Aeromedical Policy Letters and Aeromedical Technical Bulletins

Revision Date: December 2021

This revision supersedes all previous revisions.

Authority, Purpose, and Points of Contact

1. Authority. The Director, US Army Aeromedical Activity (USAAMA) on behalf of the Aerospace Medicine Consultant (AMC) to the OTSG, is authorized to issue aeromedical policy letters and technical bulletins to provide aeromedical providers guidance in regards to examinations and procedures to determine the fitness for flying duties, and the interim aeromedical disposition of disqualifying conditions, IAW ARs 40-3, chapter 3-2f and 40-501, chapter 4-1c.

2. Implementation. Policy letters and technical bulletins remain in effect from the date of publication until rescinded or superseded by the Director, USAAMA, or a higher authority.

3. Purpose.

a. Policy letters recommend Army-wide standardization of aeromedical evaluation, treatment, and disposition for a variety of common clinical problems. They provide continuity of aeromedical care for aeromedical providers and aircrew members world-wide and ensure the optimum quality of care. They ensure the safe return of countless aircrew members to flying duties once effective treatment has been achieved.

b. Technical bulletins recommend Army-wide standardization of aeromedical testing and administration. They ensure consistency in the completion of administrative requirements and the proper use of testing equipment and testing procedures throughout the Army's medical system.

c. Policy letters and technical bulletins, while not regulations or orders, are a statement of policy by the Director, USAAMA, as derived from the recommendation of the Aeromedical Consultant Advisory Panel's (ACAP) review of data from the Aeromedical Epidemiology Data Register, consultation with numerous specialists, and review of medical literature. The policy letters also recommend medical evaluations which are required to make a final recommendation for flying duties, thus avoiding the delays resulting from incomplete aeromedical summaries.

d. The policy letters, unless otherwise noted, apply to all military and DAC aircrew, ATC, and UAS operators. They apply to any contractor who completes an Army flight physical.

e. Policy letters and technical bulletins are designed to be updated as the standards of aeromedical care and knowledge change.

4. Points of Contact. Please report any content or policy issues to:

U.S. Army Aeromedical Activity (USAAMA)
334-255-0749/0750/0751/0760 DSN 558-0749/0750/0751/0760
usarmy.rucker.medcom-lahc.list.lahc-aero-helpdesk@mail.mil

5. The latest revision of this document may be downloaded at:

AERO - https://aero.health.mil (Must be on the NIPRNET)

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INTRODUCTION

External Links

1. US Army School of Aviation Medicine (USASAM): https://home.army.mil/rucker/index.php/units-tenants/tenants/saam or https://medcoe.army.mil/saam

2. US Army Publishing Directorate (USAPD): https://www.apd.army.mil/

3. AERO (must be on the NIPRNET): https://aero.health.mil/

4. US Navy Aeromedical Waiver Guide: https://www.med.navy.mil/sites/nmotc/nami/arwg/Documents/WaiverGuide/Complete_Waiver_Guide.pdf

5. US Air Force Waiver Guide (must apply for AF Knowledge Exchange access): https://kx.health.mil/kj/kx7/waiverguide/Pages/home.aspx

CARDIOVASCULAR WAIVERS

AORTIC REGURGITATION / INSUFFICIENCY

INFORMATION ONLY: Yes, in a structurally normal (trileaflet), fully asymptomatic individual with trace or "physiologic" aortic regurgitation/insufficiency incidentally detected on echocardiogram.

TEMPORARY CLEARANCE: Yes, after favorable AMS submission.

AEROMEDICAL CONCERNS: Aortic regurgitation/insufficiency is usually asymptomatic for decades because of the compensation of the left ventricle for volume overload produced by this condition. Severe aortic insufficiency does not occur until after the 4th decade. If symptoms are occurring, they are usually exercise related and secondary to left ventricular failure, i.e. exertional dyspnea, orthopnea and paroxysmal nocturnal dyspnea. Exercise intolerance due to left ventricular dysfunction, syncope, and angina are rare in the absence of associated CAD. Reports of valvular degeneration by repeated exposure to high Gz may be of concern in high performance helicopters. Thus, the presence of aortic regurgitation/insufficiency (beyond trace) is of great concern, even in young, otherwise healthy, asymptomatic applicants and aircrew members.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Exception to policy is rarely recommended, but may be possible on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended in asymptomatic, structurally normal members. Those with structural abnormality may be considered for a waiver on a case by case basis provided they are asymptomatic and a full cardiac work-up is otherwise negative or demonstrates only minimal cardiac enlargement.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete Cardiology evaluation is required to include AGXT, 24-hour Holter Monitor, and echocardiogram with Doppler flow study.
- Clearance from Cardiologist to return to work, exercise and recreational activities with no restrictions.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Annual Cardiology evaluation to include report of echocardiogram with Doppler flow study.

TREATMENT: Subacute bacterial endocarditis antibiotic prophylaxis is required for all dental procedures as well as any other potentially septic exposure. Treatment of underlying hypertension should be closely adhered to and avoidance of weight training recommended since these both may theoretically promote progression of this condition. Any medication used must be compatible with aviation duties. Valvular replacement is considered permanently disqualifying with waiver not recommended for class 2 or 3 personnel. Waiver may be possible in class 4 personnel otherwise found fit for Army retention/continued DAC service.

DISCUSSION: The most common causes of this disorder stem from valvular pathology (bicuspid aortic valve, infective endocarditis, and rheumatic heart disease) and aortic root abnormalities (dilation due to HTN/aging, Marfan's Syndrome, and ankylosing spondylitis). Trace aortic regurgitation/insufficiency is possible without detectable valvular or root pathology. However, this is considered aeromedically insignificant as these cases typically have a very small aortic insufficiency "jet" that does not extend out of the left ventricular outflow tract (LVOT) on echocardiogram.

REFERENCES:
(1). American College of Cardiology guidelines: https://www.acc.org/education-and-meetings/products-and-resources/guideline-education/valvular-heart-disease.

AORTIC STENOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Aircrew members with aortic stenosis (AS) generally remain asymptomatic for many years. When symptoms develop they often start with angina, syncope, or left ventricular failure. The onset of any of these symptoms heralds the start of increased risk of sudden death. Syncope has been reported in up to 20% of cases of aortic stenosis; it may even occur with mild AS. Sudden death occurs in 15-30% of all cases, with 3-5% occurring in symptom-free patients. Left ventricular failure may predispose individuals to dysrhythmias or syncope, and increased risk of sudden death. When the diagnosis of aortic stenosis is made, the patient must be followed closely to continuously assess valvular and left ventricular function.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Normally no exception to policy is recommended, but may be reviewed on a case-by-case basis

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Mild to Moderate AS may be considered for waiver provided complete cardiology evaluation is negative. AS with syncope, or other symptom complex are concerning for continued duties and considered less favorable for waiver action. Surgery is also considered disqualifying with normally no waiver recommended, with select cases reviewed on a case-by-case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology consultation is required including the following:
  - AGXT
  - 24-hour Holter Monitor
  - Echocardiogram with Doppler flow study
  - Cardiac catheterization may be required

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual cardiology evaluation to include echocardiogram with Doppler flow study.

TREATMENT: SBE antibiotic prophylaxis is recommended for all dental procedures as well as any other potentially septic exposure. SBE antibiotic prophylaxis is recommended for both bicuspid aortic valve and aortic stenosis. Neither aortic valvuloplasty nor aortic valve replacement have been considered for favorable waiver action in active duty aviators.

DISCUSSION: AS in individuals less than 30 years of age is almost always the result of a congenitally abnormal valve. When found in elderly patients (over 60 years of age), AS is usually secondary to the CAD and the calcific changes in a morphologically normal valve. AS due to rheumatic heart disease is usually accompanied by mitral stenosis or regurgitation. Bicuspid aortic valves become stenotic two-thirds to three-fourths of the time. The percentage of bicuspid aortic valves that become stenotic increases with age.

ATRIAL FIBRILLATION

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: About 20 times more common than atrial flutter, atrial fibrillation (AFIB) may be the result of any underlying cardiac disease but is occasionally seen in the absence of any apparent cardiac disease. The most common cause of AFIB is undertreated or unrecognized hypertension. It may be precipitated by alcohol, caffeine, tobacco, hyperthyroidism, hypoxia, hypothermia, etc. While atrial fibrillation is frequently asymptomatic, especially in younger individuals, its presence in association with rapid ventricular response may be responsible for palpitations. Angina may occur in those individuals with CAD. Dizziness or syncope and even focal neurological symptoms may occur in those with underlying cerebrovascular disease or cerebral embolism. Atrial fibrillation has also been associated with increased embolic events.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended for single episodes that are in full remission and are not characterized as either severe, recurrent or chronic. All other cases will be reviewed on a case-by-case basis, however, ETP recommendation is unlikely.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
A single episode of atrial fibrillation with clearly documented precipitating factors ("holiday heart") is waiverable, following a 6 month period of observation to ensure the absence of recurrence as well as the elimination of underlying organic sources. For earlier consideration for return to flight, the flight surgeon should contact USAAMA. Alternatively, waiver may be applied for 6 months after radiofrequency ablation, with a normal post-ablation evaluation (AFIB unable to be provoked), although such review will be done on a case by case basis. Waivers are not recommended in recurrent cases or in cases with underlying significant CAD.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Local evaluation should include a cardiology consultation with the following:
  - AGXT
  - Echocardiogram
  - Three 24-hour Holter monitors taken at 2-month intervals.
  - Thyroid function testing
- 6-month observation period off antiarrhythmic or rate-controlling medications is required to ensure the absence of recurrence.
- A detailed history to document a precipitating event is essential to support waiver action.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: In the continued absence of recurrence, a repeat cardiac evaluation is required every three years. This evaluation should include AGXT and a 24-hour Holter monitor. If AFIB is associated with any underlying disease, these requirements may be modified.

TREATMENT: A past history of electrical or chemical cardioversion is not necessarily disqualifying. Any maintenance medication (to include anticoagulant) is considered disqualifying. All underlying precipitating causes should be eliminated including smoking, caffeine, alcohol, etc.

DISCUSSION: The baseline rhythm of AFIB is characterized by chaotic atrial activity (P waves not discernible) at a rate of 350-700 times per minute. AFIB is most commonly accompanied by ventricular rates of 60-180 beats per minute. Ventricular rates are easily influenced by the presence of digoxin, beta- blockers, high vagal tone, or intrinsic AV nodal disease. There is a 17-fold increase in risk of AFIB in patients where the AFIB is associated with by mitral valve disease compared to a 5-fold increase in risk in patients where the fibrillation arises from all other causes. Cardioversion is usually successful in restoring rhythm in flutter, but there is a relatively high relapse rate in fibrillation. Patients with idiopathic, paroxysmal atrial fibrillation have no increased mortality compared to normal. Radiofrequency ablation (pulmonary vein ablation) has a success rate of up to 70% for control of AFIB, but should not be considered curative. The American Heart Association recommends consideration for ablation as a first line therapy for special populations, including military personnel.

ATRIAL FLUTTER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Atrial flutter (AF) is relatively uncommon in adults and may be associated with underlying organic heart disease. Symptoms may range from none (particularly in younger individuals) to dizziness, syncope, or angina pectoris. There is a significantly increased incidence of embolic phenomena in sustained atrial flutter.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Applicants will rarely be considered for an exception to policy.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers for non-recurrent AF or atrial fibrillation (AFIB)/AF spectrum are possible when precipitating factors are clearly documented and correctable, and the complete cardiology evaluation is normal. Alternatively, waiver may be applied for 6 months after radiofrequency ablation, with a normal post-ablation evaluation (AF unable to be provoked). Recurrent AF or AF/AFIB is not considered favorably for waiver although such review will be done on a case-by-case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology evaluation is required. This includes:
  - AGXT
  - Echocardiogram
  - Three 24-hour Holter monitors at 2-month intervals.
  - The grounded aircrew member must be observed for at least 6 months off antiarrhythmic therapy or after ablation, for evidence of recurrence.
  - Document any history of precipitating causes, e.g., alcohol intoxication, hyperthyroidism, hypothermia, etc.
- Abnormalities in any of these studies may require further work-up and aeromedical assessment.
- Any medication used to control underlying rhythm or abnormalities found.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: In the absence of recurrence, a repeat workup is required every three years. This workup includes a 24 hour Holter monitor and AGXT.

TREATMENT: The treatment of choice for atrial flutter is an electrophysiology procedure and radiofrequency ablation. Maintenance drug therapy to control AV conduction or long term anticoagulant therapy is disqualifying. A history of cardioversion or short-term use of medication(s) is not necessarily disqualifying, but the continuation of medications or inability to wean off antiarrhythmic therapy makes waiver very unlikely.

DISCUSSION: In the usual variety of AF, the typical saw-tooth pattern of flutter waves is usually best seen in the inferior leads. An atrial rate of 250-350 and varying degrees of AV conduction is the most common presentation; 2:1 conduction is the usual AV conduction ratio. Radiofrequency ablation has a success rate in excess of 98% for 'cure' of isthmus dependent atrial flutter. Because AF is a function of the structure of the heart, recurrence in the absence of ablation is common, and the American Heart Association recommends consideration for ablation as a first line therapy with first presentation.

ATRIAL SEPTAL DEFECT (ASD)

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Most patients with ASD are asymptomatic. Those that do develop symptoms usually do so by the 3rd or 4th decade. These symptoms include exercise intolerance, chronic fatigue, and orthopnea secondary to the development of pulmonary hypertension. Significant pulmonary hypertension rarely occurs before age 20 but may happen at earlier ages in those individuals living in higher altitudes. Supraventricular dysrhythmias (e.g., atrial fibrillation, atrial tachycardia) are common in patients with ASD and may persist even after successful repair of the ASD. While at one time it was postulated that ASD predisposes an individual to decompression sickness (DCS), clinical studies conducted by NAMI have not supported this theory. The role of previously undiscovered ASD in the etiology of CNS DCS is still controversial. Many times an ASD is diagnosed as part of the work-up for stroke or TIA, or, more recently and still under study, with migraine variants.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Exception to policy for initial aviation candidates is probable if surgically corrected in childhood and without any sequelae from appropriate cardiologic assessment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers are usually granted provided complete cardiology work-up is normal and without sequelae, or postoperatively with normal recovery and postoperative cardiologic assessment. If discovered due to another condition (stroke or TIA), that condition must also be aeromedically resolved and compatible with return to flight.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Cardiology consultation including the following:
  - AGXT
  - 24-hour Holter monitor
  - Echocardiogram
- If repaired in adulthood, post-operative cardiology assessment after a minimum of 3-months recovery
- Copies of all tracings and films may be requested for review.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Repeat cardiology evaluation every three years including: 24-hour Holter monitor and echocardiogram with Doppler flow study. For cases involving childhood repair, there are no annual waiver requirements unless specified.

TREATMENT: Waiver is possible after surgical or nonsurgical closure of ASD. The requirement for permanent pacing is disqualifying. SBE antibiotic prophylaxis is not indicated for uncomplicated ASD.

DISCUSSION: ASD is the one of most common form of congenital heart disease in adults. Autopsy series document a patent foramen oval in about 30% of cases in the 20-30 year age group. The incidence decreases as age advances. Up to 25% of ostium primum ASD patients have at least one other congenital abnormality of the heart. In patients who have had ostium secundum ASD treated, 58% will have an abnormal stress test with a smaller increase in cardiac output than normal when performing intense, upright exercise. Dysrhythmias follow surgical repair in 3 to 15% of cases, more than half of which have atrial fibrillation or flutter. Untreated secundum ASD is associated with pulmonary hypertension (22%), mitral stenosis (4%), atrial flutter or fibrillation (8%); and with patients experiencing dyspnea (83%), fatigue (27%), palpitations (37%), and chest pain (6%).

ATRIOVENTRICULAR CONDUCTION DISTURBANCES

INFORMATION ONLY: Yes, short PR interval (<120 msec in all 12 leads, asymptomatic, and without a delta-wave), first degree atrioventricular (AV) block (PR interval >220 msec in all leads), and asymptomatic Mobitz Type I second degree AV block ("Wenckebach") have traditionally been considered for Information Only, no waiver required, provided complete cardiology evaluation as defined below reveals no underlying disease.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Bradycardia, often associated with some of the below conduction disturbances, can result in a decreased tolerance to G-forces, syncope, or sudden death. Beyond G- forces concerns, the more severe AV blocks have aeromedical concerns that warrant consideration for continuation in flight status. See Bradydysrhythmias.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for Mobitz Type II, second degree AV block, or third degree (complete) AV block. Since 2 to 1 AV block may be either Wenckebach or Mobitz Type II, complete cardiology evaluation for differentiation is required prior to further review. Consideration will be made on a case by case basis with Aeromedical Cardiology review.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Mobitz Type II, second degree AV block and third degree (complete) AV block are considered disqualifying and normally not waiverable. Since 2-to-1 AV block may be either Wenckebach or Mobitz Type II, complete cardiology evaluation for differentiation is required prior to further review. Consideration will be made on a case-by-case basis with Aeromedical Cardiology review.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
For short PR interval, include a complete history directed toward symptoms of tachydysrhythmias, i.e., palpitations, lightheadedness, or syncope: if present, a work-up IAW Pre-excitation syndrome is required; if absent, no further information is required (service member is considered FFD). This is coded as Information Only.

For 1st degree heart block, local evaluation shall proceed with a rhythm strip performed during exercise increasing the heart rate over 80-100 bpm or more to measure the PR interval. If the PR interval shortens to $\leq$ 220 msec, no further evaluation is required (coded as IO). If the PR interval remains prolonged despite increased heart rate, a complete cardiology consultation including treadmill testing, echocardiogram, and 24-hour Holter monitor is required.

Mobitz I (Wenckebach) block also requires a rhythm strip performed during exercise. If the block is reversed, no further work-up is required (coded as IO). If, however, the block is refractory to exercise, a complete cardiology evaluation with AGXT, echocardiogram, and 24- hour Holter is required. If all testing is normal, no further evaluation is needed and the aviator may remain on flight status (coded as IO). If abnormal, all will need to be reviewed prior to continuation on flight status.

Mobitz Type II, 2:1 AV Block, and 3rd degree Heart Block, requires a complete cardiology consultation including treadmill testing, echocardiogram, and 24-hour Holter monitor. Tracings and films may be requested for review. Complete heart block must clearly be differentiated from AV dissociation due to a marked sinus bradycardia with an accelerated junctional escape rhythm; the latter may be a normal variant.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None for conditions coded as IO, provided patient remains asymptomatic and initial work-up was normal. For conditions receiving waiver, specific follow-up will be annotated.

TREATMENT: Artificial Cardiac Pacemakers are not compatible with continued flying status.

DISCUSSION: Many cases of first degree and Mobitz type I second degree heart block are related to increased vagal tone. Exercise reduces vagal tone and often reverses the block. Recent evidence, however, suggests that in patients with Mobitz type I block refractory to exercise or atropine, syncope is common and the prognosis is similar to that for patients with Mobitz type II block. Syncope (the classic Adams-Stokes attack caused by transient asystole or ventricular fibrillation) occurs without warning. When the rhythm disturbance is short-lived, some patients experience "near-syncope" or a feeling of dizziness often misdiagnosed as vasovagal syncope.

AXIS ABNORMALITY

INFORMATION ONLY: Yes, in asymptomatic members when not a serial change AND not specifically listed as disqualifying in AR 40-501, chapter 4-12.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: In the younger population group, significant axis deviation can occur as a normal variant but is occasionally found in other conduction abnormalities. In the older population group, newly discovered significant axis deviation may be an early sign of underlying cardiovascular disease, such as LVH or myocardial disease.

Condition
- Left axis deviation of the P wave. The P-axis is less than -45 degrees (-45 to -180).
- Right axis deviation of the P wave. The P-axis is greater than +120 degrees.
- Left axis deviation of the QRS complex. The QRS-axis is less than -45 degrees (-46 to - 180).
- Right axis deviation of the QRS complex. The QRS-axis is greater than +120 degrees unless the finding is clinically consistent with a persistent juvenile pattern in young aircrew.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended in asymptomatic individuals with a normal cardiology evaluation. If the evaluation reveals an underlying abnormality, ETP recommendation is based upon the nature of that abnormality.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended in asymptomatic individuals with a normal cardiology evaluation. If the evaluation reveals an underlying abnormality, waiver recommendation is based upon the nature of that abnormality.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Compare the tracing to any previous axis abnormality and report consistency or change.
- If the axis abnormality has been acquired since the last examination and/or has never been evaluated previously, then perform an AGXT and an echocardiogram. If right axis deviation is found to be clinically consistent with a persistent juvenile pattern in a young aircrew member, however, only an echocardiogram needs to be completed.
- All tracings and films should be submitted together with the aeromedical summary.

ANNUAL WAIVER ERQUIREMENTS/FOLLOW-UP: None required for benign deviations. Otherwise, IAW with specialist recommendation based on underlying cause.

TREATMENT: N/A

DISCUSSION: In normal adults, the axis is almost parallel to the anatomical base of the heart to its apex in the direction of Lead II. The axis is more vertical in thin individuals and more horizontal in heavy individuals. Abnormal axis deviations are more commonly associated with fascicular blocks (left anterior hemiblock and/or left posterior hemiblock) and with bundle branch blocks. If ECG is evident for concern of bundle branch block without a frankly deviated axis, work-up should proceed IAW the Intraventricular Conduction Abnormalities APL.

CARDIOMYOPATHY

INFORMATION ONLY: Yes, if currently fully resolved and occurrence was specifically related to a reversible, corrected etiology.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Cardiomyopathy is disease of the heart muscle. The heart loses its ability to pump effectively and in some instances, leads to dysrhythmias. Cardiomyopathy may be attributed to congenital heart disease, valvular heart disease, hypertension, myocarditis, metabolic causes (e.g. alcohol, hyperthyroid), ischemic heart disease, or most commonly idiopathic. The 3 types of cardiomyopathy are dilated, hypertrophic, and restrictive. Dilated cardiomyopathy has an enlarged left ventricle with a decreased functionality that may lead to congestive heart failure. Hypertrophic cardiomyopathy (HCM) results from a thickened septal wall, which may obstruct flow from the left ventricle. Symptoms may present with shortness of breath with exertion, dizziness, syncope, and/or chest pain as well as present with sudden cardiac death from fatal dysrhythmia. Restrictive cardiomyopathy results from rigidity within the ventricle wall for filling and is usually associated with an underlying systemic disease process. Symptoms include shortness of breath, dyspnea on exertion, fatigue, peripheral edema, hypotension, and syncope.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Exception to policy is not recommended but may be requested for a case-by-case review.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver may be considered in only the very mildest of cases with minimal hemodynamic and echocardiographic abnormalities and after the exclusion of underlying pathology. Cardiomyopathy must have been felt due to a reversible cause, with complete resolution of cardiovascular findings, with an ejection fraction >50% and not requiring supportive medications (including beta-blockers, ACE-inhibitors, aldosterone receptor antagonists, digitalis). Aeromedical Cardiology Consultant will likely review the case after submission with USAAMA. True primary hypertrophic cardiomyopathy is not granted a waiver; in fact, it is considered unfit for all military duties.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Cardiology consultation is required, including:
  - Echocardiogram
  - Cardiac catheterization, if clinically indicated.
  - Exclusion of underlying disorders such as hypertension, pulmonary hypertension, valvular disorders, and hyperthyroidism is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Will be specified based on the diagnosis and condition.

TREATMENT: Surgical treatment or medical treatment with Class IV medications is disqualifying for all flight duties. It must be noted, however, that almost all patients require some form of treatment.

DISCUSSION: Hypertrophic cardiomyopathy presents most frequently in the twenties. In a military population, it is important to differentiate between athletic heart syndrome and HCM. The majority of individuals will demonstrate ECG changes with LVH by voltage criteria and/or ST-T wave changes. The level of hypertrophy and the severity of the hemodynamic changes do not help to determine the prognosis. Poor prognostic factors are a family history of sudden death, diagnosis in childhood, and a history of syncope. Although many cardiomyopathies may be reversible, the underlying conditions may require separate review for waiver (e.g., atrial fibrillation, alcohol abuse, thyroid disorders, nutritional deficiencies, etc.). A unique entity to military personnel has been the identification of vaccine related myopericarditis, which has been seen to have a favorable prognosis even with initial identification of a dilated cardiomyopathy. Aircrew members should be encouraged to pursue a waiver after 6 months from time of acute illness due to a post-vaccination myocarditis with anticipated review by the Aeromedical Cardiology Consultant.

CARDIOVASCULAR RISK SCREENING PROGRAM (CVSP)

INFORMATION ONLY: Failure of Level 1, 2 or 3 with subsequent passing of the next higher level can be listed IO in asymptomatic individuals. Disposition of those needing Level 4 screening will be based off cardiac catheterization results/findings.

TEMPORARY CLEARANCE: Yes, provided screening and evaluation reveal no coronary artery disease and member is otherwise fully asymptomatic.

AEROMEDICAL CONCERNS: Coronary artery disease (CAD) is a major cause of permanent suspension from aviation duties and non-accidental, premature death in aircrew members. The first signs and symptoms of CAD are often dramatic, incapacitating, or even fatal, too late for preventive strategies to preserve flight status. The CAD screening program for asymptomatic individuals is vital to identify and aggressively treat modifiable risk factors, identify those requiring further intervention, prevent in-flight incapacitation and to promote health and wellness in Army aircrew.

WAIVERS:
Pilot Applicants (Class 1A/1W):
N/A. ETP is not required in association with the CVSP APL. If any CAD is discovered, aeromedical providers should see the CAD APL for ETP eligibility and requirements.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
N/A. Waiver is not required in association with the CVSP APL. If any CAD is discovered, aeromedical providers should see the CAD APL for waiver eligibility and requirements

INFORMATION REQUIRED:
All aircrew members are required to undergo CAD screening via the CVSP. Risk factor evaluation should be assessed annually regardless of age and documented on the FDME/FDHS in AERO. Aircrew members declining to complete any required level of the CVSP should be recommended for permanent suspension via aeromedical summary.

For aircrew and applicants age 39 years and younger, failure of Level 1 in otherwise asymptomatic individuals is listed IO with documentation of appropriate risk reduction counseling. No further work-up is necessary and no additional information needs to be submitted to AAMA.

For aircrew and applicants age 40 years and older, report the result of each level used in screening as described below as well as any corresponding consultations and evaluations. Failure of any screening level with passage of the subsequent level is filed IO. Flight physicals submitted without required CVSP results will be returned Disqualified Incomplete. The discovery of any verified CAD during any level of screening is disqualifying and the aeromedical provider should see CAD APL for AMS/waiver requirements.

Civilian ATCs: Civilian ATCs failing Level 1 are normally counseled on risk factor modification without further assessment, regardless of their age. However, the aeromedical provider may require these individuals to complete Level 2 or higher screening if, in their professional medical opinion, not completing additional screening could potentially result in unnecessary and/or excessive aeromedical risk or negatively impact mission completion. Additionally, AAMA may choose to return the flight physical Disqualified Incomplete requiring completion of Level 2 or higher CAD screening based on review of CAD risk history, medical history, waivers, co-morbid conditions, and previous submissions. Military ATCs failing Level 1 will be further evaluated as outlined below.

LEVEL 1: Annual submission of risk factors to include age, family history, blood pressure, smoking history, serum lipids, blood sugar, and ECG findings of Left Ventricular Hypertrophy (LVH). If the Framingham risk index is 7.5 or greater, LDL cholesterol 190 or greater, total serum cholesterol 255 or greater, total cholesterol/HDL ratio is 6.0 or greater, or if ***metabolic syndrome*** (if three or more of the following criteria are met: waist circumference over 40 inches (men) or 35 inches (women), blood pressure over 130/85 mmHg, fasting triglyceride (TG) level over 150 mg/dl, fasting high-density lipoprotein (HDL) cholesterol level less than 40 mg/dl (men) or 50 mg/dl (women) and fasting blood sugar over 100 mg/dl.) is present, aircrew members (except civilian ATCs) must proceed to Level 2.

LEVEL 2: Treadmill stress test (GXT) or Coronary Artery Calcium (CAC) scoring, i.e., electron beam CT (EBCT), multi-slice CT (MSCT), multi-detector CT (MDCT), or multi-row CT (MRCT). CAC scoring is standardized across all CT modalities and quantified using a unit-less number known as the Agatston score. Scores of 400 or more

are considered abnormal and necessitate further screening. If either GXT or CAC score are abnormal, proceed to Level 3.

LEVEL 3: Noninvasive Cardiac Imaging: Stress echocardiogram, stress myocardial perfusion scan or stress cardiac MRI. If abnormal, proceed to Level 4, but only after consultation with AAMA. If no hemodynamically significant perfusion defects are detected, aggressive risk factor modification should be prioritized.

LEVEL 4: Invasive Cardiac Procedure: Cardiac catheterization. Results of cardiac catheterization must be forwarded to AAMA for review along with results from Levels 1-3. Final disposition on cases will be made after review of all study results. If catheterization resulted in any interventions (angioplasty, stent placement, etc.) the aircrew member is disqualified and aeromedical provider should follow the CAD APL.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: There are no annual waiver requirements associated with the CVSP APL; however, continued failure of any CVSP level after a normal subsequent work-up will necessitate the submission of a repeat Level 2 (or higher if necessary) CAD screening every 3 years.

TREATMENT: The key to lowering the incidence of coronary artery disease is aggressive risk factor modification and reduction. Treatment of hyperlipidemia, hypertension, and increased blood glucose are essential. Therapeutic lifestyle changes focused on tobacco cessation, regular exercise and a healthy diet are of the utmost importance in lowering cardiovascular risk. Aircrew that fail Level 1 screening with subsequent passage of Level 2 still require careful assessment and treatment of risk factors. See appropriate APLs for aeromedically acceptable treatment for these conditions.

DISCUSSION: The Framingham CAD Risk Index calculator is a computer generated, weighted multiple regression formula automatically calculated for the aeromedical provider when entering risk data into the AERO system. This calculator helps identify those with atherosclerotic burden and/or CAD that are likely to result in an adverse cardiovascular event in the next 5-10 years. This risk can be exacerbated with common conditions present in the aviation environment including but not limited to hypoxia, heat stress, load-bearing, poor nutrition status, dehydration, and gravitational forces. Sudden incapacitation of aircrew secondary to heart disease may result in loss of life and aircraft as well as result in mission failure. Therefore, early detection of CAD can help mitigate risk for in-flight incapacitation associated with this disease process. The screening program is an opportunity to diagnosis disease at a subclinical or asymptomatic stage in order to ensure that in-flight incapacitation remains a rare event.

REFERENCES:

(1). Wirawan IMA, Wu R, Abernathy, M, et al. Calcium Scores in the Risk Assessment of an Asymptomatic Population: Implications for Airline Pilots. Aviat Space Environ Med, 2014; 85: 812-17.
(2). Libby P and Theroux P. Pathophysiology of Coronary Artery Disease. Circulation, 2005; 111: 3481-88.
(3). Greenland P, LaBree L, Azen SP, et al. Coronary Artery Calcium Score Combined with Framingham Score for Risk Prediction in Asymptomatic Individuals. JAMA, 2004; 291(2): 210-15.
(4). Kramer CM and Beller GA. Noninvasive Cardiac Imaging. Ch. 56 in *Goldman's Cecil's Medicine*, 24th ed., Saunders, 2011.
(5). Goff DC, Lloyd-Jones DM, Bennett G, et al. 2013 ACC/AHA Guideline on the Assessment of Cardiovascular Risk: a Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation, 2014; 129(suppl 2): S49-S73.
(6). Kruyer WB and Davenport ED. Cardiology. Ch. 2 in *Rayman's Clinical Aviation Medicine*, 5th ed., New York: Castle Connolly Graduate Medical Publishing, LTD, 2013.

CHAMBER WALL OR SIZE ABNORMALITIES

INFORMATION ONLY: Yes, isolated electrical-only LVH confirmed to be a false positive on echocardiogram.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Atrial enlargement can be caused by many cardiac problems but is usually associated with enlargement of one or both of the ventricles. Right atrial enlargement is most often associated with pulmonary disease and left atrial enlargement is commonly caused by mitral valve disease. Right ventricular hypertrophy is also often caused by pulmonary disease but can be compensatory rather than pathologic. Left ventricular hypertrophy is most commonly seen secondary to hypertension or aortic stenosis or associated with cardiomyopathies, which are discussed separately.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended when underlying condition is resolved or when aeromedically acceptable treatment has been optimized.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
In the active duty military population, most chamber abnormalities are non-pathologic. True chamber enlargement due to underlying pathologic disease is only waived when treatment and the underlying causative condition are resolved. Valvular diseases require special consideration (see specific valvular disorder APL). LVH, based solely on ECG criteria, is usually false positive and requires an echocardiogram to discern. Current criteria, based on the general population, are not valid for our young, athletic population. Individuals with echocardiographically proven LVH are often terminated from flight status with no waiver recommended. Isolated findings of elevated voltages on ECG with normal echocardiogram are considered fully qualified with information only. Individuals with early mild LVH secondary to hypertension are waiverable if satisfactory treatment of hypertension is achieved. Report all tracings and films results with the aeromedical summary to USAAMA--these may be requested for further review.

G Code	Condition
G-500	Left Atrial enlargement
G-720	Left ventricular hypertrophy by voltage criteria and ST-T segment abnormalities
G-727	Biventricular enlargement
G-501	Right Atrial enlargement
G-728	Septal hypertrophy
G-502	Bi-atrial Enlargement
G-721	Right ventricular hypertrophy with tall R-wave
G-729	Left ventricular hypertrophy by voltage only
G-722	Right ventricular hypertrophy with RSR’

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Cardiology evaluation
- Echocardiogram

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An annual echocardiogram, and 3-day b.i.d. BP check are required for hypertension induced mild LVH.

TREATMENT: Treatment of underlying cause of hypertrophy with approved medications.

DISCUSSION: In young individuals, the precordial voltages tend to be higher than in older individuals. If voltage criteria alone are used to diagnose LVH, many false positives will result. Below are some criteria for LVH from different authorities, although none has been validated in those less than age 45 years. Left atrial enlargement, ST segment abnormalities, widening of the QRS, and abnormal R-wave progression are supplemental characteristics of LVH. An echocardiogram should be obtained with M-mode Doppler measurement of the left ventricular posterior wall thickness in diastole and the interventricular septal wall thickness in diastole. Symmetric thicknesses of up to 1.5cm are considered normal in this healthy athletic population.

Scott Criteria:

(1) S in V1 or V2 plus R in V5 or V6:
- > 35 mm > 30 years old
- > 45 mm > 20 - 30 years old
- > 55 mm > 20 years old

(2) R in V5 or V6 > 26 mm; R + S in any V lead > 45 mm
- R in aVL > 7.5 mm;
- R in aVF > 20 mm;
- or S in aVR > 15 mm.

USAFSAM Criteria:

S in V1 or V2 plus R in V5 or V6
- > 55 mm if under 35
- > 45 mm if over 35

Estes Criteria:

R or S in any limb lead > 20 mm	= 3 points
S in V1, or V2, or V3 > 25 mm	= 3 points
R in V4, or V5, or V6 > 25 mm	= 3 points
Any ST shift without drugs	= 3 points
Typical “strain” pattern with digitalis	= 1 point
LAD of -15 or more	= 2 points
QRS width 0.09s or more	= 1 point
Intrinsicoid deflection in V5 or V6 0.04 or >	= 1 point
P terminal force in V1 more than 0.04	= 3 points

A score of 4 points indicates probable LVH.
A score of 5 and greater indicate definite LVH.

CORONARY ARTERY DISEASE / MYOCARDIAL ISCHEMIA OR DAMAGE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Coronary artery disease (CAD) is a leading cause of permanent suspension from flying duties. The major concern is sudden in-flight incapacitation as a result of sudden death, altered consciousness, or incapacitating angina. Heat, hypoxia, hyperventilation, work-related stress, and/or high Gz/Gx maneuvers all increase myocardial oxygen demand; thus, possibly provoking angina, dysrhythmia and infarction in individuals with preexisting CAD lesions. Additionally, interval ECG findings can be suggestive of ischemia or myocardial damage that has gone unrecognized by the aircrew member. With no awareness and lack of correction of risk factors, these individuals are at increased risk for disease progression and potentially catastrophic cardiovascular events.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Exception to Policy is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver will be recommended for luminal irregularities or asymptomatic, minimal/mild CAD following appropriate evaluation and risk factor reduction. Waiver may be recommended on a case by case basis for moderate CAD following evaluation, risk factor reduction and successful intervention of stenotic lesion(s). Waiver may be recommended on a case by case basis for myocardial ischemia/infarction following appropriate evaluation, optimization of medical management and return to full duty without restrictions.

INFORMATION REQUIRED FOR ALL INITIAL WAIVER/ETP:
- Complete cardiologist evaluation to include risk factor analysis. Evaluation must include clearance to return to work/sports with no limitations.
- Results of any tracings, reports or images obtained for clinical assessment (GXT, cardiac CT or MRI, stress echocardiogram, coronary angiography/catheterization).
- Attestation by submitting aeromedical provider of member meeting military/DAC retention standards including trial of duty requirements prescribed in AR 40-501, Chapter 3-14.

Additional Requirements Following Intervention:
- Results/notes from percutaneous coronary interventions.
- Post-intervention studies demonstrating hemodynamically normal function (minimum 4 months):
  - Treadmill or nuclear GXT with imaging (i.e., stress echo or stress myocardial perfusion scan).

Additional Requirements Following Myocardial Ischemia or Damage:
- Results/notes from percutaneous coronary intervention if indicated or recommended by treating specialist.
- Post-event studies demonstrating hemodynamically normal function (minimum 4 months):
  - Treadmill or nuclear GXT with imaging (i.e., stress echo or stress myocardial perfusion scan).
- 24hr Holter monitor if clinically indicated due to symptoms, ECG findings or location of ischemic damage.
- Attestation of adherence to aggressive lifestyle modifications (no smoking, normotensive, normoglycemic, optimized lipid control, exercise/weight loss regimen).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Cardiology evaluation
- Treadmill or nuclear GXT with imaging (i.e., stress echo or stress myocardial perfusion scan).
- Local aeromedical provider comment on absence of symptoms, continued compliance with medication regimen and strict adherence to lifestyle modifications.

***** Repeat cardiac catheterization is NOT required unless there are symptoms suggestive of ischemia, left ventricular dysfunction, other evidence of disease progression, or deterioration of non-invasive testing OR if otherwise recommended by specialist evaluation.

TREATMENT: The mainstay of treatment for asymptomatic or minimally symptomatic CAD is reduction of modifiable risk factors. Local aeromedical providers should vehemently counsel aviation personnel on reduction/cessation of tobacco/nicotine containing products, reduction of body mass/weight, maintenance of an exercise regimen and strict adherence to any hyperlipidemia, hypertension and/or diabetic medications. Many CAD risk factors are in and of themselves disqualifying for aviation duty, so aeromedical providers should follow applicable policy letters if these conditions exist. Coronary angioplasty or stent placement can be required for hemodynamically significant or symptomatic stenosis. Waiver for CAD requiring interventions may be submitted following successful completion and recovery of these procedures with an appropriate waiting period as defined in "Information Required for Initial Waiver/ETP" section above. CAD that is significant enough to require revascularization via Coronary Artery Bypass Grafting (CABG) will generally not be recommended for waiver. The only exception would be those individuals who otherwise meet all military/DAC service retention standards with unique, mission critical skills or those in low-density, nonflying aviation-related positions. A full ACAP will typically be required in these rare cases. Any medication use must be with aeromedically acceptable formulations, be well-tolerated and have no aeromedically significant side effects. Antiplatelet therapy for secondary/tertiary prevention or following stent placement is generally considered favorably for waiver. However, aeromedical providers must be aware these may negatively affect military retention and impart assignment and deployment limitations. Please see the Medications APL and AR 40-501, Chapters 3 & 5, for further guidance.

DISCUSSION: Hemodynamically significant coronary lesions are routinely screened for in our over-40 population (excluding Civilian ATC unless requested) using the Cardiovascular Risk Screening Program (CVSP). For further guidance, please see the CVSP APL.

Grading of the number and extent of stenotic coronary lesions can be complex and based off subjective interpretation by cardiology and radiology specialists. Aeromedical providers should endeavor to employ a conservative approach when determining the extent of coronary artery disease and subsequent aeromedical waiver requirements in any borderline cases. Additionally, knowledge of ECG morphology is critical in rapid diagnosis and prevention of cardiovascular events. Luminal irregularities describe coronary angiography with irregular arterial edges due to atherosclerotic plaque but less than gradable 10-20% stenosis. This represents a subset of CAD with event rates higher than those with truly normal coronary angiography (smooth arterial edges). Minimal/Mild Coronary Artery Disease (MCAD) is generally defined as 20-49% stenosis in the most severely obstructed lesion of one or more coronary arteries but with no hemodynamic abnormalities. These lesions do not cause reperfusion deficit on exercise perfusion studies and have no abnormal wall motion on exercise echocardiogram. Therefore, waiver will be recommended as described above. Moderate Coronary Artery Disease (ModCAD) is generally defined as 50-69% stenosis in the most severely obstructed lesion of one or more coronary arteries and is expected to result in symptoms and hemodynamic abnormalities. The flight environment can significantly exacerbate these hemodynamic abnormalities hence the unlikelihood of waiver recommendation in this category without a successful intervention. Significant Coronary Artery Disease (SCAD) is generally defined as 70% or greater stenosis in the most severely obstructed lesion of one or more coronary arteries resulting in marked symptoms secondary to ischemia. SCAD represents significant disease likely present in multiple coronary arteries that is not compatible with aviation duty; therefore, waiver is not recommended regardless of any interventions.

REFERENCES:
(1). American Heart Association. *2014 Heart and Stroke Statistical Update.* Dallas, Texas: American Heart Association, 2015.
(2). The Guide to Clinical Preventive Services 2014. U.S. Preventive Service Task Force, pp 25-26.
(3). Hall SL and Lorenc T. Secondary Prevention of Coronary Artery Disease. American Family Physician, 2011, 83(7): 819-826.
(4). Davis JR, Johnson R, Stepanek J, and Fogarty JA. Clinical Aerospace Cardiovascular Medicine. Ch.13 in *Fundamentals of Aerospace Medicine*, 4rd ed., Lippincott Williams & Wilkins, 2008.
(5). Kruyer WB and Davenport ED. Cardiology. Ch. 2 in *Rayman's Clinical Aviation Medicine*, 5th ed., New York: Castle Connolly Graduate Medical Publishing, LTD, 2013.

HYPERLIPIDEMIA / HYPERCHOLESTEROLEMIA

INFORMATION ONLY: Yes, with uncomplicated dyslipidemia controlled by either therapeutic lifestyle changes (TLC) or two or less aeromedically acceptable medications with no side effects.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission in asymptomatic patients who are not otherwise CVSP risk failures.

AEROMEDICAL CONCERNS: Atherosclerotic Cardiovascular Disease (ASCVD) is a leading cause of non-accidental premature death in aircrew members. ASCVD risk increases with elevated plasma cholesterol, elevated low-density lipoprotein (LDL), and sub-optimal high-density lipoprotein (HDL) levels. ASCVD can lead to suddenly incapacitating conditions such as angina, heart failure, myocardial infarction, aortic atherosclerosis and aneurysm, sudden cardiac death, and cerebrovascular accident. Furthermore, very high triglyceride levels may result in acute pancreatitis, with symptoms ranging from distracting to incapacitating. Aeromedical providers must also consider the possibility of distracting/hazardous side effects from commonly used medications.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely required and is reserved for those rare cases requiring three or more medications, where medical therapy fails to adequately correct dyslipidemia, or medication use results in unacceptable side effects, permanent medical conditions, or end-organ damage.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is rarely required and is reserved for those rare cases requiring three or more medications, where medical therapy fails to adequately correct dyslipidemia, or medication use results in unacceptable side effects, permanent medical conditions, or end-organ damage.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- □ Baseline fasting* lipid panel prior to initiation of medical therapy.
- □ Baseline fasting* comprehensive metabolic panel (CMP)
- □ Comment by aeromedical provider on absence of causes of secondary hyperlipidemia, i.e. hypothyroidism, diabetes, alcohol abuse, cigarette smoking, gout, renal failure, nephrotic syndrome, and certain medications (i.e., estrogen preparations, corticosteroids, and anabolic steroids).

* For accurate results, the patient should fast for ~8 hours (only water/zero-calorie fluids, i.e., black coffee, tea, etc.), maintain their “typical” diet for the preceding two weeks, and have no recent illnesses, operations, or major injuries.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- □ Updated fasting lipid panel
- □ Updated fasting CMP
- □ Aeromedical provider comment on continued absence of aeromedically significant side effects.

TREATMENT: Information regarding the treatment of hyperlipidemia is continuously evolving. Providers should remain abreast of current professional society recommendations and clinical practice guidelines. When medication therapy is initiated, the local aeromedical provider must enforce a minimum grounding period of six half-lives to observe for aeromedically significant side effects. Most medications used to treat hyperlipidemia are acceptable for aviation duty and are listed IO. The use of two or less aeromedically acceptable, lipid-altering medications can be listed IO. The use of three or more medications OR the use of any aeromedically unapproved medication(s) is disqualifying and requires waiver submission with the above listed requirements. Pharmacologic treatment options include HMG CoA Reductase Inhibitors (Statins), Ferric Acids, Bile-Acid Binding Resins, Nicotinic Acid, and Cholesterol Absorption Inhibitors. A relatively new class of medications to treat elevated cholesterol is proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors (i.e., Repatha and Praluent). PCSK9 inhibitors are effective at improving cholesterol markers in conjunction with statins or alone when statins cannot be tolerated. They are FDA approved and relatively well-tolerated but their use is limited in military aviation due to high cost and required subcutaneous injections. ETP would not be recommended and waiver only considered in select aircrew on a case by case basis. Please see Medications APL for further guidance.

DISCUSSION: This is one of the most high-yield policy letters in terms of the long-term and profound impact on aircrew health and overall aviation safety. The main goal in addressing dyslipidemia is to educate patients on how to improve their health through lifestyle changes and, where indicated, with medications. Despite a relatively smaller number of required waivers, early detection and subsequent reduction of this primary CAD risk factor significantly impacts aircrew fitness and operational readiness.

REFERENCES:
(1). Management of Blood Cholesterol: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. JACC, 2019.

HYPERTENSION

INFORMATION ONLY: Yes, if currently normotensive (less than 140/90 mmHg) treated with lifestyle modifications OR on a stable dose of an approved single agent medication (see Table 1) with no aeromedically significant side effects.

TEMPORARY CLEARANCE: Yes, after favorable AMS submission.

AEROMEDICAL CONCERNS: Untreated hypertension is a major risk factor for the development of cardiovascular disease including coronary artery disease, congestive heart failure, cerebrovascular accidents, peripheral vascular disease, renal disease, and diabetes. Hypertension is relatively common, easily recognizable, and treatable with diet/exercise and/or approved medications.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is recommended once normotensive on a stable dose of approved medication(s), with no aeromedically significant side effects and evaluation reveals no significant comorbid disease or underlying pathology.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended once normotensive on a stable dose of approved medication(s) with no aeromedically significant side effects. **There are different standards for civilian ATC (see OPM ATB).**

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- □ Documentation of evaluation completed IAW current practice guidelines (JNC, ACP, AAFP, ACC, or AHA) to exclude underlying pathology, secondary causes and/or end organ damage.
- □ 3-day average BP
- □ ECG
- □ LABS: Chem7, H&H, Urinalysis and Lipid panel
- □ Fundoscopic examination

* Any abnormalities must be evaluated by board-certified physician as clinically indicated.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- □ 3-day average BP
- □ ECG
- □ LABS: Chem7, H&H, Urinalysis. If on a thiazide-type diuretic, include a lipid panel

* If changing within or between classes of approved medication(s), no additional waiver action is required. A new waiver request will be required if changing from an IO single agent to a medication from table 2.

TREATMENT: Based of review of current literature and multiple society guidelines the standard for blood pressure control is set at <140/90 for management in the Army aviation environment. Lifestyle modification is a first line therapy but is often inadequate to maintain a normotensive state. This includes smoking cessation, blood glucose and lipid control, a proper diet with salt and alcohol restriction, and physical activity. Following initiation of pharmacotherapy, diet and exercise remain essential adjuncts and should be encouraged at a level appropriate to patient's age and current fitness status. Consistent with previous policy and good aeromedical practice, aircrew members should be grounded for a minimum of 7 days at the initiation of any new drug therapy, following a dose adjustment or following a change in medication IOT observe for aeromedically significant side effects.

Table 1: Single Agent Medications Approved For Information Only:

Angiotensin-converting enzyme inhibitor (ACEI)	Benazepril (Lotensin) Lisinopril (Zestril) Ramipril (Altace) ***Note:** Ramipril is restricted to 5mg to 20mg for IO.
Angiotensin II receptor blocker (ARB)	Losartan (Cozaar) Telmisartan (Micardis)
Thiazide-type diuretic	Chlorothiazide (Diuril) Hydrochlorothiazide (Hydrodiuril)
Potassium sparing diuretic	Triamterene (Dyrenium)

Table 2: Single & Combination Medications(1) Requiring Waiver:

Angiotensin-converting enzyme inhibitor (ACEI)	Captopril (Capoten) Enalapril (Vasotec) Fosinopril (Monopril) Moexipril (Univasc) Quinapril (Accupril) Trandolopril (Mavik)
Angiotensin II receptor blocker (ARB)	Candesartan (Atacand) Irbesartan (Avapro) Valsartan (Diovan)
Alpha blocker	Doxazosin (Cardura) Prazosin (Minipress) Terazosin (Hytrin)
Beta blocker	**Class 4 PERSONNEL ONLY (FS & Non-rated Aircrew on a case-by-case basis):** Atenolol (Tenormin) Metoprolol (Lopressor, Toprol) Propranolol (Inderal)
Calcium channel blocker (CCB)	Amlodipine (Norvasc) Felodipine (Plendil) Nisoldipine (Sular) **Class 4 PERSONNEL ONLY (FS & Non-rated Aircrew on a case-by-case basis):** Diltiazem (Cardiazem) Nifedipine (Procardia) Verapamil (Calan)
Central alpha2/adrenergic agonist	**Class 4 PERSONNEL ONLY:** Clonidine

*NOTE: (1). Contact AAMA for medications that are not listed prior to submission of waiver request.

DISCUSSION: In the Framingham study, the mortality of individuals with hypertension was more than double that of the normotensive population, with most of the deaths occurring suddenly. USAAMA stresses the need for flight surgeons to work on primary prevention with aircrew members and to aggressively diagnose and treat hypertension to prevent long-term sequelae. The risk of cardiovascular events increase with age, smoking, male gender, positive family history, excess alcohol intake, and high blood lipid levels. A significant portion of cardiovascular disease occurs in people whose blood pressure is above the optimal level (120/80 mm Hg) but who are not explicitly hypertensive. Review of the Aeromedical Epidemiology Data Registry (AEDR) indicates hypertension is readily waived and those not granted a waiver/ETP generally have more serious underlying pathology leading to suspension. Local aeromedical providers are encouraged to inquire about any herbal and/or supplement use as many of these products touted as fat burners, hormone modulators and pre-workout supplements cause transient but often marked hypertension. “White coat hypertension” does not require waiver action provided the aircrew member can prove their normotensive status outside of the clinical setting.

REFERENCES:

(1). James PA, Oparil S, Carter BL, et al. 2014 Evidence-Based Guideline for the Management of High Blood Pressure in Adults: Report From the Members Appointed to the Eighth Joint National Committee (JNC8). JAMA, 2013.

INTRAVENTRICULAR CONDUCTION ABNORMALITIES

INFORMATION ONLY: Yes, for IRBBB. Also for isolated, asymptomatic RBBB, LAFB or LPFB with no underlying cardiac disease and a cardiologist evaluation documented on DD 2807. Otherwise, please see Table 1 below.

TEMPORARY CLEARANCE: Yes, after favorable AMS submission.

AEROMEDICAL CONCERNS: An acquired right bundle branch block may be the result of underlying cardiac or pulmonary disease including hypertension, coronary atherosclerosis, myocardial infarction, pulmonary hypertension, volume overload states, valvular diseases, or primary conduction disease. LBBB most often occurs in patients with underlying heart disease and may be associated with progressive conducting system disease. Patients who have multi-fascicular blocks may have advanced conduction system disease that ultimately may progress to complete heart block and sudden cardiac death.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended IAW Table 1.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended IAW Table 1.

TABLE 1:

Condition	Class 1A/1W	Class 2, 3 and 4 Applicants
IRBBB	Information Only	Information Only
Isolated RBBB, **LAFB**, or **LPFB** with **no** underlying cardiac pathology and normal cardiologist evaluation	Information Only – document requirements on DD 2807	Information Only – document requirements on DD 2807
Bifascicular block (LAFB or LPFB with RBBB) with **no** underlying cardiac pathology and normal cardiologist evaluation	Information Only – document requirements on DD 2807	Information Only – document requirements on DD 2807
LBBB with **no** underlying cardiac pathology and normal cardiologist evaluation	ETP recommended	Waiver recommended
RBBB, **LBBB**, **LAFB** or **LPFB** associated **with** cardiac disease/pathology or abnormal cardiologist evaluation	ETP is case by case and dependent on the underlying condition and results of the evaluation	Waiver is case by case and dependent on the underlying condition and results of the evaluation
Bifascicular block associated **with** cardiac disease/pathology or abnormal cardiologist evaluation	ETP is case by case and dependent on the underlying condition and results of the evaluation	Waiver is case by case and dependent on the underlying condition and results of the evaluation
Alternating RBBB and **LBBB**	ETP not recommended	Waiver not recommended
Trifascicular block	ETP not recommended	Waiver is case by case and requires structurally normal heart

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Cardiologist consult
- 24 hour holter monitor
- Evaluation of cardiac function and structure:
  - Treadmill stress test plus imaging (echocardiogram or cardiac MRI).

  OR
  - Stress imaging (Nuclear stress testing, stress echocardiogram or stress cardiac MRI).
- Cardiac catheterization if clinically indicated and/or recommended by cardiologist consultant.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical Provider comment on any changes in condition, symptoms or treatment.
- For LBBB or presence of underlying cardiac pathologic/structural abnormalities:
  - Stress imaging (Nuclear stress testing, stress echocardiogram or stress cardiac MRI).
  - 24 hour holter monitor every 3 years, unless required more frequently due to cardiologist recommendation or IAW the APL for the underlying cardiac condition.

TREATMENT: Local aeromedical providers should inquire about the use of any potentially cardiotoxic medications or supplements that might either mask or augment pathology. Cessation of offending agents (if medically appropriate) may remove the requirement for costly and invasive testing or treatment. Permanent pacemaker insertion is indicated for patients who develop symptomatic conduction system disturbances not associated with a reversible or transient condition. In some instances, electrophysiology study may be necessary to definitively evaluate the infrahisian conduction system, specifically if there is question of whether a pacemaker is indicated. A pacemaker may be needed if syncope occurs, particularly if other conduction disturbances are present, such as a third degree or type II second degree AV block. Pacemakers will not be recommended for ETP/Waiver.

DISCUSSION: When requesting IO consideration for a condition in this APL, local aeromedical providers must either upload results of applicable function and/or imaging studies to AERO documents OR comment in sufficient detail on the specific studies completed and their results. Please also remark on any additional pertinent information from the evaluating specialist including but not limited to requirement for additional evaluation, future follow up intervals, treatment recommendations (medical, pharmacologic, or surgical) and any restrictions related to work, physical activity or travel.

IRBBB is a normal variant with no evaluation required and can be listed IO. RBBB is a largely asymptomatic, normal variant that occurs on ~2/1000 ECGs but can develop in the setting of high heart rates. RBBB therefore necessitates a cardiac evaluation including echocardiogram or cardiac MRI. In the absence of heart disease, acquired RBBB carries the same risk for death or syncope as the general population and can therefore be IO. Similarly, isolated LAFB or LPFB are considered benign conditions and are also IO following a negative/normal evaluation.

Applicants for any flight AOC/MOS with LBBB associated with moderately to severely reduced LVEF will not be recommended for ETP/waiver. Trained aviation personnel with LBBB and similarly reduced LVEF will be recommended for aeromedical suspension. Trifascicular block is disqualifying in aviator applicants with ETP not recommended. Waiver for class 2, 3 or 4 applicants is possible if there is a structurally normal heart but is only considered on a case by case basis. An alternating pattern of RBBB and LBBB is disqualifying for all applicant classes with ETP/waiver not recommended.

REFERENCES:

(1). ACC/AHA/HRS Guideline on the Evaluation and Management of Patients with Bradycardia and Cardiac Conduction Delay: American College of Cardiology Clinical Practice Guideline. https://www.onlinejacc.org/content/74/7/932, 2018.
(2). Elizari, MV, Acunzo, RS, and Ferreiro, M. Hemiblocks Revisited. Circulation. 2007; 115: 1154-1163.
(3). Rogers, RL, Mitarai, M., and Mattu, A. Intraventricular Conduction Abnormalities. Emergency Medical Clinic North America. 2006; 24: 41-51.

ION CHANNEL DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Ion channelopathies are those genetic disorders leading to abnormality of sodium (Brugada syndrome), potassium (long QT syndrome), or calcium (catecholaminergic polymorphic VT, RyR2) transport across the myocardial cell. Commonly, these conditions may cause characteristic ECG changes and symptoms of syncope or palpitations unexpectedly, and there is an increased risk for sudden cardiac death. The initial clinical manifestation of these conditions may be sudden incapacitation without prodrome.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
The definitive diagnosis of Brugada syndrome, long QT syndrome, or catecholaminergic polymorphic VT are non-waiverable conditions. Because the initial manifestation of these syndromes may be sudden death, identifying any of these diagnostic ECG patterns is also non-waiverable until thoroughly evaluated and reviewed. Because the diagnosis can be challenging, consultation with a cardiac electrophysiologist is required prior to submission of the case to USAAMA for Aeromedical Cardiology Consultant. Although the syndrome is not waiverable, having a family history of premature sudden cardiac death (any first degree relative prior to the age of 35 without antecedent trauma or prolonged illness) will require review of the case by the Aeromedical Cardiology Consultant after submission with USAAMA.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Cardiology consultation is required for those with a family history of sudden death prior to the age of 35, including:
  - Echocardiogram
  - 12 lead electrocardiogram
  - 24 hour Holter monitor
  - Genetic testing for SCN5a and LQTS at the discretion of the Aeromedical Cardiology Consultant

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Will be based on the diagnosis and condition.

TREATMENT: Treatment for those with identified ion channelopathy in addition to symptoms referable to that channelopathy lead to a diagnosis of a syndrome. The presence of Brugada syndrome, LQT syndrome, or RyR2 syndrome is treated with either antiarrhythmic drugs, or more commonly an implantable cardioverter-defibrillator. For those with a family history, no treatment is necessary, and if genetics can be used to disprove transmission through pedigree or identifiable mutation, there is no indication for treatment, and there is no limitation. For those with asymptomatic Brugada pattern or asymptomatic long QT pattern, close follow-up with query for symptoms is necessary.

DISCUSSION: Sudden death in the setting of a structurally normal heart, presumed arrhythmia, is the leading cause of non- traumatic death in the military population. Many of these cases are felt to be due to a genetic ion channelopathy. Ion channelopathies usually occur in the absence of structural heart disease, and the ECG pattern may be variable. Brugada syndrome has a characteristic ECG finding of incomplete right bundle branch block and ST elevation of more than 1mm in the anterior precordial leads V1 and V2, with a characteristic coved appearance. Long QT syndrome has a characteristic ECG finding of a prolonged QT interval (defined as a QT corrected of more than 440msec in males and 460msec in females). Measurement of the QT interval can be variable, and caution must be exercised not to include the U-wave, a normal variant in young people. Catecholaminergic polymorphic VT has a normal ECG at rest, but with exertion or stress may develop polymorphic ventricular tachycardia. Although the transmission of ion channelopathies is genetic, many cases represent spontaneous mutations. Poor prognostic factors include a family history of sudden death, history of syncope, evidence of spontaneous ventricular arrhythmias on ambulatory monitoring, and response to electrophysiology study. The risk of sudden cardiac death does not decrease with age, and the only treatment available is an implantable cardioverter defibrillator (ICD).

MITRAL REGURGITATION

INFORMATION ONLY: Yes, trace or mild mitral regurgitation (MR) in an asymptomatic, structurally normal individual can be IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Aircrew members with MR can remain asymptomatic for decades or complain of subtle symptoms like fatigue or perceived deconditioning, often overlooked by their flight provider. Chronic MR may progress leading to volume overload and symptoms of weakness, exercise intolerance, exertional dyspnea and orthopnea, all undesirable in the aviation environment. Long term sequelae include pulmonary congestion, left ventricular (LV) dysfunction, cardiomegaly, and ultimately heart failure, not only unacceptable for aviation duty, but also general military/DAC service retention.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for moderate MR when all other ETP requirements are met. ETP is not recommended for severe MR.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for moderate MR when all other waiver requirements are met. Waiver is not recommended for severe MR.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Cardiologist evaluation including at a minimum:
  - Treadmill stress test and echocardiogram (stress echocardiogram is appropriate).
  - Clearance for return to work and exercise with no limitations.
  - Recommendations for required follow up.
- Aeromedical provider comment on:
  - Absence of any MR related symptoms including specifically exercise tolerance/capacity.
  - Absence of, or no clinical concern for, any connective tissue disease/disorder.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Treadmill stress test and echocardiogram (stress echocardiogram is appropriate).
- Aeromedical provider comment on absence of any interval history concerning for disease progression.
- Annual cardiology evaluation and/or additional testing/imaging is NOT specifically required unless previously recommended by evaluating specialist or if clinically indicated due to disease progression and/or worsening of symptoms.

TREATMENT: Treatment will be based upon the diagnosis of either primary or secondary MR and dictated by appropriate clinical practice guidelines. Treatment of primary MR is often limited due to any non-surgical management not addressing the primary etiology of the dysfunctional valvular apparatus. Of primary importance is regular monitoring of the aircrew member with vigilant suspicion for disease progression. Use of otherwise aeromedically acceptable anti-hypertensive agents or agents used to reduce afterload are largely suitable for all flight duty classes. MR that is severe enough, or that has progressed to the point of necessitating any valvular surgery/replacement, will not be recommended for ETP. Waiver could be considered on a case by case basis but would require full recovery from the procedure, release from cardiology care with no assignment/duty/exercise limitations, no requirement for aeromedically unacceptable medications, and finally, a positive retention decision for military/DAC service. Treatment of secondary MR would be guided by the underlying/causal condition with waiver/ETP consideration IAW with the appropriate APL.

DISCUSSION: Primary MR is commonly found following evaluation of murmurs heard on physical exam or discovered incidentally on echocardiogram following an abnormal EKG. A vast majority of patients with MR can have this listed as IO. IO requirements include MR that is trace or mild, a fully asymptomatic patient (including having normal exercise tolerance), and no evidence of any chamber enlargement, LV dysfunction, or dysrhythmias. Local aeromedical providers should provide a detailed discussion on the submitted flight physical and upload any pertinent testing/imaging results to AERO documents for review by AAMA.

Primary MR is caused by an abnormality of one or more components of the valve apparatus (leaflets, chordae tendineae, papillary muscles, and/or the annulus). In the United States and much of the Western world, the most

common cause of MR is mitral valve prolapse (MVP), accounting for as much as one-half to two-thirds of cases. In the aircrew population, clinically significant MR is also most commonly associated with MVP/myxomatous mitral valve disease. Other causes of primary MR include rheumatic heart disease, infective endocarditis, collagen vascular disease, cleft mitral valve, and radiation heart disease. The provider must be aware that mild LV hypertrophy in the setting of an athletic Soldier with MR does not signify disease progression unless it is determined to be a serial change. Secondary MR is caused by another cardiac disease such as coronary artery disease or a cardiomyopathy. Cases of secondary MR will typically require waiver/ETP action for the underlying/contributing condition.

REFERENCES:

(1). Kruyer WB and Davenport ED. Cardiology. In Rayman's Clinical Aviation Medicine, 5th ed. New York: Castle Connolly Graduate Medical Publishing, LTD., 2013; 58-60.
(2). Strader JR, Gray GW, Kruyer WB. Clinical Aerospace Cardiovascular Medicine. Ch. 13 in Fundamentals of Aerospace Medicine, 4th ed., Philadelphia: Lippincott Williams & Wilkins, 2008; 335-336.
(3). Nishimura RA, Otto CM, Bonow RO, et al. 2014 ACC/AHA Guidelines for the Management of Patients with Valvular Heart Disease. A report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. J Am Coll Cardiol, 2014; 63(22): e57-e185.
(4). Bonow RO, Nishimura RA, Thompson PD, Udelson JE. Eligibility and Disqualification Recommendations for Competitive Athletes with Cardiovascular Abnormalities: Task Force 5: Valvular Heart Disease: A Scientific Statement From the American Heart Association and American College of Cardiology. J Am Coll Cardiol 2015; 66:2385.

MITRAL STENOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Mitral stenosis (MS) is generally a result from rheumatic heart disease. This is becoming a rare cardiac entity. The first symptoms to appear include exertional shortness of breath and hemoptysis. Symptoms continue to worsen with continued loss of effective valve area, often due to calcification or scarring. Chronic fatigue, worsening dyspnea, and ankle edema are present in later stages. Complications include atrial fibrillation with or without rapid ventricular response, pulmonary edema, arterial or venous embolism, and right ventricular failure. Mitral stenosis may also present with chest pain. The progressive nature of this process and its risk of significant complications are incompatible with the military aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Any degree of mitral stenosis is disqualifying, and waivers are generally not recommended or granted. Occasionally, aircrew members with extremely mild stenosis, who are asymptomatic with a pliable valve, minimal orifice reduction, normal exercise testing, and no dysrhythmia may be considered for a waiver. All MS will be reviewed on a case-by-case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology evaluation including:
  - AGXT
  - 24-hour Holter Monitor
  - Echocardiogram (2-D & M-Mode) with color Doppler flow study.
- Consultation with the designated Army Aviation Medicine Cardiology Consultant or Air Force aeromedical consultation service may be required by USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual submission of AGXT, 24-hour Holter monitor, and echocardiogram with Doppler flow study with cardiology consultation reports. If requested, submit complete tracings and films with FDME.

TREATMENT: SBE antibiotic prophylaxis is required for all dental procedures as well as any other potentially septic exposure. Valve replacement is normally not waiverable, but cases will be reviewed on a case-by-case basis.

DISCUSSION: Approximately 50% of patients with mitral stenosis report an episode of rheumatic fever in childhood. The patient becomes symptomatic 10-20 years after an attack of rheumatic fever and becomes incapacitated 5-10 years later. Pregnancy can result in earlier manifestations of mitral stenosis due to the increased workload pregnancy places on the heart. Pulmonary edema, heart failure and even death have been reported in pregnant women with mitral stenosis. Atrial fibrillation becomes chronic in over 50% of patients with mitral stenosis. Paroxysmal atrial fibrillation will occur in up to 80% of patients with mitral stenosis and of these, 20-30% will form atrial thrombi with subsequent embolization. Between 10 and 20% of patients with mitral stenosis, including those with only mild disease, can throw off emboli with a subsequent mortality rate of 15%. Once patients become symptomatic, survival is 50% at 4-5 years without surgery. After valve replacement, the 50% survival rate is improved to 10 years.

MITRAL VALVE PROLAPSE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Most mitral valve prolapse (MVP) is considered a benign condition with no significant symptoms. However, MVP Syndrome is occasionally associated with development of palpitations, episodic chest pain, progressively worsening mitral regurgitation, infective endocarditis, syncope, atrial and/or ventricular dysrhythmias, and rarely sudden death.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is considered favorably in the presence of only mild mitral regurgitation and no significant dysrhythmia. All other case scenarios will be reviewed on a case-by-case basis. Surgically corrected MVP, even if minimally invasive, is non-waiverable.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology consultation is required, to include the following:
  - AGXT
  - 24-hour Holter Monitor
  - Echocardiogram with Doppler flow study

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Submission every three years of 24-hour Holter monitor and echocardiogram with Doppler flow study documenting severity of regurgitation. Findings of progressive regurgitation or dysrhythmias will require further testing as indicated.

TREATMENT: SBE antibiotic prophylaxis is not required for MVP in the absence of thickened leaflets or mitral regurgitation. In specific circumstances, such as prophylaxis for all cases of MVP, the risk of death due to penicillin is estimated to be greater than the risk of infective endocarditis. Beta blockers, used to reduce the incidence of palpitations, may be used on ATC personnel but are prohibited for all other classes of aircrew.

DISCUSSION: Mitral valve prolapse (MVP) was once felt to be one of the most common abnormalities of the heart valves with prevalence in various studies up to 17%. Later review found that these were gross over-estimates as to the prevalence of the disease and due to inappropriate imaging and interpretation of echocardiography. A small percentage of MVP occurs with inheritable connective tissue disease (such as Marfan syndrome, pseudoxanthoma elasticum, and Ehlers-Danlos syndrome). Middle aged and elderly men, who have MVP, are at a higher risk of developing progression of mitral regurgitation (5.5%), ruptured chordae tendinea, and endocarditis (2-8%). Neurologic ischemic events occur in individuals with MVP more commonly than in the normal population, but this can only be clearly identified in groups at low risk of stroke, such as young women. Risk of sudden death is well established in MVP patients with severe mitral regurgitation. Patients without known MVP, at autopsy, are found often with an associated severe valvular deformity as well as increased heart weight suggesting the presence of undiagnosed regurgitation. To date specific dysrhythmias have not been documented to increase the risk of sudden death in the MVP, but have been linked with symptoms incompatible with aviation status, i.e., sudden onset syncope, chest pain, and associated anxiety.

NORMAL VARIANT ELECTROCARDIOGRAMS

INFORMATION ONLY: Yes, if confirmed to be a normal variant with no concerning underlying pathology.

TEMPORARY CLEARANCE: N/A.

AEROMEDICAL CONCERNS: Normal variant ECG findings differ from the normal pattern but are usually not indicative of underlying cardiovascular disorder.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally not required in the absence of underlying pathology.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally not required in the absence of underlying pathology. The information is coded using the "G" coding system developed to compensate for the lack of coding ECG abnormalities in the ICD9/10 coding system, and entered as Information Only.

G Code	condition	Qualifiers to Diagnosis
700	Normal ECG	Without normal variant or any abnormal findings
002	Sinus bradycardia	Resting pulse 40 to 50 bpm, asymptomatic, conditioned crewmember
007	Sinus dysrhythmia (sinus arrhythmia)	
028	Ectopic atrial rhythm	
040	Accelerated junctional rhythm	
080	Supraventricular rhythm	With a rate of less than 100 beats per minute.
085	Wandering atrial pacemaker	
104	2oAV block, Mobitz Type I (Wenckebach)	
121	Incomplete right bundle branch block	When not acquired as a serial ECG change. (See below)
123	Terminal conduction delay	(i.e., S wave in V6 greater than or equal to 0.04 sec).
132	Nonsp. Intraventricular conduction delay	QRS is less than 120 msec in all leads.
204	ST segment elevation	Due to early repolarization.
219	Persistent juvenile T-waves	In anterior leads.
729	LVH	By voltage alone when not presenting as a serial change and/or not associated with hypertension.
735A	Leftward axis	From 0 to -45 degrees unless a serial change.
736	Rightward axis	From +90 to +120 degrees unless a serial change.
737	Indeterminate axis	
743	S1-S2-S3 pat	With QRS less than 100 msec.
744	S1-S2-S3 and RR' in V1 or V2	With QRS less than 120 msec.
755	R>S in V1	With no other evidence of right ventricular hypertrophy.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- 12-lead ECG interpreted by a physician is required on all flying duty medical examinations. The flight surgeon should line through computer-generated ECG readings that are in error, compare the ECG tracing with all available previous ECG tracings, and comment on serial ECG changes. Each ECG should be signed by the reviewing physician and submitted with relevant previous tracings. If no previous ECGs are available for comparison, further work-up may be required.

TREATMENT: N/A

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: N/A

DISCUSSION: Normal variant ECGs are often found in young athletic individuals to include bradycardia, LVH by voltage criteria, etc. Other normal variants are found in large groupings of the normal population, i.e., ectopic atrial rhythms and congenital incomplete right bundle branch blocks, etc. In no study have these variants of normal been linked with any increased risk of cardiovascular disease or dysrhythmia.

PERICARDITIS / MYOCARDITIS / ENDOCARDITIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Pericarditis can lead to pericardial effusion and even cardiac tamponade in more severe cases. These result in chest pain and shortness of breath and even dysrhythmias, which can lead to dizziness, syncope and rarely death. Myocarditis, usually the result of a variety of causes including infection, toxins, rheumatoid disease, sarcoidosis, may also present in either an acute manner or in a chronic insidious form. Cardiac failure is an important feature of this disorder since it is prognostic of outcome. Endocarditis, generally the result of bacterial infection, can present in an acute or chronic nature. The subacute or chronic nature of the disease leads to vague symptoms, which are often difficult to diagnose. These symptoms include low-grade fever, weakness, easy fatigability, anorexia, weight loss, and muscle pain. Later manifestations of endocarditis include valvular damage with resultant regurgitation and potential for cardiac failure and embolic events. Recent experience suggests a low-grade form of myocarditis associated with vaccination (e.g. Smallpox vaccine). This particular form has demonstrated a favorable prognosis.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by cases when conditions are fully resolved and have zero sequelae.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
The aircrew member should be grounded during the acute illness and for at least 6 months after recovery. Then, idiopathic pericarditis may be considered for waiver provided no recurrence or sequelae. Endocarditis may also be waivered if there are no recurrences or sequelae. Myocarditis is normally not waivered, but will be reviewed on a case-by-case basis, particularly if due to vaccination. The disposition of cases secondary to underlying disease will depend on the disease process.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Review of clinical history and records/evaluation leading to the diagnosis as well as treatment course.
- Cardiac evaluation is necessary to exclude connective tissue disorder, myocardial infarction or other disease, and neoplasm. This consultation should include:
  - EKG
  - Post-recovery echocardiogram to ensure the absence of pericardial effusion or constrictive pericarditis. If endocarditis, may also need TEE.
  - AGXT
- Films and tracings may be requested for USAAMA and Aeromedical Cardiology review.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: N/A.

TREATMENT: Idiopathic pericarditis is usually self-limiting. Rest, aspirin or nonsteroidal anti- inflammatory agents, and time are often all that is required for treatment. If maintenance medication is required, waiver may not be favorably considered. Bacterial endocarditis, if treated early enough with appropriate antibiotic coverage, may require no other therapy. Six months of recovery time from the insult is required before waiver consideration.

DISCUSSION: About 50% of the cases of acute idiopathic pericarditis are viral in origin, usually Coxsackie B. A small minority of cases may progress to pericardial constriction or tamponade. On initial presentation, more than 90% of the patients will have symmetrical ST elevation of most or all ECG leads, which become inverted over the next 2-3 weeks before reverting to normal. Some patients will be left with minor nonspecific ECG abnormalities. Bacterial endocarditis is due in about 95% of cases to Streptococcus, Enterococcus, or Staphylococcus. Failure of diagnosis, delay in diagnosis and treatment, and extreme resistance of the organism to available antibiotics are the factors that account for the mortality and associated morbidity. Other factors leading to a relatively less than favorable outcome include an age over 50 and persistently negative blood cultures. Relapses usually occur, if at all, in the first 4 weeks after discontinuing treatment. Rarely do relapses seem to develop as late as 3 months afterward. Clinical and bacteriologic cure for 6 months after treatment almost always denotes permanent recovery.

PERIPHERAL VASCULAR DISEASE / CLAUDICATION

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Peripheral vascular disease, as manifest by symptoms of claudication, ischemic rest pain, or ulcerative skin changes is indicative of possible underlying cardiac disease. Because cardiac disease is the #1 killer of both men and women in the US; screening and evaluating aviation personnel serves an important step in maintaining aeromedical health. Furthermore, peripheral vascular disease may result in numbness to distal extremities to an extent where interference in fine motor skills may become paramount. These limitations may be more pronounced in the setting of abrupt climate changes, hypoxia, and/or high Gz maneuvers. Because the association between coronary atherosclerotic disease and atherosclerotic peripheral vascular disease is so high, all attempts must be made to diagnose coronary disease in personnel that present with symptoms that may be consistent with peripheral vascular disease.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
The presence of significant atherosclerotic peripheral vascular disease, that being of sufficient severity to produce discomfort and inability to complete a walk of 200 meters or less on level ground without a rest, or objective evidence of hemodynamically significant disease with symptoms of claudication, ischemic rest pain, or with gangrenous or ulcerative skin changes of a permanent degree in the distal extremity are non-waiverable. For asymptomatic atherosclerotic peripheral vascular disease, waivers will be considered on a case by case basis for initial Classes 2F, 3 and 4 after completion of the evaluation below if all are normal. Symptomatic peripheral vascular disease or evidence of abnormal testing will be scrutinized on a case-by-case basis much closer for waiver versus suspension based on duties, missions, and risk/benefits of continued service in the Army aviation community--additional evaluations and waivers may result from the overall evaluation outlined below.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Initial complete cardiology/vascular surgery evaluation to include risk factor analysis:
  - Ankle/Brachial Index testing
  - Aeromedical graded exercise test (AGXT) with Thallium or Sestamibi perfusion imaging
  - Carotid ultrasound with report of intimal medial thickness
  - Cardiac catheterization (if the above testing is inconclusive)
- Review of risk factors and documentation of reduction of modifiable factors.
- Medication use
- Following consultation with USAAMA and review with Aeromedical Cardiology Consultant testing may be done locally or with Air Force Aeromedical Consultation Service (USAF ACS). An Aeromedical Summary to include final reports of all studies will be forwarded to USAAMA for review prior to any waiver action. If films or complete tracings are required, they will be requested. Local flight clearance is not authorized unless granted in coordination with USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Any person granted a waiver for peripheral vascular disease shall report the results of an annual stress testing with imaging with FDME/FDHS in addition to annual Ankle/Brachial Index testing.

TREATMENT: Treatment for atherosclerotic peripheral vascular disease focuses on general cardiovascular health to include tobacco cessation, control of cholesterol and blood pressure. For management of these conditions, please refer to respective APLs. Once identified, even those with asymptomatic atherosclerotic peripheral vascular disease should be started on a HMG-CoA Reductase Inhibitor (e.g., lovastatin, pravastatin, simvastatin, atorvastatin, fluvastatin, and rosuvastatin). In accordance with APL, liver function tests and CPK prior to initiating treatment and 6-12 weeks after the start of therapy, and annually thereafter need to be performed. For those over age 40, treatment with either aspirin or clopidogrel should be encouraged.

DISCUSSION: The ankle-brachial index (ABI) is a reliable means for diagnosing peripheral vascular disease. Blood pressure measurements are taken at the arms and ankles using a Doppler. The ABI range that is generally considered normal is .95 to 1.2. An ABI value >0.80 is suggestive of peripheral vascular disease, but may not be associated with symptoms; however, any ABI <1.0 can be associated with increased risk for coronary artery disease and full evaluation is required. An ABI between 0.40 – 0.80 is moderately decreased and tends be associated with symptoms such as claudication. An ABI of < 0.40 indicates severe peripheral vascular disease, and places the aviator at risk for non-healing wounds, rest pain, or even gangrene.

PRE-EXCITATION SYNDROMES / TACHYDYSRHYTHMIAS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Pre-excitation syndromes, such as Wolff-Parkinson-White (WPW) (defined as a short PR interval, widened QRS complex with a prolonged upstroke (Delta Wave), and tachydysrhythmia) and Lown-Ganong-Levine syndrome (LGL) (defined as short PR interval with associated tachydysrhythmia), are considered not compatible with flying duties because of the increased risk of having symptomatic dysrhythmias. Tachyarrhythmias are associated with unpredictable hemodynamic compromise presenting with palpitations, lightheadedness, or syncope.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis after a minimum of 6 months following radiofrequency ablation with a normal post-ablation evaluation and following completion of, and normal results, of all below requirements.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver may be applied for 6 months after radiofrequency (RF) ablation, with a normal post-ablation evaluation (dysrhythmia unable to be provoked). A pre-excitation pattern alone, but only after electrophysiologic study (EPS) may be considered for waiver provided the full evaluation is normal as outlined below. Strong consideration should be given for radiofrequency ablation of accessory pathways, upon identification, even in the asymptomatic individual. Tachyarrhythmias and pre-excitation syndromes that are identified or suspected but not evaluated completely to include EPS, or that recur after RF ablation, will not be waived.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Cardiology evaluation, to include:
  - 24-hour Holter monitor
  - AGXT
  - Echocardiogram
- Electrophysiology report and 6-month follow-up report as applicable
- Cases will be reviewed with Aeromedical Cardiologist

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual report of history of any hemodynamic compromise or tachyarrhythmia (negative comments are required) and an annual 24-hour Holter monitor.

TREATMENT: The only appropriate treatment for accessory pathway syndromes is ablation. Radiofrequency or cryoablation can be waivered provided the procedure is coordinated with USAAMA.

DISCUSSION: This condition occurs in 1 to 3 per 1000 of the population. The lowest incidence of dysrhythmia is in young adults without a past history; it is estimated that up to 20% of such individuals will develop tachycardia at some time. It is not possible to predict which patients will develop SVT and which will develop atrial fibrillation with or without catastrophic rapid ventricular response. Ablation is felt to by the American Heart Association to be the primary treatment for all symptomatic individuals, and for those individuals with increased occupational risk. The 'cure' rate of ablation is in excess of 95%, and long-term success can be identified within 6 months of follow-up.

PREMATURE ATRIAL CONTRACTIONS (PACs)

INFORMATION ONLY: Yes, if asymptomatic with no underlying cardiovascular disorders and occurring less than 10 of any 50 beats, less than 10% of one hour of monitoring, less than 1% of 24 hours of monitoring and any ectopic pairs are graded as no more than “rare” or “occasional” (10 total pairs or fewer on 24hr Holter).

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Premature Atrial Contractions (PACs) are common findings in normal individuals. PACs may be associated with underlying pathological conditions such as atrial enlargement, hypoxia, congestive heart disease, or cardiac ischemia or infarction. Some drugs and/or behaviors, i.e., alcohol, tobacco, and caffeine, may also be responsible for causing a significant increase in PAC frequency. Symptoms are most often none or limited to mild palpitations. For those with more than 3 consecutive PACs, see Supraventricular Tachycardia APL.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended for asymptomatic individuals with no underlying cardiovascular disorders. ETP will not be recommended for those with associated symptoms, i.e., syncope, lightheadedness, etc.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for asymptomatic individuals with no underlying cardiovascular disorders. Waiver will be considered on a case by case basis for mildly symptomatic aircrew or those with underlying cardiac disease.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- 24 hour Holter monitor
- Treadmill stress test
- Echocardiogram or Cardiac MRI
- Further evaluation as indicated by any abnormal results from above testing or as dictated by specialty consultation.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Aeromedical provider comment on continued absence of symptoms.
- Additional consultation or testing as required by underlying cardiovascular disorders or if member becomes symptomatic.

TREATMENT: A significant decrease in the frequency of PACs can be achieved through behavior and lifestyle modifications. Aeromedical providers should assess and recommend reduction or elimination of caffeine-containing beverages, use of nicotine (smoking, vaping, smokeless tobacco or nicotine replacement therapy) and use of any dietary supplements or herbal preparations that have stimulatory properties. Medication is rarely required for treatment but, if used, should be assessed appropriately for aeromedically significant side effects.

DISCUSSION: If 2 or more isolated premature beats or 1 or more paired premature beats are discovered on a standard 10 second ECG, aeromedical providers should assess the quantity and type of ectopic beats via a Holter monitor. The results of the Holter monitor will dictate further workup and help determine IO versus aeromedical disqualification and resulting waiver cascade.

REFERENCES:
(1). Kruyer WB and Davenport ED. Cardiology. Ch. 2 in Rayman’s Clinical Aviation Medicine, 5th ed., Castle Connolly Graduate Medical Publishing, LTD, 2013; 14-15.
(2). Strader JR, Gray GW, and Kruyer WB. Clinical Aerospace Cardiovascular Medicine. Ch. 13 in Fundamentals of Aerospace Medicine, 4th ed., 2008.

PREMATURE VENTRICULAR CONTRACTIONS (PVCs)

INFORMATION ONLY: Yes, in those with a 24-hour Holter demonstrating the following: a frequency of 10 or less of any 50 beats; 10% or less of each hour of monitoring; or 1% or less of 24 hours of monitoring; and if the PVC is not a paired PVC (couplet), or a PVC with R on T.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: A single ventricular premature beat (PVC) may not be abnormal or even symptomatic, but requires further evaluation. Additionally, if the PVCs are not significantly decreased with exercise, the concern is for underlying cardiac abnormality. If progression of disease occurs, this increases the risk of symptoms or more severe dysrhythmia, which could be disabling in flight.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis following completed and negative/normal Cardiology evaluation.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following completed and negative/normal Cardiology evaluation.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Report results of 24-hour Holter monitoring. If requested, submit tracings of the original PVC and 24-hour Holter monitor.
- Cardiology consult including
  - AGXT
  - Echocardiography
  - Electrophysiology consultation for higher degrees of ventricular dysrhythmia (e.g. R on T phenomenon, 2 or more consecutive PVCs).
- If any Cardiology tests are abnormal additional cardiology evaluation is required to rule out underlying cardiovascular disease. This may include thallium or persantine GXT or cardiac catheterization. Consultation with USAAMA is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: No follow-up is required for those cases simply filed information only. If PVCs are detected on future routine annual ECG, then a repeat 24-hour Holter is required. If a change in morphology, or the aircrew member develops symptoms, then a complete work-up is required as above with AMS submission.

For those aircrew members with waivers for PVCs, a repeat 24-hour Holter and AGXT are required annually. Any change in rhythm or development of symptoms requires complete cardiovascular evaluation and AMS submission.

TREATMENT: No treatment is warranted for asymptomatic PVCs, and medication has been shown to increase mortality.

DISCUSSION: On routine ECG, 1-5% of healthy adults exhibit some form of ventricular ectopy; this increases to 20-30% in a maximal exercise test and to 40-60% during 24-hour Holter monitoring. The incidence of ventricular ectopy and its rate increases exponentially with age. Between 5-10% will show complex ventricular ectopy (multiform PVCs, pairing or more or PVCs or R on T phenomenon). In these cases, structural heart disease needs to be excluded.

SINUS TACHYCARDIA

INFORMATION ONLY: Yes, if discovered to be from a benign and reversible cause.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Sinus (nodal) tachycardia is considered abnormal if the resting heart rate is greater than 100 beats per minute (bpm). In many cases, the source of sinus tachycardia is non- cardiac in origin. In the flight applicant, this tachycardia may simply be caused by anxiety and is rarely persistent. Persistent sinus tachycardia may be secondary to significant metabolic or other exogenous abnormalities and must be diagnosed and corrected prior to flight clearance. These include such entities as medication (prescribed and OTC), caffeine, nicotine, supplement use, fever, hyperthyroidism, dehydration, anemia, hypoxia, pulmonary emboli, pain, and psychosomatic and psychiatric disorders.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis depending on the underlying etiology. If no etiology is discovered, ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Anxiety-provoked sinus tachycardia, if found to be resolved upon retesting, is not considered disqualifying. Persistent tachycardia greater than 100 bpm while supine or greater than 110 bpm while standing is considered disqualifying. Waiver consideration is based upon the underlying cause of the tachycardia and the treatment plan. If no cause is discovered, the aircrew member will not be considered for waiver without a case-by-case review with the Aeromedical Cardiologist.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Obtain a 3-day b.i.d. pulse and BP determination.
- 24 hour Holter monitor for evaluation of normal circadian rhythm to heart rate. If heart rate is less than 100 during sleep, no further evaluation is required. If the heart rate is persistently elevated, further evaluation is required as follows:
  - Eliminate possible exogenous factors and obtain thyroid function tests.
  - Submit an internal medicine evaluation to assess underlying pathology.
  - AGXT and echocardiogram.
- Further evaluation will be at the discretion of the USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Periodic follow-up is dependent upon the underlying etiology of the tachycardia.

TREATMENT: Treatment is determined by the nature of the etiology. Hyperthyroidism is covered under Metabolic/Endocrine Waivers. Negative chronotropic medication use is not waiverable.

DISCUSSION: Anxiety of applicants, and rarely active aircrew members, often results in not only tachycardia but also hypertension. This “White Coat Syndrome” can often be overcome with desensitization, i.e., repeated exposure to the procedure of obtaining the measurement. Technicians obtaining these readings must be as non-threatening as possible, friendly, and not in a rush to complete the test.

SUPRAVENTRICULAR TACHYCARDIA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The primary concern in supraventricular tachycardia (SVT) is the risk of significant hemodynamic compromise causing in-flight incapacitation. These symptoms include lightheadedness, dizziness, presyncope, and loss of consciousness. SVT is characterized as a ventricular rate greater than or equal to 100 bpm with a narrow or wide QRS complex that cannot be accounted for by normal physiologic response associated with sinus tachycardia. It may be a short run of 3 beats or last longer requiring vagal maneuvers, medication, or cardioversion.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis after completion of all below requirements and review by Aeromedical Cardiology.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver may be considered on a case by case basis after completing the evaluation below. Anti-arrhythmic medication is not allowable. Grounding (and reevaluation of waiver) is mandatory in cases of: symptomatic SVT; single sustained SVT with significant CAD; recurrent, sustained SVT; and any SVT associated with a pre-excitation pattern on ECG. Grounding should be for at least 6 months, but a trial period of return to flight may occur after a 2 month down period provided completion of the Cardiology evaluation through the first Holter where all is normal, no recurrences has occurred, and no medications is needed. Any further recurrence will require grounding, completion of the entire evaluation, and review with USAAMA and Aeromedical Cardiology prior to return to flight.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Thyroid function testing
- Cardiology evaluation to include:
  - Echocardiography
  - AGXT
  - Three 24-hour Holter monitors at 2 months interval. Abnormalities will require further evaluation.
  - Electrophysiologic studies with consideration for ablation.
- Documentation of studies may be requested for USAAMA and Aeromedical Cardiology review.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: In the continued absence of recurrence, a repeat cardiac evaluation including AGXT and a 24-hour Holter monitor are required every 3 years. If ablation was utilized to treat an underlying accessory pathway, additional requirements include an annual report of history of any hemodynamic compromise or tachydysrhythmia (negative comments are required) and an annual 24-hour Holter monitor.

TREATMENT: Anti-arrhythmic medication will not be recommended for waiver. Ablation is appropriate in some cases and can be considered for ETP/waiver following a normal post-ablation evaluation 6 months after the procedure.

DISCUSSION: SVT is characterized by a narrow QRS complex rhythm (except with aberrant conduction in which the QRS is wide) and P waves are usually hidden. Seventy percent are related to an AV reentry mechanism; 20% involve an accessory conduction pathway e.g., WPW; and 10% are SA nodal in origin. Non-reentry SVTs are due to ectopic atrial tachycardias. Ablation is considered the treatment of choice for AV nodal re-entrant tachycardia and AV re-entrant tachycardia utilizing an accessory pathway.

VALVULAR DISORDERS, PULMONARY AND TRICUSPID

INFORMATION ONLY: Yes, asymptomatic trace or mild pulmonary or tricuspid regurgitation can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The major aeromedical concern is the risk of incapacitating symptoms associated with mitral and aortic valves previously discussed. Pulmonary valve and tricuspid valve stenosis can both produce fatigue or shortness of breath. Moderate to severe tricuspid insufficiency can be associated with atrial dysrhythmias

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for moderate pulmonary or tricuspid regurgitation depending on the results of the below Cardiology evaluation. ETP is not recommended for severe pulmonary or tricuspid regurgitation.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for moderate pulmonary or tricuspid regurgitation when the below Cardiology workup is complete and normal/negative. Other valvular disorders not discussed within this policy are too rare to develop formal waiver policy or are considered on a case-by-case basis. Waiver is not recommended for severe pulmonary or tricuspid regurgitation.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete cardiology evaluation including:
  - AGXT
  - 24-hour Holter monitor
  - 2-D M-Mode echocardiography with Doppler flowstudy.
- Further cardiology evaluation may occasionally be required by USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Repeat cardiology evaluation every three years including 24-hour Holter monitor, 2-D M- Mode echocardiography with Doppler flow study. Further follow-up may be required upon development of a significant dysrhythmia, progressive regurgitation, or progressive hemodynamic instability.

TREATMENT: SBE antibiotic prophylaxis is required for all dental procedures as well as any other potentially septic exposure.

DISCUSSION: Tricuspid insufficiency may present with a clinical picture of severe right-sided heart failure. Fatigue, peripheral edema, anorexia, and abdominal swelling are its primary symptoms. Most pulmonary stenosis is congenital and if severe, is normally treated with surgical repair in infancy. Most patients with mild to moderate pulmonary stenosis rarely if ever develop heart failure and are easily managed usually with nothing more than antibiotic prophylaxis.

VENOUS THROMBOSIS

INFORMATION ONLY: Acute, superficial thrombophlebitis once fully resolved can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The pain and swelling from deep venous thrombosis (DVT) is incompatible with flight duties, potentially resulting in distraction and incapacitation from pain and discomfort locally to pulmonary embolism with chest pain, shortness of breath, hypoxia or cardiac dysrhythmias. Dyspnea occurs in nearly 90% of patients with symptomatic pulmonary emboli. Cramped cockpit conditions may exacerbate or provoke a thrombotic event.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for acute, nonrecurrent conditions after cessation of anticoagulant therapy provided a normal workup with no predisposing factors, such as malignancy or disorders of clotting. The development of pulmonary hypertension, the requirement for continued anticoagulation, or surgical procedures, such as plication of the vena cava, is disqualifying with ETP not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for acute, nonrecurrent conditions after cessation of anticoagulant therapy provided a normal workup with no predisposing factors, such as malignancy or disorders of clotting. The development of pulmonary hypertension, the requirement for continued anticoagulation, or surgical procedures, such as plication of the vena cava, is disqualifying with waiver considered on a case-by-case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- □ Hematology consultation including coagulation studies.
- □ Normal exercise tolerance (APFT/ACFT) after recovery.
- □ Pulmonary function testing with history of pulmonary embolism.
- □ Exclusion of underlying malignancy with history of pulmonary embolism.
- □ If MEB completed, results/recommendations shall be forwarded.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: With a completely normal evaluation after acute, nonrecurrent event, annual evaluation with Internal Medicine or Hematology for 3 years is required. If complicated with pulmonary embolism or recurrence, annual consultation is for duration of flight status. Recurrence of thrombotic event will require resubmission for waiver with full work-up.

TREATMENT: Medication therapy, beyond aspirin, is considered incompatible with continued flying duties.

DISCUSSION: Prevalence of venous thrombosis history ranges from 2 to 5% of the population. Risk factors related to hypercoagulability (e.g., the risk of developing DVT after open prostatectomy has been quoted as 35%) and stasis (e.g., being strapped into an aircraft seat for long missions) should be considered. In 50% of cases of deep vein thrombosis (DVT) of the leg, there are no signs or symptoms relating to the lower limbs. Untreated, acute ileofemoral venous thrombosis has a 50% chance of causing pulmonary embolus. Malignancy is found in up to 30% of such patients. It is estimated that only 20-30% of pulmonary emboli cause concerning symptoms. The vast majority of patients who survive pulmonary embolism will recover normal or nearly normal cardiac and pulmonary functions within 2-8 weeks.

VENTRICULAR SEPTAL DEFECT (VSD)

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Adults with VSD may be symptom free, or they may complain of fatigue and exercise intolerance. Aortic insufficiency and bacterial endocarditis in patients with VSD result in marked increase in mortality as a result of right ventricular outflow obstruction and heart failure.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for those with current VSD. History of spontaneous or surgical closure with no significant childhood sequelae may be considered for ETP on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Newly discovered VSD in a trained aircrew member, with a history of spontaneous or surgical closure, may be recommended for waiver on a case by case basis provided complete recovery and normal cardiology work-up.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology consultation including:
  - AGXT
  - 24-hour Holter monitor
  - 2-D, M-mode echocardiogram with Doppler flow study is required.
- Further evaluation, to include possible right heart catheterization with sequential oxygen sampling and transesophageal echocardiography, may be required after consultation with USAAMA and an Aeromedical Cardiology Consultant.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Complete Cardiology evaluation every three years including 24-hour Holter monitor and transthoracic echocardiography with Doppler flow study.

TREATMENT: SBE antibiotic prophylaxis is required for all dental procedures as well as any other potentially septic exposure.

DISCUSSION: VSD is the most common congenital defect in children. The incidence of VSD is decreased in adults as a result of either spontaneous/surgical closure of defects during childhood/adolescence or mortality from this lesion before adulthood. It is estimated that as many as 60% spontaneously close by 5 years of age and 90% by 18 years of age.

VENTRICULAR TACHYCARDIA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Ventricular tachycardia (VT) may be associated with underlying cardiac disease or represent a primary rhythm disturbance in some patients. Hemodynamic changes causing lowered blood pressure and reduced cerebral blood flow can result in sudden onset of weakness, dizziness, and frank loss of consciousness. Decreased myocardial perfusion may provoke angina with the risk of ventricular fibrillation and sudden death. However, short runs of VT usually do not produce cardiovascular symptoms.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is normally not recommended but will be reviewed on a case by case basis after completing the below evaluation. ETP is not recommended for those with symptoms, those with non-sustained VT greater than 11 beats, sustained VT greater than 30 seconds in length, greater than 4 VT episodes per evaluation, VT with associated structural heart disease, or following ventricular fibrillation or flutter.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver for VT may be recommended for those aircrew members with asymptomatic non-sustained VT less than or equal to 11 beats and less than or equal to 4 VT episodes per Holter evaluation in the absence of structural heart disease. Waiver will not be recommended for those with symptoms, those with non-sustained VT greater than 11 beats, sustained VT greater than 30 seconds in length, greater than 4 VT episodes per evaluation, VT with associated structural heart disease, or following ventricular fibrillation or flutter.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete cardiology evaluation including:
  - AGXT with thallium or Sestamibi
  - Echocardiography
  - Three 24-hour Holter monitors done at monthly intervals over three months.
  - Cardiac MRI looking for arrhythmogenic right ventricular dysplasia.
- Cardiac catheterization is required if these noninvasive tests are suggestive of underlying coronary disease.
- Electrophysiologic studies may be required if there is uncertainty regarding the origin of the tachycardia (VT vs. SVT with aberrant conduction).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Will require annual Cardiology consultation, locally or with the Air Force Aeromedical Consultation Service, every three years. Evaluation will include Thallium or sestamibi AGXT, 24-hour Holter monitor, and echocardiography. If other abnormalities are present, further testing may be indicated.

TREATMENT: The treatment for ventricular arrhythmia in the absence of structural heart disease (idiopathic VT) is ablation, with success rates in excess of 90%. In the setting of structural heart disease, the only available treatment is an implantable cardioverter-defibrillator, which is not compatible with flying duties.

DISCUSSION: AR 40-501 defines VT as 3 or more consecutive ventricular beats at a heart rate greater than 100 beats per minute. Recurrence is defined as occurring more than once in any Holter monitor or period of work-up, or more than once in any subsequent evaluation. The Air Force consultation service recently completed a review of 193 aviators with VT. All aircrew members with underlying atherosclerotic coronary artery disease had at least one abnormal noninvasive test. In another study, 35% of patients with VT had a recent myocardial infarct.

DERMATOLOGY WAIVERS

ACNE

INFORMATION ONLY: Yes, if mild, requiring only topical or oral antibiotic therapy, and not impacting fit and wear of equipment.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Severe active cystic acne can produce lesions, which prevent proper or comfortable fit of a helmet, can impede proper harness or equipment fit, or act as a distraction in the aviation environment. If severe enough, cystic acne can even produce sufficient facial deformity to result in various psychological problems serious enough to impede adaptation to an aviation or military career. Treatment with certain drugs for any form of acne may be incompatible with the aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended for all but severe cystic acne.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended including those aircrew members with cystic acne provided they are not restricted from routine use of mask or helmet and approved drugs are used for treatment.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Current treatment plan
- Side effects of treatment or documented lack of side effects.
- Verification of ability to properly fit and wear equipment to include protective mask and helmet.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual update of medication treatment plan and any limitations.

TREATMENT: Use of topical agents is the initial preferred mode of treatment. Topical bacteriostatics (Benzoyl peroxide), antibiotics (topical clindamycin or erythromycin), or topical tretinoin (RETIN A), or adapalene (DIFFERIN) are all acceptable forms of treatment and do not normally require waiver. Systemic antibiotic treatment using tetracycline, erythromycin, or doxycycline if used chronically must be reviewed and will be filed as Information Only with waiver not required. Initial use of oral antibiotics, Oral Contraceptives in females, or topical tazarotene should always be preceded by a period of observation for adverse effects prior to return to full flight status. Minocycline (MINOCIN), Sulfonamides, Dapsone, Spironolactone, Prednisone, and Isotretinoin (ACCUTANE) are considered non-waiverable.

DISCUSSION: Topical absorption of Tazarotene is generally minimal in acne patients, but special precautions must be taken in females of childbearing age. Oral contraceptives containing low androgenicity (desogestrel/gestodene/ortho-tri-cyclen) are an acceptable alternative for females with acne. Minocycline is not acceptable because of the risk of CNS side effects such as light-headedness, dizziness, and vertigo. The incidence of dizziness with minocycline use has been reported as high as 17 percent; however, this is dose-related and the actual risk is only 5 percent with the dosages required for acne control. Sulfonamides are rarely prescribed due to their strong association with severe drug eruptions. Dapsone has been used in the treatment of severe acne, but may cause psychosis and peripheral motor neuropathy. The most potentially serious common adverse effect of spironolactone is hyperkalemia with arrhythmia. Isotretinoin (ACCUTANE) has frequently been associated with xerosis, cheilitis, alopecia, depression, and hypertriglyceridemia, but all of these are reversible upon discontinuation of therapy. Other disturbing side effects of isotretinoin therapy include the development of vertebral hyperostosis and pseudotumor cerebri. While not recommended, it would be feasible to use isotretinoin in aircrew members who are not required to fly for any given 6-8 month period.

ATOPIC DERMATITIS / ECZEMA

INFORMATION ONLY: Yes, if mild or moderate, requires only topical treatments, and doesn't interfere with fit and wear of equipment.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: One of the distinctive features of dermatitis is the itching, which may be severe and easily triggered. This can be distracting in the aviation environment. Some dermatitides may also interfere with proper wear of equipment. Patients with atopic dermatitis are often more susceptible to contact irritants found in the aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended provided applicant is cleared by specialist and using authorized medications with no aeromedically significant side effects.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended provided applicant is cleared by specialist and using authorized medications with no aeromedically significant side effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Dermatology consultation.
- Allergy/Immunology evaluation for those with elevated IgE levels or respiratory difficulties.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual dermatology consult.

TREATMENT: Intermittent use of topical steroids over a limited area is considered compatible with continued flight status. Topical tacrolimus (PROTOPIC) is an immunomodulator useful in treatment and is compatible with flight status, but should include an initial period of grounding and observation for rare side effects of headache, allergic reaction, and hyperesthesia or skin tingling. Non-sedating antihistamines can be approved for use in treating dermatitis.

DISCUSSION: Atopic dermatitis affects 1-3 percent of the population. Around 90 percent of affected children manifest their disease by 5 years of age. A family history of atopy is quite common (70 percent), and about 50 percent of children with atopic dermatitis, persistent beyond the age of 12, develop either rhinitis or asthma. Patients with atopic dermatitis have frequent immunologic abnormalities, including elevated serum IgE levels (strong association with concomitant asthma and allergic rhinitis), reduced cell-mediated immune responses, and slowed chemotaxis of neutrophils and monocytes. About 20 percent of adults with atopic dermatitis have normal or low IgE levels; others have no IgE at all.

Non-pharmacologic preventive measures should be stressed. Education on bathing, daily moisturizers, avoidance of triggers to include fragrances, wool clothing products, and environment/outdoor activities will help control some of the flaring associated with this chronic process. Acute changes in the otherwise stable atopic patient should raise the question of staphylococcus aureus and the involvement of a super- antigen reaction. These will be more common with deployments, but are easily screened for and treated. Topical treatment with mild steroid ointments (desonide and triamcinolone) combined with the immunomodulating tacrolimus ointment will control most mild to moderate atopic dermatitis/eczema without the need for waiver. For more severe cases requiring oral medication, the aircrew should be grounded during treatment and may be returned to flight status when off medication and the chance of possible side effects of treatment is minimized. By convention, this is commonly after approximately five to six half-lives of the medication have passed. If chronic oral therapy is required, the aviator must be grounded and the case reviewed at USAAMA.

PSORIASIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Psoriasis is a chronic, proliferative epidermal disease affecting an estimated 2-8 million people in the United States. Its most common course is one of discreet, localized plaques that respond well to treatment; however, extensive or even generalized involvement may develop; and in some, its severity is incompatible with the military aviation environment and deployments. The condition will be exacerbated by the stress and anxiety brought about during a deployed situation. In addition, some forms of therapy have side effects incompatible with aviation duty.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally not recommended but may be considered on a case by case basis for those with very mild disease and zero systemic manifestations.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers for psoriasis are considered on a case by case basis. A mild case of psoriasis localized to an area not affecting the aircrew member's ability to wear or operate safety garments, mask, or helmet and controllable with occasional use of topical steroids such as vitamin D analogs is readily waivered. More severe cases are considered on an individual basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Aeromedical Summary (AMS)
- Dermatology Consultation
- If requested by USAAMA, photographs of affected area.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual dermatology consultation.

TREATMENT: Use of topical steroids applied qd to bid to localized lesions are quite useful, especially in reducing scaling and thickness. Overnight or 24-hour occlusive therapy with these medications will initiate involution in most lesions. Caution: Prolonged use of fluorinated corticosteroids leads to skin atrophy, striae, and telangiectasia. Ultraviolet light is of substantial benefit in a garrison situation, but of little practical use when deployed to remote areas. Topical vitamin D analogs such as calcipotriene (DOVONEX) are a useful adjunctive treatment to topical corticosteroids. Calcipotriene is used topically BID and is useful in reducing the total amount of topical corticosteroids needed and does not require a waiver. Other topical therapies include tazarotene (TAZORAC), a topical retinoid. Special precautions in females of child bearing age must be taken with use of tazarotene. Other treatments such as tar products and dithranol produce staining and are not considered compatible with flight status. Antimitotic drugs such as methotrexate (can cause ataxia or hallucinations) and retinoic acid (can cause liver toxicity, dry mouth, sore lips, and conjunctivitis) and cyclosporine (hypertension, hematologic abnormalities, and neurologic abnormalities – tremor) are also incompatible with flying.

DISCUSSION: Psoriasis typically does not manifest itself until the 3rd decade of life, though it may develop at any time. A family history of psoriasis is found in 30 percent of patients. It is less common in sunny climates and in those with darker skins. Psoriasis patients have fluctuating courses of spontaneous remissions and relapses making estimations of a cure totally unpredictable and unreliable. Complications include psoriatic arthritis and psoriatic trachyonychia (nail involvement).

ENDOCRINOLOGY WAIVERS

DIABETES MELLITUS AND GLUCOSE INTOLERANCE

INFORMATION ONLY: Yes, remote and resolved impaired glucose tolerance (IGT) or current asymptomatic IGT can be listed IO. Frank Diabetes Mellitus Type 2 (DMII) cannot be listed IO.

TEMPORARY CLEARANCE: Yes, if DMII is controlled with lifestyle modifications. No, if DMII requires medication as this necessitate IDES referral prior to AMS submission/waiver consideration.

AEROMEDICAL CONCERNS: The primary concern in any diabetic is the possibility of unexpected hypoglycemia and the associated risk of sudden loss of consciousness. This risk is greatest among those with Type I (insulin dependent) diabetes mellitus, but may also occur in diabetics controlled with oral hypoglycemics. Also of concern is the risk of renal, cardiovascular, neurological, and visual complications associated with any form of diabetes. Deployment frequently exacerbates symptoms/complications secondary to uncontrolled diet, long hours, and environmental stresses.

Category	Fasting Blood Sugar	2-Hour Post-Prandial
Normal	<110	<140
Impaired Glucose Tolerance	110 < FBS < 126	140< 2HPP< 200
Diabetes Mellitus	>126	>200
Gestational Diabetes Mellitus	>105	>165

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for symptomatic IGT or DMII.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for mildly symptomatic IGT or DMII controlled with lifestyle changes or oral medications that result in a normal fasting blood glucose, an acceptable HbA1c, and no medical sequelae. Waiver is not recommended for IGT with aeromedically significant symptoms (i.e., fatigue, frequent urination, blurred vision, drowsiness, etc.) or DMII that requires any injectable medications. Please note, members with DMII requiring medications for glycemic lowering, must be found fit for retention via the IDES process PRIOR to AMS submission/waiver consideration.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Testing results confirming diagnosis.
- Internal Medicine or Family Physician evaluation.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Continuation of waiver requires semiannual evaluations with maintenance of satisfactory weight control, a fasting plasma glucose less than 126mg/dl, and a glycosylated Hb-A1c of less than 7%. The local aeromedical provider should also submit results of recent (within 90 days of physical submission) CBC, BMP, UA, lipid profile and ECG. These results must be submitted with the annual flight physical along with provider comment on any interval history and results of physical examination. Physical examination should include cardiovascular system, fundoscopic exam (preferably by doctorate level eye provider), peripheral pulses/vascular exam, and neurologic system to include sensation and deep tendon reflexes of the ankles and skin inspection of the feet. For those aircrew on Metformin, the following laboratory evaluation is recommended: Renal function (BUN/Creatinine) and LFTs must be checked before the start of therapy and then every 3 months for the first year of therapy and then at least annually thereafter.

TREATMENT: Diabetes Mellitus: For aviation personnel, diet, weight reduction, and oral medications are the approved methods of treatment: Impaired Glucose Tolerance: Diet, exercise, and weight reduction are primary therapies. These individuals also require aggressive cardiac risk factor modification**.**

DISCUSSION: Compared to healthy aviators, diabetic aviators are twice as likely to have a stroke, 2 to 10 times more likely to suffer a myocardial infarction, and 5 to 10 times more likely to suffer peripheral vascular disease. Diabetics are 25 times more likely to suffer partial or complete loss of vision compared to non-diabetics. The risk of cataracts is 4 to 6 times greater. Up to 20% of diet controlled diabetics have retinopathy at the time of diagnosis and all are at risk for maculopathy which can seriously affect visual acuity. Type II has an 8% chance of polyneuropathy being present at diagnosis and risk of neuropathy is 4% by 5 years and 15% by 20 years. Tight control of blood glucose levels has been demonstrated to delay the onset or reduce the risk of complications.

Screening fasting blood glucose is strongly recommended annually for all individuals at a higher risk for developing diabetes. These include: (1) Individuals with a parent, sibling, or child with diabetes mellitus; (2) A history of gestational diabetes mellitus or impaired glucose tolerance; (3) A history of previous abnormality of glucose tolerance associated with the metabolic stresses of obesity, trauma, surgery, infection, or alcohol intoxication; (4) A history of hypertension; (5) Cholesterol abnormalities with HDL <35 mg/dl and/or triglyceride level >250 mg/dl, and (6) members of high risk ethnic populations.

GOUT

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Gout may often present with an acute, severe, often disabling arthritic attack, usually without warning. It may be associated with underlying disorders such as atherosclerosis, diabetes mellitus, hypertension, and renal disease.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers are normally recommended when the aircrew member becomes asymptomatic and medication is tolerated without side effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider comment on disease control and tolerance of any required medications.
- Verification of absence of, or no clinical concern for, renal stones.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual serum uric acid.

TREATMENT: For an acute gout attack, treatment can be one of three medications: 1) Colchicine, 2) NSAIDs or 3) Intra-articular corticosteroid injection. In the aviation environment, the preferred initial therapy for gouty arthritis is treatment with NSAIDs. Treatment should be initiated rapidly as sooner treatment results in better patient response. If the condition recurs, a joint aspiration should be performed with fluid analysis to confirm the diagnosis. NSAIDs are a symptomatic treatment but long term control of hyperuricemia is via uricosuric drugs or allopurinol. Allopurinol or Probenecid are both acceptable therapies, provided there are no significant side effects.

DISCUSSION: In primary gout, 10-25 % of patients will develop renal stones. Fifty percent of those with a serum uric acid level greater than 13 mg/dl will develop renal stones. Starting treatment with Probenecid can precipitate stone formation in the kidney and the maintenance of an alkali diuresis at the start of treatment is recommended. In individuals at greater risk of developing renal stones, a large urinary volume through liberal ingestion of fluid should be maintained. Of relevance to aircrew is the association of gout with an increased level of alcohol consumption. Alcohol (Ethanol) increases uric acid production and reports indicate that of alcoholic beverages, beer may have the most potent effect on uric acid production.

Analysis of AEDR data indicates that in 2000, ten aircrew had the condition of gout and 50 % of these were granted waivers.

HYPERTHYROIDISM

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Hyperthyroidism and the resulting thyrotoxicosis may either present with slowly progressive symptoms (thyroid ophthalmopathy, corneal damage, optic neuropathy, tachycardia, various supraventricular dysrhythmias, nervousness, emotional lability and hyperkinesis) or may present acutely as in thyrotoxic crisis with fever, marked tachycardia with possible pulmonary edema or congestive heart failure. Cardiac and psychiatric symptoms are common in men. Thyroid ophthalmopathy frequently limits full visual fields, primarily in the upward gaze and more specifically in the superolateral field of gaze.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended if the applicant is euthyroid and there are no residual ophthalmologic deficits.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers are commonly recommended once the patient is euthyroid, and there are no residual ophthalmologic deficits. Aircrew members with ophthalmopathy may require grounding during treatment. Aircrew with abnormal cardiac dysrhythmia will require possible waiver action for the dysrhythmia as well. Waivers are commonly granted for hyperthyroid-induced dysrhythmias once the patient is euthyroid and cardiac evaluation reveals no underlying pathology.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Endocrinology consultation
- Ophthalmology consultation
- Recent (within the previous 90 days) thyroid panel (to include as a minimum TSH and Free T4).
- Cardiology consultation and full work-up may be required for any associated dysrhythmias (See appropriate APL).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Submission of thyroid panel (TSH and Free T4 as a minimum) is required with all comprehensive FDMEs. Although this requirement is only with the comprehensive FDME, the flight surgeon should assess for symptoms and check levels annually. Ophthalmology and/or cardiology consultations with associated work-up may be required for those with residual abnormality or in those with unusual cardiac manifestations.

TREATMENT: The three main forms of therapy include: 1) antithyroid drugs, 2) radioactive iodine (I 131), and 3) surgery. Antithyroid drugs (methimazole, and propylthiouracil) are waiverable but may cause side effects including vertigo and drowsiness as well as agranulocytosis (< 1%). Radioactive iodine is a simple and economical means of treating thyrotoxicosis with the principle disadvantage of producing a high incidence of late hypothyroidism. Surgery is also an alternative but has been declining in popularity; it may still have a role in treating females in their child-bearing years. Complications of thyrotoxicosis usually rapidly respond to therapy, but the patient usually requires grounding until euthyroid and all ophthalmologic or cardiac disorders, etc., are resolved.

DISCUSSION: Graves' disease is the most common cause of hyperthyroidism in patients younger than age 40 in the United States, occurring in an estimated 0.4% of the population. Muscle pain, weakness, and stiffness are the presenting symptoms in 25% of patients. Infiltrative ophthalmopathy is clinically evident in about 50% of patients. Approximately 10% manifest with atrial fibrillation. Paroxysmal supraventricular tachycardia may occasionally be present. Only about 25% of patients present with the classic features of thyrotoxicosis: tremors, tachycardia, nervousness, exophthalmos, heat intolerance, and weight loss despite increased appetite. When treated with drugs, there is a 30% lasting remission rate. Post-radioiodine hypothyroidism occurs in 30% of patients at five years and may reach from 40-70% within 20 years. A third of patients undergoing surgery will be hypothyroid within 10 years. It is essential; therefore, that all treated patients be monitored regularly for the rest of their life. The complete remission rate after radioactive iodine is 86% with 60% developing myxedema after 10 years and a further 2-3% a year developing myxedema after that. More than 50% of cases of exophthalmos will spontaneously remit within 5 years with no other treatment than that of the underlying condition. Only 5% of patients with ocular pathology will require surgery.

HYPOGONADISM / TESTICULAR HYPOFUNCTION

INFORMATION ONLY: Past treatment for hypogonadism with no current meds or symptoms and currently eugonadal.

TEMPORARY CLEARANCE: Yes, once eugonadal on monotherapy of stable dose of approved medication without aeromedically significant side effects.

AEROMEDICAL CONCERNS: Hypogonadism most often presents with slowly progressing symptoms of reduced energy/endurance, fatigue, loss of muscle, obesity, depressive symptoms, cognitive dysfunction, reduced motivation, poor concentration and memory, irritability, reduced sex drive, and erectile dysfunction until significant degradation is present. This may predispose aircrew to subtle incapacitation and may also be a source of significant anxiety and distraction once discovered. Other aircrew members may experience secondary hypogonadism following traumatic or medically indicated orchiectomy.

WAIVERS:
Pilot Applicants (Class 1A/1W):
Exceptions to policy (ETP) will be considered on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers will be recommended once the individual is clinically and chemically eugonadal and on stable dose of an approved medication with no aeromedically significant side effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Endocrinology or Urology consultation, with specific requirement for consultant to rule out secondary/central causes of low testosterone. We will also accept evaluation by residency-trained family medicine or internal medicine physician if specialty consultation is unavailable.
- Endocrinology/Urology consultation will be **<u>required</u>** in all cases of patients prescribed anything more than mono-drug therapy with synthetic testosterone replacement.
- Laboratory Required: Total Testosterone Level x 2 (1 week apart), FSH, LH; PSA for age ≥ 40.
  - Total testosterone level below 300 ng/dL is a reasonable cut-off in support of the diagnosis of hypogonadism. The diagnosis is **<u>ONLY MADE</u>** with serial (2 or more, early morning) low total testosterone measurements combined with symptoms and/or signs listed above.
- Laboratory (ONLY if Clinically Indicated): Prolactin Level, Hematocrit, Iron level

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
Submission of serum total testosterone in normal (400-800ng/dL) range, hematocrit and flight surgeon comment on absence of hypogonadal associated signs and symptoms. If treatment is via injectable testosterone, flight provider must ensure lab is drawn at the midpoint between 2 injections. In the case of any aircrew member with Exception to Policy/Waiver approved for anything more than mono-drug therapy with synthetic testosterone replacement, annual consultation by endocrinology or urology will be required.

TREATMENT: Commercially prepared topical testosterone patches or gels, injectable testosterone, and implanted testosterone pellets are acceptable treatment options. Operational restraints/requirements should be considered when choosing a treatment modality as any injectable preparations may make an aircrew member non-deployable. Only monotherapy will be considered for a waiver, unless there are specific recommendations of medical necessity from endocrinology/urology regarding dual therapy. Include these recommendations in AMS/waiver submission. Clomiphene is prohibited in aviators due to the risk of blurry vision/other visual disturbances. The only authorized use is short term therapy following identification of a cause of reversible/secondary hypogonadism or for infertility. ETP/Waiver will not be considered for chronic Clomiphene use. Past Clomiphene use can be listed IO. Anastrazole and other aromatase inhibitors have also been increasingly used for prevention and treatment of gynecomastia, a common side effect following abuse/misuse of testosterone or its chemical analogues and derivatives. However, it is not FDA approved for this condition and should not be used in male aircrew members unless specifically required as medically necessary by treating specialist. Gynecomastia should not be a concern provided serum testosterone remains in the eugonadal range and if it does develop, superior medical and surgical treatment options exist.

NOTE: Locally compounded formulations are prohibited. OTC men's health/performance enhancers/T-boosters remain Class 4 and are prohibited.

DISCUSSION: The causes of hypogonadism are myriad and in addition to being a normal byproduct of aging can include: diabetes, obstructive sleep apnea, obesity, exposure to chemotherapy/testicular radiation, HIV/AIDS, chronic narcotic/corticosteroid use, and pituitary dysfunction. The severity of signs/symptoms listed above is independent from the degree of hormone deficiency. The onset of hypogonadism typically manifests after age 40 and is usually so insidious that the typical manifestations may take months or years to appear; no age group is immune. Eugonadal is defined as achievement of therapeutic testosterone levels to the normal physiologic range of approximately 400-800 ng/dL, accompanied by symptom/sign improvement/resolution. Any level >800ng/dL should be considered supratherapeutic and should prompt adjustment of replacement dose unless lab draw was inappropriately timed. Hematocrit measurements are necessary as secondary polycythemia is a well-documented side effect of testosterone treatment. Development of thromboembolic events is of specific concern for aviators due to potential for dehydration and prolonged immobility. PSA should be measured in men over 40 years of age prior to commencement of testosterone therapy to exclude a prostate cancer diagnosis.

Testosterone testing and prescriptions have nearly tripled in recent years; however, it is clear from clinical practice there are many men using testosterone without a clear indication. Some studies estimate up to 25% of men who receive testosterone therapy do not have their testosterone tested prior to initiation of treatment. Of men who are treated with testosterone, nearly half do not have their testosterone levels checked after therapy commences. While up to a third of men who are placed on testosterone therapy do not meet the criteria to be diagnosed as testosterone deficient, there are a large percentage of men in need of testosterone therapy who fail to receive it due to clinician concerns, mainly surrounding cardiovascular events, although current evidence fails to definitively support these concerns. Indefinite follow-up is advised, mainly to confirm patient compliance.

REFERENCES:

(1). TESTOSTERONE THERAPY IN MEN WITH HYPOGONADISM: Endocrine Society Clinical Practice Guideline. https://academic.oup.com/jcem/article/103/5/1715/4939465, 2018

(2). EVALUATION AND MANAGEMENT OF TESTOSTERONE DEFICIENCY: AUA Guideline. https://www.auanet.org/guidelines/testosterone-deficiency-guideline, 2018

HYPOTHYROIDISM

INFORMATION ONLY: Subclinical hypothyroidism not requiring medications can be listed IO.

TEMPORARY CLEARANCE: Yes, when clinically euthyroid without any aeromedically significant medication side effects.

AEROMEDICAL CONCERNS: Hypothyroidism typically presents with subtle, slowly progressive symptoms. Common signs and symptoms include fatigue, muscle weakness or cramps, weight gain, cold intolerance, dry skin, constipation, menstrual irregularities, depression, abnormal reflexes, and a variety of lab abnormalities (hypercholesterolemia, anemia, elevated CK, abnormal hepatic function tests) . Severe hypothyroidism may present with decreased cognitive function, cardiac dysrhythmias and congestive heart failure, sleep apnea, pituitary hyperplasia, hyponatremia, edema, and even myxedema coma. The primary aeromedical concern is slowly degraded flight performance unrecognized by the aircrew member and others until it is severe enough to cause significant degradation in flight performance.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is commonly recommended once the applicant is clinically and biochemically euthyroid on approved medication with no demonstrated side effects.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is commonly recommended once the member is clinically and biochemically euthyroid on approved medication with no demonstrated side effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Endocrinology Consultation must be obtained for any cases other than primary autoimmune thyroiditis, and for all cases that are complicated or difficult to control. For uncomplicated autoimmune thyroiditis, consultation with residency-trained primary care physician rather than endocrinologist is permissible.
- Laboratory: Thyroid panel, to include TSH and free T4 at a minimum, completed within 90 days of submission demonstrating biochemically euthyroid state (as indicated by normal TSH and fT4). Appropriate evaluation to confirm autoimmune etiology and/or rule out secondary causes should be included as clinically indicated.
- Imaging: Only required if clinically indicated such as for goitrous or nodular thyroid disease.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Submission of thyroid function testing (TSH, fT4) with annual physicals. If TSH is out of standards but fT4 is within the normal range, the flight surgeon must make a comment that the member is clinically euthyroid (has no symptoms consistent with either hypothyroidism or iatrogenic hyperthyroidism) and manage the member according to appropriate clinical treatment guidelines. Follow-up, including laboratory evaluation, is required annually with flight physical submission but may be required more frequently depending on the member's clinical condition and stability.

TREATMENT: Levothyroxine (e.g. Synthroid, Unithyroid, Levoxyl) is an acceptable treatment. Dessicated thyroid or animal thyroid products (e.g. Armour Thyroid, NP Thyroid, or Nature-Throid), locally compounded medications, over-the-counter medications, neutraceuticals, and supplements are not acceptable treatments and will not be considered for ETP/waiver. Triiodothyronine (Liothyronine, Cytomel, Triostat) is not considered standard treatment and will generally not be considered for ETP/waiver. The use of thyroid replacement medications in clinically and chemically euthyroid individuals, such as for depression or weight loss, is disqualifying and will not be considered for ETP/waiver.

DISCUSSION: Hypothyroidism may be characterized as subclinical or overt. Subclinical hypothyroidism is a laboratory diagnosis, defined by an elevated TSH (above the upper limit of normal but usually <10 mIU/L) with a normal fT4 and an absence of symptoms consistent with hypothyroidism, stable over at least 4-6 weeks. These patients should be monitored for progression to overt hypothyroidism but should not be treated with thyroid hormone replacement; antibody testing may be considered as elevated anti-thyroid antibody titers are associated with a higher likelihood of progression to overt hypothyroidism. Overt primary hypothyroidism is defined as an elevated TSH and subnormal fT4, with or without symptoms. Iodine deficiency is the most common cause of primary hypothyroidism worldwide, while chronic autoimmune thyroiditis is the most common cause in the United States. Thyroid function may also be suppressed by surgery or medical treatment for hyperthyroidism, benign thyroid nodules, thyroid malignancies, non-thyroid head and neck malignancies, or certain medications.

Hypothyroidism may be less clinically apparent and better tolerated when the onset is gradual such as from autoimmune thyroiditis than when it is sudden such as from surgical thyroidectomy. Central or secondary hypothyroidism is indicated by subnormal fT4 without appropriately elevated TSH, and is generally caused by pituitary or hypothalamic dysfunction. Chronic hypothyroidism should not be diagnosed in the setting of acute illness. Individuals with palpable goiters or thyroid nodules should be appropriately evaluated to make a confirmatory diagnosis and exclude malignancy. Females are much more likely than males to be diagnosed with hypothyroidism and the incidence increases with age, but all demographics may be affected. Indefinite follow-up is advised, mainly to confirm patient compliance and titrate medication dosages to account for changes in age, weight, disease status, or other factors which may result in a change to required dose.

REFERENCES:

Garber JR, Cobin RH, Gharib H, et al. Clinical practice guidelines for hypothyroidism in adults: cosponsored by the American Association of Clinical Endocrinologists and the American Thyroid Association. Thyroid 2012; 22:1200. https://www.aace.com/files/final-file-hypo-guidelines.pdf

American Thyroid Association (ATA): 2014 Guidelines for the treatment of hypothyroidism. https://www.liebertpub.com/doi/pdf/10.1089/thy.2014.0028

GASTROENTEROLOGY WAIVERS

CIRRHOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Liver cirrhosis may present slowly or acutely with associated development of gastrointestinal hemorrhage, malaise and lethargy, symptoms arising from encephalopathy and peripheral neuropathy, abdominal pain, jaundice, and Dupuytren's contracture. Osteomalacia occurring in cases of primary biliary cirrhosis could theoretically give problems on ejection. If secondary to alcohol use, the diagnosis of alcohol dependence must be considered (See Alcohol Use Disorders APL).

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended for untrained aircrew. Trained aircrew may be considered for waiver on a case by case provided they are asymptomatic, stable, require no treatment, and do not exhibit any evidence of esophageal varices.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Submission of an internal medicine or gastroenterology consultation.
- A complete panel of liver function tests is required.
- A liver biopsy may be required.
- Alcoholic liver cirrhosis must also submit the requirements as discussed in the Alcohol Use Disorders APL.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual submission of an internal medicine or gastroenterology consultation with complete panel of liver function tests.

TREATMENT: The need for any form of therapy will probably lead to termination from flight duties.

DISCUSSION: Cirrhosis resulting from Wilson's disease, hemochromatosis or chronic active hepatitis tends to present in the teens and twenties, while patients with other etiological factors present after age 40. The male:female ratio for alcoholic cirrhosis ranges from 2-10:1 in contrast to that for primary biliary cirrhosis where it is 1:9. Alcoholic cirrhosis occurs in 15% of heavy drinkers. In clinically compensated cases, the 5-year survival for those who stop drinking alcohol is 90% as compared with 70% for those who continue drinking; for cases who are not clinically compensated, the corresponding figures are 60% and 30%. The incidence of symptoms in cirrhosis is malaise (30-80%), abdominal pain (30%), gastrointestinal hemorrhage (up to 25%), neurological features (<10%) and Dupuytren's contracture (10- 30%). Survival rates in progressive cases are reported as > 50% at 1 year falling to 10% at 6 years. In primary biliary cirrhosis, pruritis occurs as the first symptom in 80% of cases and jaundice in the remainder. The incidence of collagen diseases in association with primary biliary cirrhosis is 70-80% with joint involvement in over 40%. Bacteriuria is found in 35% of cases but may be asymptomatic. For primary biliary cirrhosis, the average survival is 11.9 years but may be less than 2 years when serum bilirubin levels rise quickly.

CROHN'S DISEASE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Frequent bowel movement, diarrhea, rectal urgency and incontinence are obviously things to be avoided in the military aviation environment where it can cause delay, interruption, or failure in completion of military operations. Abdominal cramps and pain and the potential for hemorrhage can cause incapacitation during flight. Anemia, bowel obstruction, fistulization, as well as a multitude of potential extraintestinal manifestations of Crohn's disease are also of grave concern. Deployment to remote areas with poor dietary habits, high stress, and little rest are all factors responsible for relapse.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis provided member has been completely asymptomatic for 2 years, current colonoscopy reveals no active disease, member is well-managed with aeromedically acceptable medication (i.e., Sulfasalazine no greater than 2 gm/day or mesalamine at 2.4 gm/day to 6 gm/day), and the initial disease presentation was mild and of short duration. Unlike ulcerative colitis, the risk of recurrence of Crohn's disease following surgery does not justify waiver action. Therefore, any disease requiring surgical intervention will likely result in permanent aeromedical suspension.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical Summaries with detailed dietary history and record of disease course.
- Gastroenterology consultation.
- Colonoscopy report with biopsy results – if photographs are required they will be requested by the US Army Aeromedical Activity after initial case review.
- Reports of any radiologic studies if disease is in other areas of the GI tract (i.e. abdominal CT or barium studies).
- CBC
- Sedimentation rate (ESR).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual submission of an internal medicine or gastroenterology consultation, to include sigmoidoscopy or colonoscopy report, when indicated. Laboratory should include, at a minimum: CBC, blood chemistries, and if on Mesalamine, renal function.

TREATMENT: Sulfasalazine in doses up to 2 gm/day or Mesalamine up to 2.4 gm/day or 6 gm/day, depending on the formulation as maintenance therapy. Higher doses, if required, are not normally accepted for waiver.

DISCUSSION: Crohn's disease is common in 6-15 percent of young adults with a positive family history. There is an association with smoking. Patients present with diarrhea (70-90 percent), abdominal pain (45-60 percent), weight loss (65-75 percent), fever (30-40 percent), and rectal bleeding (50 percent). Extraintestinal manifestations include gallstones (15-30 percent), oxalate kidney stones (5-10 percent), sacroiliitis (15-18 percent), aphthous ulceration of the mouth (20 percent), erythema nodosum (5-10 percent), and acute arthropathy (6-12 percent). The risk of carcinoma of the colon is reported to be 3-5 percent. After the initial episode, there is a 70 percent chance of relapse in the following 5 years with most occurring in the first 2 years.

Between 70-80 percent of patients will need at least one operation (for failure of medical therapy in 33 percent, fistula formation in 24 percent, and intestinal obstruction in 22 percent). After resection, the risk of recurrence in the following 5 years is 30-70 percent and 50-85 percent in the next 10 years; of these, up to half will need further operation. Without an operation, the annualized risk for recurrence is 1.6 percent in those with single site involvement and 4 percent in those with multiple site disease. The overall mortality is 10-15 percent.

DIVERTICULAR DISEASE

INFORMATION ONLY: Yes, asymptomatic diverticulosis discovered incidentally can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: About 80% of those affected with diverticular disease never develop symptoms. The remaining 20% have a slight risk of in-flight incapacitation secondary to the development of severe colic or massive diverticular hemorrhage. Also there exists the possibility that the altered bowel habits, flatulence, pain or nausea may cause significant distraction in flight, possibly interfering with mission accomplishment. Completely asymptomatic diverticulosis without complication is not considered disqualifying but will be filed information only.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended provided symptoms are resolved/minimal and that grounding medication is not required.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided symptoms are resolved/minimal and that grounding medication is not required.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider discussion on clinical presentation, disease course, treatment(s) or interventions required, and recovery.
- Surgical consultation may be necessary to exclude malignancy.
- Submit colonoscopy or other imaging if such imaging was necessary.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Minimally symptomatic diverticular disease previously granted waivers only requires submission of surgical consultation is symptoms recur or worsen. Asymptomatic patients whose diverticulitis has fully resolved without recurrence require no specific follow-up other than aeromedical provider comment on absence of interval change an annual flight physical.

TREATMENT: A high fiber diet is compatible with flying. Psyllium or other fiber supplements may also be used under the flight surgeon's observation only due to the possibility of bowel obstruction. Partial colectomy may be required to control symptoms but surgery for asymptomatic diverticula should not be recommended.

DISCUSSION: Diverticulosis is rare before the age of 30 but affects 30% of the population by the sixth decade. It is more frequent in the 20 and 30 year age groups in patients with Marfan's syndrome. Some 20-25% of patients require surgery on their initial admission to the hospital. Once symptoms occur, the disease is one of frequent recurrence. Rectal bleeding may occur in 10-30% of patients with diverticular disease; severe blood loss from colonic diverticula is reported to occur in 3 to 5% of those with diverticulosis. Morbidity is reported as a 70% 5-year survival period. Mortality and morbidity information provided by most published clinical reports are unfortunately skewed with populations including the elderly. Little data is available in population groups matching the age distribution of the military population.

GALLSTONES / CHOLELITHIASIS

INFORMATION ONLY: Yes, if treated with dietary changes or following recovery from surgery AND member is currently asymptomatic.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The most common presenting symptom (75%) of gallstone disease is pain. This pain often is acute and disabling and is a potential risk of incapacitation during flight. Complication of gallstones include acute cholecystitis (90% have gallstones), choledocholithiasis (common duct stones), bacterial cholangitis, and gallbladder perforation.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally not required. However, ETP is not recommended in cases that are chronic, recurrent, refractory to treatment, when applicant declines definitive surgical treatment despite persistent symptoms, or when there are post-treatment complications.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally not required. However, waiver is not recommended in cases that are chronic, recurrent, refractory to treatment, when member declines definitive surgical treatment despite persistent symptoms, or when there are post-treatment complications.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- For symptomatic patients requiring surgery, the initial waiver requests should contain the operative report with confirmation that the patient is symptom-free after the procedure and that any bile duct stones are absent as demonstrated by ultrasound examination.
- Patients with retained gallstones may require submission of ultrasound results to confirm the absence of cholecystitis.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required provided the aviator remains asymptomatic.

TREATMENT: Patients who have undergone conventional cholecystectomy can normally return to flying duties within 3 months provided that an absence of bile duct stones is demonstrated. Return to flying duties after endoscopic cholecystectomy may be achieved sooner provided the same criteria can be met. Extracorporeal shock wave lithotripsy (ESWL) and chemical dissolution of gallstones are not recommended for aviation personnel due to the high rate of recurrence of the stone.

DISCUSSION: Gallstones affect between 10 and 20% of the world's population. Cholesterol stones account for 70% of those found in the United States. The prevalence of asymptomatic cholelithiasis in military aircrew has been estimated as 2%; this is less than in the general population because of age and gender factors. An annual onset rate of 1-4% for developing severe medical symptoms requiring eventual cholecystectomy can be anticipated in this population group. Overall, it may be appropriate to offer treatment to younger patients with asymptomatic gallstones who run a greater cumulative risk of developing complications than older patients. However, the total incidence of acute cholecystitis would not be affected by cholecystectomy being carried out on incidentally found, asymptomatic gallstones.

While 60% of patients with cholesterol stones and a functioning gall bladder will have a successful chemical dissolution of their stones, the risk of recurrence in the first year after treatment is 10-30%; chemical dissolution is not, therefore, recommended for waiver. The clearance rate in ESWL for those with 1 stone < 20mm diameter at 2/4/8/18 and 24 months is reported as 45/69/78/95/100%; the corresponding figures for a single stone < 30mm diameter are 18/29/51/81/100%; and for 2-3 stones 13/17/29/49/67%. About 35% of all patients undergoing ESWL have 1 or more episodes of biliary colic before the clearance of all stone fragments. About 10-15% of patients with gallstones will also have stones in the common bile duct.

GASTROESOPHAGEAL REFLUX DISEASE (GERD) / ESOPHAGITIS

INFORMATION ONLY: Yes, fully resolved pill esophagitis OR GERD with no warning signs as listed below, and controlled by either lifestyle modifications or aeromedically acceptable medications.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Retrosternal pain associated with either GERD or hiatal hernia (HH) can be a significant distracter in the aviation environment. Acid regurgitation can lead to attacks of bronchoconstriction in susceptible individuals. Prolonged exposure to acidic gastric contents can lead to Barrett's esophagus (BE), stricture formation, and dental decay. Exposure to -Gz may exacerbate the symptoms of both GERD and HH. Regular availability of OTC medications can mask severe or progressive symptoms resulting in strictures or hemorrhage in disease that may have otherwise been minimal. GERD may also negatively impact sleep quality resulting in accumulation of sleep debt and unnecessary, unacceptable aeromedical risk. Eosinophilic esophagitis (EoE), gastric motility disorders, strictures, and esophagitis from other causes (i.e., medication-induced, irradiation, etc.) are clearly distinct processes from GERD, but can be detrimental in the aviation environment and are disqualifying IAW AR 40-501, thus requiring waiver action.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Gastroenterology consult
- Endoscopy findings (please include pathology results if biopsies were necessary/indicated).
- Aeromedical provider discussion specifically addressing the following five warning symptoms:
  - Dysphagia or odynophagia
  - Symptoms that are persistent or progressive despite appropriate therapy.
  - Bleeding or iron deficiency
  - Unexplained weight loss
  - Extra-esophageal symptoms (i.e., cough, hoarseness, chest pain, asthma).
- Detailed list of all treatments utilized to include results and side effects.
- Allergy consult may be required in cases of EoE due to food allergies.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on continued absence of any of the five warning signs.
- Gastroenterology follow up is only required if there is evidence of progressive disease despite therapy, poor maintenance control, or recurrent symptomatology.
- Repeat endoscopy is only required if recommended by specialist consultation
- Follow up for EoE, BE, or any stricture, will be dictated by treating Gastroenterologist but at minimum will include evaluation and clearance for unrestricted duty by a residency-trained physician.

TREATMENT: Individuals with typical GERD symptoms should initially be managed by lifestyle modifications. These include weight loss, elevating the head of the bed in those with nocturnal symptoms, and avoidance of meals within ~3 hours of bedtime. Roughly 90% of patients will have full symptom resolution upon attaining their ideal bodyweight. Selective reduction, or elimination, of dietary triggers (i.e., caffeine, carbonated beverages, chocolate, spicy foods, peppermint, etc.) should be encouraged. Patients should be advised to avoid smoking and alcoholic beverages as both have been shown to decrease tone of the lower esophageal sphincter. The avoidance of tight fitting garments and use of chewing gum/lozenges are both physiologically sound, but have not consistently been shown to improve GERD symptoms. Refractory disease may require surgery (typically laparoscopic Nissen fundoplication) for cure, which is compatible with return to flight status with no waiver required, following an uncomplicated, full recovery. Intermittent or chronic medication use is acceptable and typically listed IO provided the specific preparation is from an acceptable class and the member is tolerating it well. As with all new medications, the local aeromedical provider should ground the aircrew member and observe for side effects for no less than six medication half-lives. Pharmacologic treatment options include antacids, surface agents (primarily Sucralfate), H2 receptor antagonists, and proton pump inhibitors (PPI). Please see Medications APL for further guidance.

Management of EoE will be based upon the disease subtype and clinical severity. Treatment options include dietary restrictions, pharmacotherapy (i.e., acid suppression, topical glucocorticoids, etc.), and endoscopic interventions such as dilation for strictures. Systemic steroids have shown some clinical utility in EoE refractive to topical/swallowed preparations. Waiver may be considered for a short course of systemic steroids but will not be recommended in those requiring long term or ongoing systemic steroids. Irrespective of the treatment required, EoE is DQ with waiver necessary and will not be listed IO.

Treatment of other types of esophagitis will depend on the etiology. Motility disorders can be problematic as prokinetic medications are typically non-waiverable due to an unacceptable side effect profile. Regardless of the etiology, any severe, persistent or recalcitrant esophagitis that results in excessive lost duty time, the need for repetitive dilations or that results in assignment or deployment limitations will be unlikely to receive favorable waiver consideration.

DISCUSSION: GERD ranks second in prevalence in Unites States digestive diseases but first in direct costs. It is a chronic, relapsing condition with associated morbidity and mortality and an adverse impact on quality of life. As many as 10% of Americans have episodes of reflux daily and ~44% have symptoms at least once a month. The major complications of esophagitis are stricture formation, BE, and hemorrhage. OTC preparations are readily available making flight personnel unlikely to present until the disease has progressed and/or extra-esophageal manifestations have developed.

BE is a complication of chronic GERD and is a premalignant condition defined simply as columnar metaplasia of the esophagus seen in 8% to 20% of patients. The overall incidence in the general population is difficult to estimate as approximately 25% of BE patients have no symptoms of reflux. Epidemiologic data indicates that men are at greatest risk and, although BE can be found at any age, the prevalence increases with advancing age until a plateau is reached in the 60s. The incidence of BE progressing to adenocarcinoma is estimated to be 0.5 per 100 patient-years. As adenocarcinoma of the esophagus is a devastating disease, BE patients need to be followed closely.

The finding of eosinophils in the squamous epithelium of the esophagus is abnormal, and may represent a primary process or may be secondary to other diseases. EoE may be associated with atopy or may be idiopathic. Individual and/or family histories of allergic diseases (i.e., food allergies, atopic dermatitis, asthma, or allergic rhinitis) have been noted in over 50% of individuals with EoE. The most common symptom is dysphagia to solid food, and esophageal foreign body impaction is now recognized as a major presenting feature. EoE may mimic GERD but can be differentiated on the basis of the magnitude of mucosal eosinophilia and the lack of response to acid suppression. Long-term prognosis is unknown but it appears to be a chronic disease with a waxing and waning course, as suggested by a noteworthy relapse rate of ~80% of recurrent symptoms and chronic therapy in adults.

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IRRITABLE BOWEL SYNDROME (IBS)

INFORMATION ONLY: Yes, minimally symptomatic IBS requiring no medications and not requiring/resulting in frequent interventions, lost duty time, or assignment/deployment limitations, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: While most of the patients with irritable bowel syndrome (IBS) have mild non-incapacitating symptoms, some will present with significant painful abdominal cramping and discomfort. Along with increased urgency and frequency of defecation, these symptoms may most certainly be distracting in flight and is inconvenient and possibly aggravated by mobilized "field" conditions. Often the disease is compounded after or during periods of stress and emotional tension. Perhaps, primarily because of the embarrassment over a perceived "inability to deal with stress", or due to the infrequency or inconsistency of the disease symptoms, most of the cases go unreported and thus, untreated.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis as long as the symptoms can be controlled, the evaluation is negative for underlying pathology, and any underlying psychological disorders have been fully treated.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended as long as the symptoms can be controlled, the evaluation is negative for underlying pathology, and any underlying psychological disorders have been fully treated.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Submit an AMS with complete description of symptom complex.
- Evaluation by residency-trained physician to rule out underlying or contributing pathology.
- Psychology and/or psychiatry evaluation may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Close follow-up by the local flight surgeon. Further evaluation is only required with exacerbation of, or failure to control, disease symptoms.

TREATMENT: Advice, possibly including psychiatric counseling or stress management and dietary management to include pectin stool expanders, are compatible with continued flying status. Avoidance of caffeine and alcohol may also be of benefit.

DISCUSSION: Over 50% of patients are under 35 years old with female-male ratio being reported as 2:1, a report potentially biased by the greater tendency for women to seek medical assistance. The criteria for making the diagnosis can be met by 6-15% of normal young people. Only an estimated 20% of people who qualify for the diagnosis seek medical attention for it. Almost half of the reported IBS patients report sexual abuse as children. The four symptoms that help distinguish IBS from organic disease are: (1) visible abdominal distention, (2) relief of abdominal pain by bowel movement, (3) more frequent bowel movements with the onset of pain, and (4) looser stools with onset of pain. Ninety-one percent of IBS patients have two or more of these four symptoms, whereas only 30% with organic disease have two or more symptoms.

PEPTIC ULCER DISEASE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Individuals presenting with acute hemorrhage and associated dizziness, perforation, pain, and/or vomiting are of primary concern in the aviation environment. Undetected chronic blood loss with no other symptoms can result in an iron deficiency anemia, which can lead to cardio- respiratory compromise in flight due to altitude or high G- maneuvers.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for a single occurrence of gastric or duodenal ulcer(s) that is fully resolved, including if maintenance therapy is required. ETP is not recommended for recurrent or complicated disease (i.e., history of hemorrhage, obstruction, or perforation, etc.), or disease that is refractory to treatment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for a single occurrence of gastric or duodenal ulcer(s) that is fully resolved, including if maintenance therapy is required. Waiver is recommended on a case by case basis for recurrent or complicated disease (i.e., history of hemorrhage, obstruction, or perforation, etc.). Waiver is not recommended for disease refractory to treatment.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical Summary including a history of caffeine, tobacco, and medication use, any hospital summaries or operative/endoscopy reports.
- Labs: CBC, three stool hemoccults and if a history of hemorrhage or heme positive stool, report PT/PTT and platelet count.
- Internal medicine or gastroenterology consultations to exclude malignancy.
- Endoscopy to demonstrate ulcer healing. If cancer is suspected, an endoscopy with biopsies is indicated.
- Other required studies may include gastric analysis, basal and stimulated, serum gastrin by radioimmunoassay, stool examination for ova and parasites, biopsies, and/or CLO test for H. pylori. If ulcer is not present on endoscopy, further work-up is required to determine etiology of any bleeding. Other causes of chest pain and associated symptoms must be considered to include checking an EKG for evidence of myocardial damage.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Gastrointestinal/internal medicine evaluation if symptoms recur.

TREATMENT: Ninety percent of ulcers are caused by H. pylori, and successful eradication reduces the recurrence rate of PUD from 90 to 20 percent. PUD generally does not recur with current therapy unless NSAID use is present. H. pylori eradication consists of antibiotics and anti-secretory drugs (H2 Blockers and PPIs). Long term acid inhibition is generally not needed after successful eradication. Various regiments of antibiotic therapy for H. pylori are acceptable as long as eradication is possible. Surgical intervention for peptic ulcer disease is now rare. Other approved medications include:

GI MEDICATIONS*:* All antacids (chronic use) and medications listed below are Class 3 when used for ulcer disease, except as noted. There are no additional requirements for a waiver other than the complete evaluation of the underlying condition and documentation of medication efficacy.

Antacids (Tums, Rolaids, Mylanta, Maalox, Gaviscon, etc.) - Chronic use is Class 3. Occasional or infrequent use is Class 1. Check electrolytes when used chronically.
H2 Blocker - (Cimetidine (Tagamet), Ranitidine (Zantac), Famotidine (Pepcid), Nizatidine (Axid)): Occasional drowsiness is associated with these medications. When treatment is first initiated, a 72-hour observation while the aviator is Duties Not Including Flying (DNIF) is required to ensure the absence of any significant side effect.
Proton Pump Inhibitor - Omeprazole (Prilosec), Lansoprazole (Prevacid), Pantoprazole (Protonix), Rabeprazole (Aciphex), and Esomeprazole (Nexium).
Sucralfate - (Carafate): Class 2 provided underlying condition does not require waiver.

DISCUSSION: Approximately 25 million Americans suffer from PUD at some point in their lifetime. Each year there are 500,000 to 850,000 new cases of PUD and more than 1 million ulcer-related hospitalizations. The most common ulcer symptom is gnawing or burning pain in the epigastrium. This pain typically occurs when the stomach is empty, between meals, and in the early morning hours, but it can also occur at other times. It may last from minutes to hours and may be relieved by eating food or by taking antacids. Less common ulcer symptoms include nausea, vomiting, and loss of appetite. Bleeding can also occur; prolonged bleeding may cause anemia leading to weakness and fatigue. If bleeding is heavy hematemesis, hematochezia, or melena may occur.

The causes of PUD can be divided into four major categories: H.pylori induced ulcers, NSAIDS, acid hypersecretory conditions (e.g. Zollinger-Ellison syndrome), and idiopathic. The use of H2 Blockers and PPIs has changed management of PUD from an inpatient to an outpatient setting. With continued use of chronic daily NSAIDS use, 1-10 percent of patients will suffer gastrointestinal bleeding or gastric/duodenal ulcers. The vast majority of PUD is caused by H. pylori and eradication is associated with a recurrence rate of less than 5 percent. The absence of the organism 4 to 6 weeks after discontinuation of therapy is accepted as an indication of sustained eradication. Eradication is best measured by the non-invasive C14 breath test or a repeat invasive endoscopy with biopsy.

Gastric ulcers and ulcers of the small bowel are found in 21.7 and 8.4 percent, respectively, of users of nonsteroidal anti- inflammatory drugs. Between 3 and 5 percent of gastric ulcers are carcinomatous. The death rate from acute hemorrhage from duodenal ulcer is 6-10 percent and is up to 22 percent in cases of acute upper gastrointestinal hemorrhage. Bleeding stops spontaneously in 85 percent of those cases presenting with acute gastrointestinal hemorrhage. Of those who perforate, 10 percent will do so with no previous history of symptoms. The use of H2 blockers is associated with 80-90 percent of patients healing in 2-3 months, although healing can be delayed in smokers; subsequent relapse rates while on maintenance therapy are higher in smokers than nonsmokers. Without maintenance medication, the relapse rate has been reported to be 50-100 percent at 1 year with 30 percent of the relapses being asymptomatic. The risk of hemorrhage has been reported as 2.5-2.7 percent per year in patients not on maintenance medication. The rate increased to 5 percent per year if there was a history of previous ulcer complications. The annual risk of perforation in similar patients ranges from 0.8-2 percent in males. There is no evidence that painless ulcers are less likely to bleed or perforate, although one bleed is predictive of others. With surgery, 5-15 percent of duodenal ulcers will recur after highly selective vagotomy and 3 percent will relapse after partial gastrectomy. Recurrence rates are less if the patient abstains from tobacco and alcohol.

ULCERATIVE COLITIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Risk of in-flight incapacitation is small but real. The symptom complex tends to differ according to the extent of disease, but generally the severity of the symptoms correlates with the severity of the disease. Diarrhea, rectal urgency (occasionally intense), rectal bleeding, passage of mucus, and abdominal pain are all possible presentations and all in varying levels of severity. While most of the time the process is insidious with gradual onset of symptoms, it can also present with an acuteness, which mimics an infection (e.g., Salmonella sp. or Campylobacter sp.). Significant hemorrhage and even bowel perforation are possible complications of severe disease. There is also a risk of discomfort, anemia, feeling unwell, and chronic fatigue between episodes, which can detract from operational efficiency and availability. Iritis, primary sclerosing cholangitis, toxic megacolon, pyoderma gangrenosum, and colon cancer are complications of chronic ulcerative colitis.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver for untrained class 2, 3, or 4 applicants is recommended on a case by case basis. Waiver is recommended for trained class 2, 3, or 4 aircrew if disease is classified as mild, left-sided, in remission for at least 1 month, and limited to the distal 25 cm of the colon. If the disease is treated by partial colectomy, a waiver recommendation can be made 1 year after surgery, provided the patient is asymptomatic and is without a colostomy or ileostomy.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Internal medicine or gastroenterology consultation.
- Results of colonoscopy or sigmoidoscopy.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual submission of internal medicine or gastroenterology consultation to include CBC.

TREATMENT: Sulfasalazine in doses up to 2 gm/day or mesalamine in doses up to 2.4 gm/day or 6 gm/day, depending on the formulation, may be used as maintenance therapy. Higher doses may be required for treatment, but are not recommended for waivers. Steroid and 5-aminosalicylic acid (5-ASA) enemas have been approved for treatment of proctitis. Partial colectomy is a viable alternative in patients who cannot tolerate medication or are unmanageable with medical therapy. However, with pancolitis and/or the appearance of high-grade dysplasia or colon cancer, total colectomy with sparing of the rectal musculature for an eventual continency procedure is the preferred operation.

DISCUSSION: Most patients (80 percent) with ulcerative colitis have intermittent attacks of their disease, but the length of the remission varies considerably from a few weeks to many years. Approximately 10 to 15 percent of patients will have a chronic continuous course, whereas the remainder will have a severe first attack requiring urgent colectomy. Few, if any, patients have one attack only. Following the initial attack, less than 10 percent remain in remission for 10 years without treatment. In patients younger than 40 years, up to 90 percent relapse within 5 years. Even on maintenance treatment with a 5-ASA product, there is an annual relapse rate of between 13 and 20 percent. Side effects of Sulfasalazine therapy include headache and nausea, oligospermia, skin rashes, agranulocytosis, interference with folate absorption, alopecia, hemolytic anemia, and occasionally hepatitis. These side effects are rare and side effects with other 5 ASA products are infrequent. About 15 percent of patients cannot tolerate this class of drugs. Mortality as a result of ulcerative colitis has diminished dramatically since the introduction of corticosteroids and the use of maintenance therapy with 5 ASA products. The mortality rate for a severe attack of ulcerative colitis has fallen from approximately 37 percent in the presteroid era to less than 2 percent. The lifetime rate of colectomy in UC patients is 30 percent. The risk of cancer in patients with ulcerative colitis begins with disease duration of seven years and rises about 10 percent per decade, reaching approximately 30 percent at 25 years. Episcleritis or anterior uveitis occurs in 5 to 8 percent of patients with active colitis. Ocular complications are present in 4-10 percent of cases, but this rises by 2-30 percent when arthritis is also present. About 1-2 percent of patients will also have ankylosing spondylitis and a further 12-15 percent will have asymptomatic sacroiliitis. Cirrhosis, bile duct carcinoma, and primary sclerosing cholangitis all occur in 1-4 percent of cases of ulcerative colitis.

HEMATOLOGY WAIVERS

ANEMIA

INFORMATION ONLY: Yes, if currently resolved and due to a nutritional/vitamin deficiency or other benign, reversible cause with underlying pathology ruled out via appropriate history, physical and laboratory evaluation. Please see below for acceptable hematocrit (HCT) and hemoglobin (HGB) values that can be listed IO.

TEMPORARY CLEARANCE: Yes, in asymptomatic individuals with HCT/HGB values within waiverable range as defined below, following complete hematologic workup that has revealed no underlying/contributing pathology.

AEROMEDICAL CONCERNS: Anemia can reduce tissue oxygenation and result in decreased work capacity and widespread organ dysfunction. Symptoms such as fatigue, weakness, lightheadedness, and chest pain are common and clearly unacceptable in the aviation environment. These effects can be compounded secondary to common physiologic stressors such as an increased workload, physical exertion, load bearing and hypoxia.

The standards for anemia listed in this policy letter are based upon healthy aircrew who must function within unique occupational and operational environments. This may differ from laboratory reference ranges involving vastly mixed patient populations but is necessary due to the risks and exposures inherent in Army aviation. Additionally, while minor racial/ethnic HCT/HGB levels exist, a low value should not be considered normal solely based on race/ethnicity alone and appropriate evaluation must still be performed. Aeromedical providers should first confirm a diagnosis of anemia by averaging three separate blood draws. Values should come from three distinct blood draws, not from the same sample analyzed three times. Despite AR 40-501 not listing disqualifying HGB levels, it is widely accepted by numerous professional societies and aviation medicine authorities that HGB < 13g/dL in men and < 12g/dL in women meets diagnostic criteria for anemia, therefore, AAMA will enforce these standards. Please note that if either HCT or HGB falls below acceptable levels, waiver/ETP will be required. The standards are as follows:

Male Standards –

- HCT > 40% and HGB > 14g/dL is qualified (both must be within standards).
- HCT 38-39.9% or HGB 13-13.9g/dL must complete below workup, if normal, list as IO but submit results.
- HCT 35-37.9% or HGB 12-12.9g/dL or any abnormalities on testing is DQ with waiver/ETP required.
- HCT < 35% or HGB < 12 g/dL ETP not recommended, waiver case by case dependent on flight duty.

Female Standards –

- HCT > 37% and HGB > 13g/dL is qualified (both must be within standards).
- HCT 35-37% or HGB 12-12.9g/dL must complete below workup, if normal, list as IO but submit results.
- HCT 33-35% or HGB 11-11.9g/dL or any abnormalities on testing is DQ with waiver/ETP required.
- HCT < 33% or HGB < 11g/dL ETP not recommended, waiver case by case dependent on flight duty.

Minimum workup for patients in possible IO range (please forward all results on FDME/FDHS) –

- Thorough history (blood loss/donation/menstruation, ethnicity, diet, gastric surgery, medication-induced hemolysis or bone marrow suppression, travel, and supplement use [zinc or MVIs containing zinc], etc.).
- Focused physical exam (signs of malnutrition/starvation, hepatosplenomegaly, lymphadenopathy, etc.).
- Laboratory evaluation (CBC with manual differential, RBC count, RBC indices, RBC morphology, reticulocyte count, iron studies, CMP, and thyroid function).
- If work-up reveals sickle cell trait or thalassemia minor/beta thalassemia in an otherwise asymptomatic individual with HCT/HGB ≥ 38%/13g/dL (male) or ≥ 35%/12g/dL (female), this can be IO. If below these values, please see Sickle Cell Disease/Trait or Thalassemias APLs as appropriate for waiver/ETP criteria.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended when both HCT and HGB are within acceptable ranges and full hematologic work up reveals no underlying/contributing pathology. ETP will not be recommended for HCT < 35% (male) and < 33% (female) or HGB < 12g/dL (male) and < 11g/dL (female).

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended when both HCT and HGB are within acceptable ranges and full hematologic work up reveals no underlying/contributing pathology. Waiver may be recommended on a case by case in select aircrew with HCT/HGB < 35% / 12g/dL (male) and < 33% / 11g/dL (female) who have no risk of exposure to altitude/hypoxia.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider discussion on presenting features, pertinent physical examination findings and summary of any required treatments including dosages and tolerance.
- Specific documentation of absence of, or no clinical concern for, frank/occult blood loss, decreased RBC production, hemolysis, nutrient deficiency, malabsorption, or chronic/systemic illness.
- Results of all labs completed for initial evaluation and any follow on labs to include at a minimum:
  - Current CBC with RBC indices
  - Peripheral smear
  - Reticulocyte count
- Hematology or Internal Medicine consultation.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on continued absence of aeromedically significant symptoms, underlying disease recurrence or progression, and adherence/tolerance to any required treatments.
- Current CBC with RBC indices.

TREATMENT: Treatment will be dependent upon the underlying cause of anemia. Oral iron, folate or B12 supplements are authorized for use on flight status and if tolerated well, can be listed IO. Chronic use of other medications for underlying causes of anemia may require waiver/ETP. Please see appropriate APL in this scenario.

DISCUSSION: Anemia has many etiologies and return to FFD and/or requirement for waiver/ETP will be predicated upon identification of the cause, elimination of the anemia, and any susceptibility towards future recurrence. Identification of a nutritional or micronutrient deficiency, not due to malabsorption or inborn disorder of metabolism, is easily corrected and does not require a waiver/ETP. Iron-deficiency anemia may be listed IO provided the iron loss isn't due to chronic or occult bleeding such as from the bowel or uterus. Anemia from excessive menstrual blood loss that has subsequently been corrected and heavy/excessive menstruation is currently controlled via IUD or oral contraceptives may be listed IO. Dilutional anemia from excessive fluid intake following intense activity or pregnancy are also benign and reversible thus not disqualifying once identified and resolved. Blood loss secondary to an acute injury that has fully resolved with subsequent normalized HCT/HGB is also not disqualifying, provided the injury itself doesn't require a waiver/ETP.

Donation of blood products is generally discouraged for individuals on flight status. IAW AR 40-8, aircrew members will not be regular (more than two times per year) blood or plasma donors. Aeromedical providers may exercise professional judgment to authorize additional donations in aircrew not regularly exposed to hypoxia (class 4 personnel) during periods of extreme need for blood or blood products. Additionally, personal or family circumstances may arise compelling donation of blood, platelets, plasma, bone marrow and/or peripheral blood progenitor cells (PBPCs aka stem cells). This should be supported if operationally feasible with DNIF based on the type of donation. Donation of > 500mL of whole blood requires a minimum 72 hour grounding period in class 2/3 personnel and 24 hours for class 4 personnel. All aircrew will be grounded for no less than 24 hours following plasma donation. Bone marrow donors will be restricted from flight until their procedure site is healed, they can wear flight uniform and survival equipment without pain or distraction, and there HCT/HGB has returned to pre-procedure levels. PBPC donors are typically administered granulocyte colony-stimulating factor (G-CSF) starting several days prior to the planned collection. Aircrew donating PBPCs are at lower risk for anemia but must be evaluated for side effects of the G-CSF including commonly, generalized mild to moderate musculoskeletal pain that lasts up to one week. Aircrew may be returned to flight after verification of normal HCT/HGB and no residual sequelae from the G-CSF and/or procedure.

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HEMOCHROMATOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Hemochromatosis may present with a classic triad of diabetes mellitus, hepatomegaly, and skin hyperpigmentation. Cardiac complications, primarily in the form of congestive heart failure, occur in 5-35% of patients and in the young may rapidly lead to death if untreated. Increased susceptibility to infection and arthropathy are also reported. CNS complications, primarily weakness, fatigue, and lethargy occur in up to 75% of symptomatic patients but occasionally severe depression with psychomotor retardation, frank disorientation, or stupor may occur.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Internal medicine or hematology consultation is required to confirm the diagnosis and exclude hepatic involvement, diabetes, and other pathology causing secondary hemochromatosis.
- Histocompatibility locus antigen (HLA) typing
- Serum iron, total iron-binding capacity, serum ferritin
- Total iron body content
- Transferrin saturation
- Liver biopsy and family studies may be necessary.
- Cardiology consultation is required to exclude cardiac dysrhythmias with 24-Holter monitor and echocardiogram.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual internal medicine with serum iron, total iron-binding capacity, serum ferritin, total iron body content, and transferrin saturation. Annual cardiology consultation with submission of ECHO and 24-hour Holter.

TREATMENT: Frequent phlebotomy and/or ongoing treatment with chelating agents such as desferrioxamine is not compatible with waiver.

DISCUSSION: Among populations of European origin (including U.S., Canada, Australia, etc.), the average frequency of hereditary hemochromatosis is estimated at about 3-5 per 1000 individuals. Phenotypic expression of the idiopathic hemochromatosis gene usually occurs between the ages of 20 to 40 with symptoms mainly occurring after the age of 50 and delayed until after menopause in females due to menstrual blood loss. The condition is lifelong in occurrence. Hepatic fibrosis is unusual in patients younger than 35 but will occur sooner and progress more rapidly to cirrhosis in heavy drinkers. Hypogonadism will occur in 25% of male patients and primary hypoaldosteronism in 10%. Cardiac failure and arrhythmias are common presenting features in younger patients. Up to 50% of patients over 40 years old have ECG irregularities and 43% of autopsied hearts from hemochromatosis patients show iron deposits in the AV-node and conduction system. Arthropathy is present in 30-50% of those patients with hemochromatosis (commonly in the proximal interphalangeal and metacarpophalangeal joints). A phlebotomy 2-3 times a week until hemoglobin is less than 10 g/dl, serum iron is less than normal, or ferritin is in the low normal range, followed by maintenance phlebotomy every 2-4 months, will reduce the incidence of complications other than arthropathy. The death rate at 5 and 10 years with phlebotomy is 32 and 66% compared to 6 and 18% in those who do not require treatment.

POLYCYTHEMIA

INFORMATION ONLY: Yes, historical cases of secondary polycythemia that are currently resolved. To be listed IO, secondary polycythemia needed to be from an identifiable and reversible etiology AND that etiology itself must not require ETP/waiver action IAW current regulation/aeromedical policy.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission AND when HCT is < 55% in males and < 50% in females.

AEROMEDICAL CONCERNS: Symptoms of increased hemoglobin levels (erythrocytosis or polycythemia) result largely from slowing of blood flow through capillaries as a result of the increased blood viscosity. Primary polycythemia, or polycythemia vera (PV), is a neoplastic disease with increased risk of stroke and myocardial infarction. Secondary polycythemia is less often symptomatic, but its cause (chronic carbon monoxide exposure, certain tumors, severe lung disease, etc.) may have a significant impact on aviation safety.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for PV. ETP is recommended for cases of secondary polycythemia that are resolved or within acceptable HCT limits AND when not due to a cause that is disqualifying.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended for primary PV. Waiver is recommended for cases of secondary polycythemia that are resolved or within acceptable HCT limits AND when not due to a cause that is disqualifying.

Abnormal values should be verified by averaging three complete blood counts (CBC) obtained at one-week intervals to rule out short term hemo-concentration from other factors. HCT averages from 40-52% in males, and 37-47% in females and hemoglobin from 14-18 gm in males and 12-16 gm in females are accepted to be normal with no waiver action required. HCT averages of 47-50% for females or 52-55% for males are routinely recommended for waiver provided they are symptom free and have no underlying pathology (see work-up below). HCT averages of greater than 50% for females or greater than 55% for males are recommended on a case by case basis and will be limited to ground based aircrew without exposure to altitude.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Internal Medicine of Hematology consultation.
- Chest X-ray.
- Pulmonary function testing with DLCO.
- Oxygen saturation.
- Spleen size (determined by CT, radionuclide scan or physical examination).
- B12 and B12 binding capacity.
- Leukocyte alkaline phosphatase score (LAP) values are used to diagnose PV.
- If PV is ruled out, the secondary cause of polycythemia must be determined (i.e., prolonged living or intense exercise at >5K feet altitude, smoking history, exogenous testosterone use, supplements, etc.).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Ensuring stability or improvement of secondary conditions is the goal of follow-up and will determine the frequency of visits.

TREATMENT: Hydroxyurea and phlebotomy are the common initial treatments for PV and are incompatible with waiver. Splenectomy has been proven to be valueless as primary therapy and is considered harmful. Treatment of secondary polycythemia is directed at the cause.

DISCUSSION: Secondary polycythemia may occur as a physiological response to decreased tissue oxygenation, i.e., high altitude, chronic lung disease, smoking, right to left cardiac shunt, etc. PV is a disease of insidious onset, chronic course, and unknown cause. The most common symptoms associated with PV are headache (48%), weakness (47%), pruritus (43%), dizziness (43%), sweating (33%), visual disturbances (31%), weight loss (29%), paresthesias (29%), dyspnea (26%), joint symptoms (26%), and epigastric distress (24%). Vascular occlusions of the brain and/or heart constitute the most serious complications. Various resulting paralyses may be the first symptoms of the disease. Myoclonia, chorea, grand mal seizures, general paresis, catalepsy, and various cognitive defects have all been reported. Investigators have shown clearly that cerebral blood flow is greatly diminished at hematocrit levels between 53 and 62%. Venesection can be the sole therapeutic measure in two-thirds of the patients. Venesection is performed repeatedly at 1-3 day intervals until the HCTs are between 40 to 45%. Good control can usually be maintained by one or two 500-ml phlebotomies every 3 to 4 months.

SICKLE CELL DISEASE / TRAIT

INFORMATION ONLY: Yes, in those with Sickle Cell Trait (Hb AS) with no current/history of symptoms or anemia, documented Hemoglobin (HGB) A > HGB S, and no history of vaso-occlusive crises.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Patients with homozygous sickle cell disease (Hb SS) are at risk for morbidity and mortality due to hemolytic anemia, vaso-occlusion, chronic pain, tissue ischemia/infarction of multiple organs, overwhelming infection and sudden death. Hb SS is therefore incompatible with both general military and aviation service. Those with Hb AS have a relatively benign carrier state, and with rare exception, are at very low risk of complications. However, extreme physiologic stress, dehydration, strenuous exercise, prolonged cold exposure, and hypoxia can precipitate/aggravate intravascular sickling and subsequent rhabdomyolysis, DVT, kidney disease, splenic infarction and sudden death.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for Hb SS OR Hb AS with symptoms or history of vaso-occlusive crises.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended for Hb SS. Waiver can be considered for prior symptomatic Hb AS in select aircrew with no risk for exposure to altitude/hypoxia who otherwise meet military/DAC service retention standards.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete history of symptoms surrounding any vaso-occlusive episodes.
- Results of HGB electrophoresis OR High Performance Liquid Chromatography documenting Hb A > Hb S (Hb S must be ≤ 45%).
- CBC, BMP and Urinalysis
- Hematology consultation is required if diagnosis is uncertain or when concern for heterozygosity with other mutant beta globin genes exists (i.e., Hb SC, Hb S- β° thal, Hb S -β+ thal, etc.).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Follow up is limited to local aeromedical provider verification of continued absence of any symptoms consistent with, or concerning for, intravascular sickling.
- Subsequent sickling event or painful crises will necessitate immediate grounding and AMS for likely aeromedical suspension. The only exception would be clear identification and reversal of a modifiable factor(s) that can be mitigated in the future without necessitating occupational, assignment, or deployment limitations detrimental to personal/flight safety or mission completion.

TREATMENT: Asymptomatic Hb AS typically requires no treatment. Treatment for a sickling event or painful crises is beyond the scope of this policy letter. Please see Discussion section for information on counseling and prevention in those with Hb AS.

DISCUSSION: Clinical concern should be maintained for Hb AS among Black, White, and Hispanic patients as well those of Middle Eastern and Indian descent as they will generally have normal levels of HGB, HCT, RBC indices, and an unremarkable peripheral blood smear. Recent Army Policy has mandated sickle cell screening in all Soldier accessions therefore aiding in the early identification of those with Hb AS. Intravascular sickling complications can occur at even modest elevations of ~10,000 feet increasing aeromedical risk to unacceptable levels. Thus the importance of identifying those with Hb AS and applying appropriate aeromedical screening in aviation applicants and risk reduction strategies in trained aircrew. Prevention is vital including counseling on avoidance of risk factors for intravascular sickling such as hypoxia exposure, volume depletion, thermogenic and/or pre-workout supplements that could markedly increase the risk of an adverse or catastrophic event.

REFERENCES:
(1). Centers for Disease Control (CDC) Sickle Cell “Toolkit” and Informational Pages: http://www.cdc.gov/ncbddd/sicklecell/toolkit.html and http://www.cdc.gov/ncbddd/sicklecell/traits.html.
(2). National Athletic Trainers’ Association Consensus Statement on Sickle Cell Trait and the Athlete: https://www.nata.org/sites/default/files/SickleCellTraitAndTheAthlete.pdf.

SPLENECTOMY

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: There is a long term risk of overwhelming, serious infection leading to death. The increased risk of infection is related to the underlying illness for which the splenectomy was performed and is most marked in patients with neoplastic disease.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis provided there is full recovery from the condition necessitating the operation.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Information required will be depend upon the precipitating condition and must be coordinated with USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None.

TREATMENT: Prophylactic antibiotics may be acceptable in certain circumstances. Immunization against pneumococcus, meningitis, and Hemophilus B is highly recommended and is considered compatible with flying status. Repeat vaccination is often recommended every 5 to 10 years. Patient education is a must to reduce the mortality from postsplenectomy sepsis. Asplenic patients must be taught to recognize the earliest signs of infection in order to seek immediate medical care or promptly start taking antibiotics dispensed in advance by their physicians.

DISCUSSION: The underlying disease process which necessitates the splenectomy is generally responsible for the overall clinical outcome. The mortality following splenectomy, regardless of cause, is around 3% of which infection accounts for 11%. Mortality for isolated injury to the spleen is less than 1%. Late sepsis after splenectomy for Hodgkin's disease occurs in 11.5% with a 5% mortality. In adults who have had splenectomy, the mortality from pneumococcal pneumonia is 17% despite administration of antibiotics. If the patient is older than 50, the mortality is 28%.

THALASSEMIAS

INFORMATION ONLY: Yes, thalassemia minor/beta thalassemia with no anemia in an asymptomatic individual can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Decreased oxygen carrying capacity secondary to decreased hemoglobin (HGB) may lead to organ hypoxia.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended in asymptomatic individuals with HGB within the acceptable range. Please see Anemia APL for acceptable HGB levels.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended in asymptomatic individuals with HGB within the acceptable range. Please see Anemia APL for acceptable HGB levels.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Internal Medicine or Hematology consultation to ensure accurate diagnosis.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual CBC is required.

TREATMENT: N/A

DISCUSSION: Thalassemia describes a condition of decreased amounts of hemoglobin due to faulty alpha and/or beta chain production. Old terms like "trait", "intermedia" and "major" are being replaced with more accurate descriptive terminology as a result of molecular biologic characterization of hemoglobin production. At any point in the initiation, promotion, transcription, translation and synthesis of hemoglobin protein chains, partial or complete absence of one or more of the 4 alpha chain gene products or one or both of the beta chain gene products can occur. The clinical course is determined by multiple factors including amounts of underproduced and overproduced chains, their interactions with other abnormal chains or hemoglobins, and individual patient characteristics. The diagnosis should result from a work-up prompted by anemia, microcytosis, or both.

INFECTIOUS DISEASE WAIVERS

HEPATITIS

INFORMATION ONLY: Yes: A history of acute Hepatitis A, B, or E infection is not disqualifying as long as six months have elapsed, liver functions have returned to normal, member remains asymptomatic, and in the case of acute hepatitis B, that the HB surface antigen has cleared. Acute Hepatitis C may be filed IO if the condition is fully resolved with no evidence of disease via RNA viral load testing.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The symptoms of acute and chronic hepatitis include fever, malaise, nausea, and pain, any or all of which could be distracting in an aviation mission. Risk of transmission to other unit personnel is of great concern. Cases may progress to cirrhosis which has its own aeromedical significance (see Cirrhosis APL). Care should be taken to identify those individuals whose disease is complicated by alcohol ingestion.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended for applicants with chronic hepatitis or other forms of hepatitis distinct from the IO conditions listed above.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for individuals with chronic hepatitis or other forms of hepatitis distinct from the IO conditions listed above.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete Internal Medicine or Gastroenterology consult
- Complete panel of liver function studies (to include AST, ALT, Alkaline phosphatase, LDH, Total bilirubin, and GGT) and full hepatitis serologies (to include hepatitis A, B, and C).
- Liver biopsy may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Those aircrew members with chronic hepatitis will require annual internal medicine or gastroenterology consultation with annual submission of liver function tests and full hepatitis serologies. Due to the predisposition of the development of hepatoma, those with chronic hepatitis-B will require annual ultrasound evaluation with alpha-fetoprotein levels. Repeat liver biopsy may be required upon progression of liver disease or with any relapse. Those with chronic hepatitis C will require evaluation by gastroenterology every 3 years for evaluation for therapy and possible repeat liver biopsy.

TREATMENT: Treatment for hepatitis A and E is supportive. Aircrew will be grounded during the acute phase. All military personnel should be immunized with the two shot series of Hepatitis A vaccine as prophylaxis. Aircrew will be grounded for the duration of all other forms of treatment for chronic hepatitis to include interferon with ribivarin or other nucleoside analogue (e.g. lamividine) combinations, steroids, or azathioprine due to multiple side effects. Treatment with alpha interferon and or lamividine has been shown to moderate signs of chronic HBV infection and eliminates HBeAg in one third of patients, with eventual clearance of HBsAg in some of the responders. Treatment for chronic hepatitis C has only a sustained virologic and biologic response rate of approximately 40% with the new, longer acting interferon and ribivarin. Waivers are not recommended during treatment.

DISCUSSION: The most common causes of hepatitis are the viruses (A, B, C, D, E), alcohol, and drugs. Less common etiologies include other viruses (Epstein-Barr, yellow fever, cytomegalovirus, and coxsackievirus).

Hepatitis-A infection is fortunately brief in duration and chronic hepatitis does not follow acute infection. Rare cases lead to fulminant hepatitis. In the majority of aviation personnel, administration of the Hepatitis A vaccine should greatly reduce, if not eliminate, this disease in our population.

For those patients whose hepatitis is a result of infection with hepatitis-B virus as an adult, 10% progress to chronic disease; cases arising in childhood progress to chronicity more frequently. Spontaneous recovery after 1 year is rare and only occurs in 5-15% of cases.

With hepatitis C, after acute infection, 15%-25% of persons appear to resolve their infection without sequelae as defined by sustained absence of HCV RNA in serum and normalization of ALT levels. Chronic HCV infection develops in most persons (75%- 85%) with persistent or fluctuating ALT elevations indicating active liver disease developing in 60%-70% of chronically infected persons. In the remaining 30%-40% of chronically infected

persons, ALT levels are normal. Most studies have reported that cirrhosis develops in 10%-20% of persons with chronic hepatitis C over a period of 20-30 years.

The majority of those with chronic persistent hepatitis following acute hepatitis do not progress to cirrhosis. In autoimmune chronic active hepatitis, 25% have established cirrhosis at the time of the first biopsy. As many as 20-30% will have evidence of other autoimmune disorders such as arthritis, thyroiditis, or SLE. Mean survival is approximately 5 years in untreated patients. Treatment is often withdrawn at 1 year but there is a 50% relapse rate in the following year with most relapsing within six months. Many of those who relapse will require lifelong maintenance therapy. Approximately 40% of all patients with acute alcoholic hepatitis will develop cirrhosis in 5 years; abstinence in the interim does not guarantee avoidance of this condition. Those who continue heavy alcohol consumption have a mortality rate of greater than 50 % at seven years; this is reduced to 25% with abstinence.

HUMAN IMMUNODEFICIENCY VIRUS (HIV) INFECTION

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: HIV is a chronic infection with variable course, ultimately causing a decline in immune functioning resulting in opportunistic infections, malignancies and neurologic problems if not managed optimally. Treatment of HIV requires varying antiretroviral medications with multiple side effects, toxicities, and drug interactions which are not compatible with flight duties. Persons with HIV are monitored in CONUS and may have deployment implications, thereby precluding many operational assignments. Aeromedical providers must also ensure they comply with all administrative requirements IAW AR 600-100.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following completion of all below requirements.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- AMS to include presentation, as well as complete, current clinical staging.
- CD4 cell count
- Plasma HIV RNA level (viral load) – include testing methods.
- Consult from Infectious Disease with assessment, prognosis and plan for care (to include medication regimen if required).
- Consult from Psychiatry to include clinical evaluation and baseline neuropsychiatric/cognitive testing.
- Strong command and local aeromedical provider support.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Per Infectious Disease specialist, periodic (e.g. quarterly) labs will be evaluated. A change in clinical status (CD4 count <350 or viral load > 55,000) requiring initiation of antiretroviral therapy or from asymptomatic to symptomatic will require immediate re-assessment of waiver. Annual evaluation at a MEDCEN or its equivalent is required.

TREATMENT: Treatment is disqualifying. Antiretroviral regimens are complex, have serious side effects, pose difficulty with adherence, and carry serious potential consequences from the development of viral resistance because of non-adherence to the drug regimen or suboptimal levels of antiretroviral agents. Highly active antiretroviral therapy (HAART) with a three- drug regimen has dramatically improved survival rates. Treatment should be offered to all patients with symptoms ascribed to HIV infection.
Recommendations for offering antiretroviral therapy among asymptomatic patients require analysis of real and potential risks and benefits. Treatment should be offered to persons who have < 350 CD4+ T cells/mm3 or plasma HIV ribonucleic acid (RNA) levels of > 55,000 copies/mL (by b-deoxyribonucleic acid [bDNA] or reverse transcriptase- polymerase chain reaction [RT-PCR] assays).

DISCUSSION: The mean incubation time between infection with HIV to development of AIDS is ten years. Highly active antiretroviral therapy (HAART) has significantly contributed to this success. The side effects of these medications make them incompatible with flight duties. HIV infects cells with CD4 receptors causing a cell death and decline in immune function. The resultant opportunistic conditions or CD4 count <200 cells/mm3 defines the change from HIV to Acquired Immune Deficiency Syndrome (AIDS). The primary aeromedical concern of HIV is its neurologic manifestations. Neurologic features of primary HIV-1 are uncommon but include meningoencephalitis, peripheral neuropathy, Guillain-Barré syndrome, brachial neuritis, radiculopathy, cognitive impairment, or psychosis. Neurologic dysfunction may be seen even in asymptomatic HIV positive patients, warranting thorough baseline evaluation. Infection of non-lymphoid organs with high levels of HIV does not occur until late- stage disease. At this time the CNS becomes a target for opportunistic infections, as well as effects attributed to the virus itself.

LYME DISEASE

INFORMATION ONLY: Yes, history of Lyme disease identified and treated within the acute stage and with zero dissemination can be listed IO. Aircrew should be DNIF/grounded during active treatment phase.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The neurological complications of the early disseminated stage of Lyme disease may include headache, photophobia, difficulty with memory or concentration, and emotional lability. Carditis during the same stage can cause tachyarrhythmias, atrioventricular conduction defects, and rarely, mild congestive heart failure. Late neurological complications may include progressive encephalopathy, polyneuritis, and psychiatric changes. Arthritis may also occur in the late stage. Persistent fatigue and malaise have been reported as features of the condition.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis following full resolution of the disease AND after a 3 month observation period.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following full resolution of the disease AND after a 3 month observation period.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Internal Medicine or Infectious Disease consultation is required.
- Neurology consultation with neuropsychiatric testing will be required in all cases with CNS findings.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: No follow-up is required unless there has been residual damage.

TREATMENT: Patients should be DNIF during treatment of early localized cutaneous disease with oral amoxicillin, penicillin, doxycycline, tetracycline or cefuroxime. Intravenous therapy, with third generation cephalosporins or other antibiotics, for disseminated or chronic disease (Stages 2 and 3), is compatible with later waiver depending on outcome.

DISCUSSION: The risk of developing Lyme disease from a single tick bite has been reported to be so low that prophylactic therapy for asymptomatic patients is unjustified. Between 50-70% of patients with chronic disease recall erythema migrans, occurring one day to one month after tick bite. About one-half of patients have multiple lesions. Up to 50% of patients in the early stage have elevated erythrocyte sedimentation rate and about 20% have mildly abnormal liver function tests. Disseminated disease occurs mainly in untreated or inadequately treated cases. Up to 10% of such patients will have carditis and up to 15% will have neurological symptoms. Months to years after the tick bite, up to 50% of untreated patients will have intermittent arthritis, of whom one fifth have a chronic monoarthritis usually of the knee.

MALARIA

INFORMATION ONLY: Yes, history of uncomplicated, fully recovered malaria can be listed IO. Malaria prophylaxis can also be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Contracting malaria is a risk to aircrew members deployed to endemic regions such as Central and South America, the island of Hispaniola (Dominican Republic and Haiti), Africa, Asia (including the Indian subcontinent, Southeast Asia, and the Middle East), Eastern Europe, and the South Pacific. Malaria is endemic in more than 100 countries and territories and kills over one million people worldwide every year. Widespread occurrence of malaria may result in significant loss of personnel. During the Vietnam War, entire units were declared "Combat Non-effective" due to high incidence of malaria.

Malaria is a protozoan infection that is spread by the Anopheles mosquito. Clinical signs and symptoms include fever, tachycardia, hypotension, cough, headache, delirium, vomiting, and diarrhea. The most severe form of malaria can cause seizures, coma, renal and respiratory failure, and death.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case for malaria with severe symptoms (i.e., seizures, coma, renal or respiratory failure, etc.) after full recovery.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for malaria with severe symptoms (i.e., seizures, coma, renal or respiratory failure, etc.) after full recovery.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Current infectious disease or internal medicine consultation, documenting treatment and full recovery.
- Current applicable consultations regarding resolution of complicating conditions from infection.
- Results of microscopic examination of both a thin and a thick blood smear for malaria.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: No follow-up is required once a cure has been obtained. Service member needs to be aware that the disease can occur months, even years after exposure. Malaria can also recur several months to years after the initial infection. Unexplained fevers and symptoms should be evaluated promptly and the evaluating care provider should be made aware of the service member's history of travel to a malaria endemic area.

TREATMENT: Chloroquine is the first line agent for chloroquine-sensitive malaria. Treatment protocol consists of initial dose of 10 mg base/kg (maximum 600 mg base) orally, followed by 5 mg/kg base (maximum 300 mg base) 6, 24, and 48 hours later. For chloroquine-resistant malaria, first line therapy is quinine sulfate 10 mg salt/kg (maximum 650 mg) every 8 hours for three to seven days, combined with either 3 tablets of pyrimethamine-sulfadoxine (25/500 mg) on day #3 (if the malaria was acquired in an area without significant sulfonamide-resistance); or doxycycline (100 mg PO bid for seven days). New medications that are FDA-approved may be necessary for use as well that have not been addressed in this APL. Local aeromedical providers should follow the best practice guidance for medical care. Individuals being treated should be temporarily grounded until recovered, and then processed as outlined above.

PROPHYLAXIS: It is important to consider that chemoprophylaxis is only one component of malaria prevention. Proper wear of clothing, use of insect repellents, mosquito nets, and mosquito avoidance are all important and can also protect against other mosquito borne illnesses. Approved medications for malaria prophylaxis include chloroquine phosphate, primaquine phosphate, and doxycycline. Single dose ground testing is advised with a 24-hour grounding period. **Mefloquine is not approved for use in flight personnel. New medications that have not been evaluated yet or FDA-approved are not for routine use in flight personnel—special cases should be referred to USAAMA.**

Recommendations for prophylaxis change frequently due to variability of organism susceptibility to treatment. Prior to deployment to an endemic area, the latest recommendations should be obtained using the Armed Forces Medical Intelligence Center (AFMIC), Fort Detrick (password-secure website at www.afmic.detrick.army.mil).

AFMIC should be the primary source of information. In addition to AFMIC, medical guidelines can also be found at the Centers for Disease Control (CDC) online at www.cdc.gov/travel, or the CDC Malaria Hotline (770-488-7788); or at the World Health Organization (WHO) online at http://www.who.int/ith/en.

DISCUSSION: There is growing incidence worldwide of chloroquine-resistance malaria. The proper chemoprophylactic agent needs to be determined on the basis of deployment country or region. Current information on medications can be found at AFMIC. Follow AFMIC recommendations. Recommendations can also be found on other government and/or medical sources (be aware that AFMIC recommendations supersede those of other government or medical agencies). Prophylaxis should begin before deployment and continue 1-4 weeks upon return to home station, depending on the agent used. Side effects to malarial prophylactic agents are usually minor, but can be as serious as psychoses, seizures, retinopathy, and sensory or motor neuropathies. Flight Surgeons should review individual drug information and monitor for side effects and signs of toxicity as well as stay abreast of changing developments.

TUBERCULOSIS

INFORMATION ONLY: Yes, those with no active disease receiving prophylaxis for a positive screening test may be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The primary concern is prevention of this communicable disease's spread to other members within the aviation unit. While active tuberculosis (TB) is somewhat unlikely in the aviation community, it is still important to provide adequate treatment for those unit members discovered to be at risk for TB. Primary infection with TB may occur without symptoms and signs or may generate classical symptoms of low grade fever, night sweats, weight loss, cough, bloody sputum, etc. This pneumonia-like process puts an aviator at additional risk when exposed to altitude changes by causing small pulmonary plugs of sputum which close off alveolar ventilation. These obstructed air-sacks may expand and burst when exposed to decreased ambient pressure resulting in possible pneumothorax, pneumomediastinum, or even air embolism.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended following complete recovery from active TB.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended following complete recovery from active TB.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Infectious disease or pulmonary medicine consultation and with documentation of complete recovery from infection.
- Post-convalescent negative sputum cultures followed by an observation of 6 months is generally required before return to aviation duties.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Following successful treatment of active TB, a program of continued observation should be developed for the next two years. However, relapse after adequate treatment of drug-sensitive infections is very infrequent. Patients receiving INH should be instructed about symptoms of hepatitis and have serum transaminase levels monitored every month.

TREATMENT: The Centers for Disease Control currently recommends several regimens for the initial treatment of tuberculosis. One such regimen employs 2 months of isoniazid (INH), rifampin (RMP), and pyrazinamide (PZA) [plus either ethambutol (EMB) or streptomycin (STM) if INH resistance is suspected] followed by INH and RMP daily or 2-3 times weekly for 4 months. Chemoprophylaxis is achieved with use of INH 300mg daily for 12 months (6 months has recently been proposed as providing greater risk/benefit for most individuals). Pyridoxine supplementation, 10-25 mg daily, is recommended for ages older than 65, pregnancy, diabetes mellitus, chronic renal failure, alcoholism, use of anticonvulsants, and malnutrition.

DISCUSSION: Mycobacterium tuberculosis infects 1.7 billion people worldwide, a third of the world's population, and causes 3 million deaths each year. In the U.S., the steady decline in TB infection occurred until 1986, at which time a steadily increasing infection rate occurred, probably due to increase incidence within the homeless, HIV epidemic, increased intravenous drug use, and declining TB control measures. About 3-4% of infected individuals will develop active TB during the first year after tuberculin conversion and a total of 5-15% will develop at some later time.

MALIGNANCY WAIVERS

MALIGNANCY INTRODUCTION

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Cancer may present with myriad signs or symptoms, including those which may present with sudden incapacitation, cognitive disorders, or seizures. The known cancer patient must face innumerable psychological adjustments, life style changes, and a lengthy treatment process with follow-up which often interferes with deployment as well as their normal duties. The impact that cancer has on aircrew requires consideration of the organ of origin, the clinical/surgical stage, and the treatments that are required.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended and would be reserved for instances such as childhood leukemia or lymphoma survivors > 10 years past disease resolution.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver recommendations are based upon the type of tumor and any residual effects of therapy. In general terms, waiver authorities will often recommend a return to restricted flying status as long as there is a minimal risk of incapacitation as a result of recurrence, treatment is complete, no residual effects from surgery/treatment are present, and the risk of relapse/CNS relapse is minimal (note: USAAMA ACAP has established that risks of CNS relapse of greater than 1%/year are not currently considered waiverable. In many cases, upgrading to a less restrictive waiver or a return from termination of flying status can be considered 2 years after completion of therapy provided there is no recurrence. Specific exceptions to this are addressed on the individual data sheets.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS summarizing the entire course of the disease and copies of diagnostic procedures, hospitalization, treatment, and recommended limitations.
- Tumor Board results and recommendations.
- Medical Evaluation Board (MEB) recommendations if MEB was required.
- Objective assessment by the oncologist of the chances of cure, the risks, likely nature and ease of detection of recurrence and recommendations for follow up.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: The necessity for follow-up will almost certainly interfere with mobility requirements unless the follow-up is at greater than 6-month intervals or the tests required are very simple.

TREATMENT: Surgery is not disqualifying for flight as long as major organ dysfunction does not exist. The condition for which the surgery was performed may, however, be disqualifying. All surgical procedures for the removal of cancer will require a variable period of grounding. The time of disqualification will depend on the chance of cure, the likelihood that recurrence will cause a flight safety hazard or otherwise interfere with the military task and on the site and extent of operation. Radiation therapy is generally delivered to a localized area for a limited time. The immediate side effects of nausea, neutropenia and other dose-related effects usually disappear a few weeks after completion of therapy. Until then, the patient should be disqualified from flying. Follow-up is required because of the risk of developing another primary cancer. Chemotherapy is incompatible with flying until full recovery from side effects such as anemia, thrombocytopenia, granulocytopenia, nausea and vomiting has occurred. Use of steroids or hormone therapy for the treatment of tumors is also disqualifying although waivers can be granted for their use as replacement therapy. Follow-up may be required for long term side effects of chemotherapy such as cardiac or pulmonary toxicity.

DISCUSSION: Classification of tumors into categories facilitates decision making on aeromedical outcome. The minimal requirements are accurate diagnosis, indication of tumor size, differentiation and local invasion, and confirmation of the presence or absence of lymph node or distant metastases. The American Joint Commission on Cancer (AJCC) TNM classification of malignant disease allows an accurate standardization of the staging of the malignancy which, in turn, should allow more consistency in the aeromedical disposition. In summary, T refers to the size of the primary tumor with subscripts to quantify the size; N with subscripts 0 or 1 identifies absence or presence of spread to the lymph nodes; and M with subscripts 0 or 1 identifies absence or presence of distant spread. Other classification systems for staging cancer exist and are useful. Further classification gives some indication of the virulence and potential for relapse.

BLADDER CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Tumors of the bladder may cause pain, urgency, chronic blood loss with development of anemia, or acute blood loss with obstruction by clot. Metastatic disease may cause pain from organ invasion and pathologic fractures.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case and rarely considered if disease extends beyond the epithelium.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended after initial, localized therapy, provided the tumor is confined to the epithelium. Localized transitional cell carcinoma generally responds well to treatment. Muscle invasive disease may require more extensive resection, which results in residual defects and may be incompatible with aviation duties. Cystectomy or the requirement for repeated catheterization results in disqualification with only rare waiver recommendations.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Oncology or Urology evaluations are required including:
  - Chest X-ray
  - Cystoscopy
  - Contrast studies of the entire urinary tract
  - CT scanning of the abdomen and pelvis.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Oncology or urology review is required annually for continuation of waivers. CT scanning of the abdomen and pelvis may be required periodically. Frequency of follow-up is dependent upon the severity of the disease and may vary from case by case as indicated upon review by the aeromedical oncology consultant.

TREATMENT: Surgical resection via transurethral approach is usually used for diagnosis and therapy of localized disease. BCG is often added for treatment of residual superficial disease. Surgery, radiation, and chemotherapy are used for more extensive disease. Ongoing therapy is not considered compatible with continued flying duties.

DISCUSSION: An estimated 50,000 new cases of bladder cancer occur in the U.S. each year, 75% of these new cases will occur in males. Most cases occur in the 50 to 70 year-old age group. However, carcinoma in situ or papillary noninvasive carcinoma are associated with a high probability of cure. Recurrence is primarily local. Bladder cancer most frequently results from the effect of carcinogens (smoking in the U.S.). This diffuse exposure results in a "field cancerization" where all the urothelium is at risk. Urologic expertise is critical to accurate staging (obtaining bladder muscle at biopsy, for example). Though risk of CNS recurrence is minimal, high risk of recurrence and the deforming surgeries done for more advanced disease make consideration for waiver difficult in all but the most local and superficial cases.

BREAST CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Advanced local disease and effects of surgery or radiation can affect comfort in restraint harness, and metastatic disease can cause pathologic fractures and involve the CNS. As in all forms of cancer, careful consideration must be given to the patient's overall psychological fitness for flying.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for applicants who have completed and recovered from therapy and are free of disease. ETP is not recommended for patients with any associated metastases.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for those who have completed and recovered from therapy and are free of disease. Waiver is considered on a case by case basis for patients with any associated metastasis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Surgical and/or Oncology evaluations are required including:
  - CBC
  - Chest x-ray
  - Bone scan
  - CT scan of the liver
  - Mammography of the opposite breast.
  - MRI scan of the brain is required in the presence of any suspected neurological disorder.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual Surgical and/or Oncology consultation, mammography, and chest x-ray are required. MRI scan of the brain, bone scan, and CT scan of the liver are required, if clinically indicated, as directed by the treating specialist(s).

TREATMENT: Surgery followed by radiation, chemotherapy or hormonal therapy based upon the extent of the surgery, tumor size and lymph node involvement, and patient's age. The aircrew member must be grounded during treatment. Tamoxifen, a common adjuvant treatment, is not an approved medication for aviation.

DISCUSSION: Breast cancer is slowly increasing in incidence and prevalence. The incidence of breast cancer is 100 per 100,000 females in any given year. The mortality rate of 28 per 100,000 has remained unchanged for over 50 years. At the time of detection, about half of breast cancers have metastasized to lymph nodes. Of those detected by screening, 42% are too small to detect by physical examination. Up to 80% of those detected by screening have negative axillary lymph nodes. Of patients with up to 3 affected nodes, 60% will relapse by 10 years. Even the earliest stage of breast carcinoma (Stage I) carries a relapse rate of 10% by 5 years. The average time to relapse is 3-4 years in patients with 1-3 involved nodes and 1-2 years if more nodes are involved, but may occur as late as 30 years after initial diagnosis. Aviators with a history of breast cancer should receive special attention at FDME for evidence of local recurrence at the surgical site or in the remaining breast tissue, occurrence in the opposite breast, bone pain, liver enlargement, neurologic and chest radiograph abnormalities, and be encouraged to report early, any new symptoms or findings. Immediate grounding and evaluation by specialists should be performed at the onset of any such abnormalities. From the point of view of comfort when wearing restraint harnesses, it may be necessary to delay return to flying duties until after breast reconstruction has been carried out in cases where simple mastectomy rather than "lumpectomy" has been performed. The site of metastasis is bone in 27% of cases, local in 26% and pulmonary in 21%. Screening for breast cancer with the "Breast Self-Exam" should be encouraged at FDME in all female aviators. Mammography screening is not required for FDME, or routinely for women under 50 years of age. A strong history would make earlier screening by mammography appropriate.

CERVICAL CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Minimal symptoms occur with limited disease. Later manifestations of the disease include anemia, weakness and weight loss. Distracting pain may be caused by local invasion.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for carcinoma in-situ, for those cases treated by laser or cautery, and for disease with no evidence of spread. ETP is recommended on a case by case basis for cases with associated metastases or those requiring radiation or surgery after 2 years following completion of therapy AND with no evidence of recurrence.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for carcinoma in-situ, for those cases treated by laser or cautery, and for disease with no evidence of spread. Waiver is recommended on a case by case basis for cases with associated metastases or those requiring radiation or surgery after 2 years following completion of therapy AND with no evidence of recurrence.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Gynecology and/or Oncology evaluations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Determined at time of initial treatment, normally by the treating subspecialist.

TREATMENT: Cervical cancer is treated with surgical techniques with early disease. Radiation is incorporated with invasive disease. Continuation of therapy is incompatible with flying status.

DISCUSSION: In the U.S., there are 12,900 new cases of invasive cervical cancer annually and it is responsible for approximately 7,000 deaths per year. For carcinoma in situ, there is an almost 100% survival rate with therapy. The 5-year survival rate for patients with localized but invasive carcinoma of the cervix is about 82% while for all groups as a whole it is 59%. Advanced cervical cancer is preventable when regular screening with exam and PAP smears is done. The history of multiple sexual partners and viral infection (Human papillomavirus and Herpesvirus type 2) should demand enforcement of screening.

COLORECTAL CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Carcinoma of the colon presents as an emergency (abdominal pain, obstruction, or perforation) in up to 30% of cases. Rectal carcinoma rarely presents as an emergency. Both can cause anemia sufficient to cause problems in flight if undetected.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis where all gross tumor was removed at surgery, adjuvant therapy has been completed, all side effects of therapy have resolved, and no evidence of tumor is detected at post-therapy evaluation. For cases where nodes are involved, waiver may be considered 2 years after completion of therapy. Patients with metastasis, residual disease, or treatment-related side-effects will not normally be recommended for waiver.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course including any post-operative therapies, results of restaging, and documentation of full recovery from effects of therapy is required.
- Histologic diagnosis and TNM tumor stage.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- CBC
- Liver enzymes
- PT and PTT
- BUN and creatinine
- Chest x-ray
- Computerized tomography (CT) to rule out extension to bone or other vital areas.
- Colonoscopy or adequate air contrast barium enema.
- Serum carcinoembryonic antigen (CEA) measurements are also required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: The best follow-up for these malignancies is not clear. CT scanning can pick up early liver lesions, but at the cost of substantial radiation exposure. MRI is also effective but expensive. Liver enzyme testing has very low sensitivity and need not be done. Carcinoembryonic Antigen (CEA) is the first evidence of recurrent disease in 50% of patient, and will eventually become positive in 60-94%. The following are required: 1) History and physical (with rectal exam and occult blood testing), CEA, (and, for patients with anastamosis in the pelvis, sigmoidoscopy) every 3 months for 3 years, then every 6 months for 2 years. 2) Postero-anterior and lateral chest x-ray every year. 3) Annual colonoscopy for 3 years, then every 3 to 5 years thereafter, if first three are normal. Discovered abnormalities will result in immediate grounding and referral to appropriate subspecialty physicians.

TREATMENT: Surgical exploration is the only curative treatment, and consists of resection of the tumor and surrounding lymph nodes, and search for metastatic disease. Pathologic evaluation of the surgical specimen for depth of tumor invasion and involvement of lymph nodes follows. Patients with colon cancer and positive lymph nodes should receive chemotherapy, generally for one year. Patients with rectal cancer with tumor through the bowel wall or with positive lymph nodes should receive combined chemotherapy and radiation therapy. Continuing treatment is incompatible with waiver. Potential treatment-related complications/side-effects include: Diarrhea, a common side-effect of surgery, radiation, and chemotherapy; post-operative constipation, less common and may be due to anastomotic strictures, disease recurrence, or adhesions; Chemotherapy may induce anemia, risk of bleeding from thrombocytopenia, and risk of infection from neutropenia, though generally, the incidence of these side-effects is low. Neurologic symptoms (dizziness and vertigo), effects on the eye (conjunctivitis), and nausea and vomiting may be seen during chemotherapy. Colostomy is not considered compatible with military aviation. Variations in atmospheric pressure may cause the colostomy bag to rupture.

DISCUSSION: Colorectal cancers account for more than 12% of all carcinomas and is the most common malignancy in the USA after lung, breast, and skin cancer. On average, 30% arise in the rectum, 30% in the sigmoid colon, and 30% in the proximal colon. The distribution of metastases is liver >60%, lung >50%, peritoneum 15% and bone 15%. There is a 20% incidence of coexisting benign or malignant neoplasms elsewhere in the colon. The 5-year survival rates for patients with Duke's stage A (limited to bowel wall, no nodes) is 90%; the corresponding rates for other stages are; stage B1 (not invading into the peritoneal cavity, no nodes) 80%; B2 (directly invading other organs or in the free peritoneal cavity, no nodes, no metastases) 65-75%; C1 (with positive nodes near the primary lesion) 50- 65%; and C2 (proximal node involved at point of ligation) 25-50%. Between 60 and 84% of metastases occur within the first 2 years after resection and can be predicted up to 6 months in advance by CEA estimation in those cases with CEA-secreting tumors. Up to 20% of single hepatic or pulmonary metastases can be cured by resection. Liver function tests (LFT) can remain within normal limits until quite advanced disease exists.

GASTROINTESTINAL TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Malignant tumors of the esophagus, stomach, and pancreas generally present in advanced stages or require significant surgery to render patients disease free. The most commonly presenting symptoms of discomfort, vague/nonspecific symptoms or occult/mild bleeding often prompt the search which finds the disease. Occasionally more serious complications may present. Esophageal carcinoma carries a risk of sudden hemorrhage and aspiration. Gastric carcinoma has the risk of incapacitating hemorrhage, anemia, or metastasis to brain, bone or lungs. Hemorrhage is also a risk in primary hepatic carcinoma. Pancreatic carcinoma is associated with a risk of developing diabetes mellitus and thrombophlebitis.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for early stage disease where patients are rendered disease free, have "normal" function of the remaining organ, and are fully recovered from surgery.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Gastroenterology and/or Oncology evaluation.
- Chest x-ray
- CT scan of mediastinum and abdomen.
- Endoscopy if indicated.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up as directed by the treating subspecialist. Other follow-up may be required as indicated by the aeromedical oncology consultant and may vary for each tumor type or organ affected.

TREATMENT: Surgical resection remains the only recognized means of cure, and it is frequently extensive. Radiation Therapy and/or Chemotherapy cannot be currently considered to add to surgical cure or to result in cures on their own.

DISCUSSION: The 5-year survival rates for the various carcinomas are as follows: esophagus 3%, stomach 12% (although 90% with early detection and resection has been reported), liver <1%, gall bladder 2½%, and pancreas 1%. Three disorders occur in pancreatic carcinoma that could affect aircrew efficiency. Diabetes mellitus occurs in 10-20% of patients. Thrombotic disorders including thrombosis of the splenic vein (15% of cases) or pulmonary embolism (10%) may also occur. Primary lymphoma of the bowel is discussed on page 5-3 under lymphomas. Colonic polyps are also considered separately.

HEAD AND NECK TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Local expansion and impingement on adjacent structures is the initial manifestation of most of these tumors. The extensive resection and resultant loss of structures vital for speech, swallowing (and control of secretions) and equipment fit will be important post-therapy concerns in the return of affected aviators to flight duties.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for those individuals whose tumors have been completely removed in a manner that has not disturbed the surrounding structures needed to perform aviation duty. Any resultant or residual impairment of speech, secretion control, or equipment fit are not considered favorably for waiver. The requirement for radiation therapy will significantly impair chances of waiver.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Documentation of return of function of "aviation-quality" speech, swallowing/control of secretions, and equipment fit are required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Determined by the ENT surgeon, with other involved specialists.

TREATMENT: Combined Chemo-Radiotherapy can result in retention of the larynx in 2/3rds of patients with laryngeal cancer, though results are not usually compatible with return to FFD. Surgical removal of the primary tumor, and further exploration of the neck based upon tumor size and clinical evidence of nodal involvement remains the standard for other malignant tumors of the Head and Neck. Radiation may add to cure, but only with more extensive tumors that are not likely to be waivered. Chemotherapy has no current role in adjuvant therapy in most tumors of the Head and Neck.

DISCUSSION: Peak incidence of laryngeal cancer occurs during the 6th and 7th decade of life with a male/female ratio of 9/1. Overall, early laryngeal cancer carries a 5-year survival of 76%, but localized glottic cancer has a figure of 90%. Recurrence is primarily local. Early laryngeal carcinoma (all sites) has a 5-year survival of 76%, while localized true vocal cord carcinoma has a 5-year survival of 90%. Laryngeal carcinomas are uncommon among nonsmokers, and tobacco use is incriminated as an etiology.

Cancer of the lower lip has the best prognosis, with a 10-year survival rate for early cases of over 95%. Most recurrence (to the lip in 43% and neck nodes in 43%) occurs in the first 2 years. Up to 12% of patients with lip cancer develop a second primary lesion, usually of the mouth or pharynx. Cancers of the upper lip carry a 5-year survival rate of 58-73%. Stage I (T1N0M0) and Stage II (T2N0M0) cancers of the oral cavity carry 5-year survival rates of 76% and 65% respectively but overall the 5-year survival rates are 25-35% for tongue, 20-40% for the floor of the mouth, 30-50% for cheek and 25% for oropharynx, palate and gingiva. Recurrence is primarily local, but up to 15% will metastasize while the local lesion is controlled. Up to 50% will manifest their metastasis within 9 months, and 80% will manifest it by 2 years. Between 15-35% of patients develop a second squamous carcinoma (head and neck 10-20%, esophagus 2-10%, bronchus 3-10%). Of those patients who have had a radical neck dissection, 30% develop a dropped shoulder because of sacrifice of the XI cranial nerve and weakness of the trapezius muscle; this may preclude flying duties. Pharyngeal cancers are usually diagnosed late and carry a 5-year survival of 33%.

HODGKIN'S DISEASE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: There is little risk of incapacitation with active disease or in those undergoing therapy. However, more advanced cases can cause dysfunction of multiple organ systems due to tumor invasion and bulk.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for those in which "early" disease was discovered, applicant has completed and recovered from therapy, and is considered disease free. ETP is not recommended for any cases with metastases.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis. The significant curability of Hodgkin's Disease makes waiver, especially for early disease, appropriate. Waiver for more advanced disease is complicated by ensuring that residual masses contain no active disease. Patients with IIB through IVB disease have a greater recurrence rate with up to 75% achieving median length of remission of 3½ years but can be considered for a waiver if free of disease, therapy is complete, and recovery from therapy is complete.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course including any residual toxicity/sequelae from radiation, chemotherapy, and/or surgery.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Complete pulmonary function testing, including DLCO.
- Echocardiogram, with ejection fraction, can support lack of pulmonary and cardiac toxicity.
- A neurological exam for the presence of peripheral neuropathy is also necessary.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An appropriate follow-up plan should be determined by the treating subspecialist.

TREATMENT: Treatment options include radiation and/or chemotherapy. Patients must be DNIF when undergoing therapy and until a positive waiver disposition has occurred. Patients treated with radiation are at risk for developing hypothyroidism and should have Thyroid Stimulating Hormone (TSH) tested yearly.

DISCUSSION: A bimodal age peak occurs with the incidence first peak in the mid to late 20s and the second peak in late adulthood. Because of the risks of long term complications of therapy, patients should be followed at least quarterly for the first 2 years, then at 6 month intervals for the next 8 years and then annually thereafter. After 3 years remission there is an 80% chance of permanent cure which rises to 96% after 5 years. The small risk for developing secondary tumors is enhanced when alkylator chemotherapy is added to radiation, and careful exam of the radiation port area during FDME in these patients is essential for detecting radiation induced skin cancer.

KIDNEY TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Early disease may present with significant bleeding and localized pain. There is a risk of metastasis to brain, with a risk of seizure, or to bone, with a risk of pathological fracture. Metastasis may also occur to the lung, mediastinum, skin and liver.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for Stage 1 tumors determined to be completely surrounded by normal kidney tissue, involving no lymph nodes, following completion and recovery of treatment. ETP is not recommended for other more advanced/extensive cases or any cases requiring nephrectomy.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for Stage 1 tumor determined to be completely surrounded by normal kidney tissue, involving no lymph nodes, following completion and recovery from treatment. Waiver is rarely considered for more advanced/extensive disease due to an unacceptable risk of developing CNS disease. Waiver is possible in select aircrew following nephrectomy if member is otherwise found fit for retention and meets all waiver requirements.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Oncology and Urology consultation/evaluations are required including:
  - CBC, liver enzymes
  - Chest x-ray
  - CT scan of abdomen and retroperitoneum
  - MRI scan of the brain
  - Bone scan

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual oncology and urology consultation is required. Further testing will vary and is dependent upon the type, stage of the tumor and the type of treatment and the recommendations of the patient's urologist or oncologist.

TREATMENT: Surgical removal of the primary tumor is the most effective treatment. Renal cell carcinoma remains the most unresponsive tumor to radiation and chemotherapy. These agents do not yet play a significant role in improving survival in patients with extensive local or metastatic disease.
Ongoing therapy is not compatible with flying status.

DISCUSSION: The most frequent traditional presentations are hematuria (56%), pain (38%), palpable mass (36%), weight loss and fatigue (27%), fever (11%), varicocele (2%), and incidental (27%). With localized disease, the 5-year survival rate is reported as 72%. The smallest tumors that exhibit minimal caliceal distortion and are surrounded by normal renal parenchyma have a good prognosis after surgery, but they are at risk for relapse. One third of patients already have disseminated disease at diagnosis, involving lung in 50% of cases, bone in 30%, liver in 30% and brain in 25%. Brain metastases from kidney are reported to be particularly susceptible to hemorrhagic degeneration with abrupt onset of headache and neurological difficulty. Hypertension occurs in about 30% of cases with renal cell carcinoma (hypernephroma) and a polycythemia syndrome occurs in 2-3%.

LEUKEMIA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Acute leukemias can cause overwhelming complications with bleeding and infection. Chronic leukemias are usually less catastrophic, though most will progress with time, and produce the same end results as their acute counterparts.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for a history of childhood Acute Lymphocytic Leukemia (ALL). ETP is not recommended for other leukemias.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for a history of ALL. Waiver is recommended on a case by case basis for non-aviator applicants and trained aircrew provided they have been free of symptoms and off treatment for 2 years. While there may be rare aviators with successful treatment and recovery from therapy that may return to flight duties, this is not currently a possibility for most.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting the entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- In patients who have had prophylactic CNS radiation, neuropsychology review and testing is necessary.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Oncology/hematology consultation is required at least annually for continuation of waiver. Other requirements may vary based upon the nature of the tumor, its stage and the treatment program. The requirement for frequent assessment may interfere with military mobility.

TREATMENT: Acute leukemias are treated with intensive therapy, and relapse in still all too common. All acute leukemias should undergo MEB. Treatment of chronic leukemias mirrors the aggressiveness of the disease at presentation, though curability is not yet possible in most cases. Ongoing therapy is not compatible with waiver. Patients who have had marrow transplant are not likely candidates for waiver, unless they are asymptomatic and on no medications.

DISCUSSION: Acute ALL is primarily a disease of childhood; chronic lymphocytic leukemia (CLL) is a disease of the aged; acute myelogenous leukemia (AML) occurs with similar frequency at all ages; and chronic myelogenous leukemia (CML) occurs most frequently in middle life. Sex differences are slight except in CLL, where male predominance is more striking. Adult ALL has a high relapse rate and long term survival is uncommon; CNS relapse occurs in 50% of cases although this figure is reduced to 5% with chemical or radiation prophylaxis. Although 60-80% of cases of AML go into remission, this is short (15 months on average) and there is a high relapse rate. 60-90% of AML will respond to induction chemotherapy, and median survivals at 3.5 years of 83%, 50%, and 23% are reported for age groups 25 or less, 26-45, and more than 45 years of age. High dose chemotherapy with hematopoetic progenitor support (i.e., bone marrow transplant, peripheral stem cell harvest, etc.) may have a place in some patients with AMI, but are not yet standard in the care of all AML patients. CLL spans the spectrum from indolent to aggressive disease, the development of a blast crisis is unpredictable and may be sudden. Therapy for CLL is currently directed at resolving symptoms or cytopenias; reproducible cure is not yet possible, and intense therapy may be no better than periodic therapy at prolonging life. Significant immune suppression and, paradoxically, autoimmune phenomenon (hemolytic anemia) may further complicate the clinical course. Hairy Cell Leukemia is a rare disease. 2-Chlorodeoxyadenosine (2-CdA) may be the treatment of choice, and long term disease-free survival is increasingly being appreciated. Significant, long-term immune suppression may follow the use of 2-CdA.

LUNG CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The major concern for aviators is the risk of cerebral metastasis with the development of seizures and neurologic compromise. In addition, bone metastasis could give rise to pathological fractures during emergency ground egress or ejection. There is also a possibility of diminished pulmonary function with compromised oxygenation, producing symptoms in-flight. Chest discomfort and/or hemoptysis is a presenting feature in 40% of cases and this discomfort may be exacerbated by the pressure of a restraint harness. Lack of energy and loss of interest in normal pursuits may impinge on flying ability or keenness to fly. Certain types of tumor may also be associated with neuropathies or endocrine disturbances. Small cell lung cancer commonly presents with paraneoplastic syndromes, and represent their own threats to aviation safety.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Aircrew with small cell lung cancer are not considered waiverable in any stage due to the significant risk of development of CNS disease. Only those primary non-small cell lung cancers of less than 2 cms can be considered for wavier. Many of these tumors will be denied waivers (for example those patients with adenocarcinoma) as they represent a greater than acceptable risk for developing CNS metastasis. Tumors larger than 2 cms, or those with positive lymph nodes also carry a greater than acceptable risk of developing CNS metastasis, and are not appropriate for wavier. Aviators more than 3 years out from initial diagnosis, fully recovered from therapy and free of disease, may be considered favorably for waiver action.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Oncology consultation/evaluation including:
  - Chest x-ray
  - Pulmonary functions testing
  - MRI of the brain

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Specific follow-up requirements will be depend upon the nature of the tumor, its stage, the treatment program, and the recommendations of the treating oncologist.

TREATMENT: Surgical treatment is the only current curative therapy for non-small cell lung cancer. Radiation therapy and chemotherapy is used in limited small cell lung cancer, with chemotherapy alone for extensive disease.

DISCUSSION: Lung cancer accounts for 19% of all cancer in men, compared to 11% in females. Overall, lung cancer has a 5 year survival rate of 9%; between 17-20% survive one year after diagnosis. Even those who have curative surgery for localized cancer of the lung and in whom all disease is confined to the lung without any spread to any lymph nodes have a 5 year survival rate of only 42% and a 10 year survival rate of 16-18%. The 5 year survival rate for resected Stage I carcinoma has been reported as 70%. However, most recurrences are distant suggesting that micrometastasis has already occurred by the time of diagnosis. The rate of cerebral metastasis for the varying types of lung carcinoma have been reported as ranging from 14-30%. Small cell lung cancer has a 15%, 3 year survival with limited disease, and less than 3% with extensive. Chest irradiation, used as therapy in small cell lung cancer, may result in the development of a second primary (most commonly nonsmall cell lung cancer) at the rate of 4.4%/year.

MALIGNANT MELANOMA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The ultimate aeromedical concern is the risk of an in-flight incapacitating event. Failure to recognize early disease will compromise cure and result in the loss of the aviator. Advanced disease can affect many organ systems, especially the Central Nervous System (CNS), with obvious risks to aviation safety.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for lesions less than 2 mm in depth and that do not show lymph node involvement or distant metastases (AJCC stage IA and IB). For lesions between 2 and 4 mm, without nodal involvement, there must be a 5 year disease free interval prior to ETP consideration (AJCC stage IIA and IIB). Lesions deeper than 4 mm, or that involve lymph nodes or distant metastases, will not generally be recommended for ETP since the risk of CNS disease recurrence is greater than acceptable limits (AJCC Stage IIC, IIIA/B/C, and IV).

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for lesions less than 2 mm in depth without evidence of lymph node involvement or distant metastases. For lesions between 2 and 4 mm there must be a 5-year disease free interval prior to waiver consideration (AJCC Stage IIA and IIB). Lesions deeper than 4 mm, or that involve lymph nodes or distant metastases, will not generally be recommended for a waiver since the risk of CNS disease recurrence is greater than acceptable limits (AJCC Stage IIC, III A/B/C, and IV).

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course including results of surgery, including lymph node involvement and metastatic work up. Metastatic work up for localized lesions should include an alkaline phosphatase, LDH and CXR. For Stage IIA and IIB lesions a sentinel node analysis is required prior to consideration for return to flight status.
- Complete mucocutaneous examination performed by a dermatologist.
- Neurological and lymph node exam (performed by the flight surgeon).
- CXR.
- Tissue examination performed by a dermatopathologist that must include a comment about the presence or absence of ulceration and the Breslow depth. A simple Clark's level description is not sufficient. If no dermatopathologist is available then tissue sample should be sent to AFIP for diagnosis.
- Tumor board results and recommendations.
- MEB recommendations if MEB was required.
- Any associated neurologic abnormalities require Neurology consult and MRI of the brain.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Aviators must examine their excision site and skin monthly for signs of new lesions. Flight surgeons must take an active role in educating the aviator on how to do this exam and what to look for. For Stage IA a dermatology exam every 6 months for 2 years and then every year is recommended. For Stage IB a dermatology exam every 6 months for 3 years and then every year is recommended. A dermatology consult should be obtained every year. For Stage II and III a full mucocutaneous exam every 6 months for 5- years and then annually is recommended. A dermatology consult should be obtained every year. The dermatologist or other subspecialist may direct additional studies.

TREATMENT: Surgical excision of the primary lesion is the primary means of treatment. Lymph node dissection may play a role in improving survival in some stages, but should not be done simply to increase the chance of waiver approval.

DISCUSSION: Two different studies found tumor ulceration the second most powerful prognostic indicator. The presence or absence of ulceration on histology heralds a high risk of metastases and its presence upstages the prognosis of all lesions. Patients with the excision of tumors < 1.0 mm without evidence of ulceration are considered cured after the appropriate margin is performed at the area of biopsy and there is a careful dermatopathologist review of the excision with comment on clear histological margins. These lesions should be reviewed regularly because of the propensity for the melanoma to recur at the original site or elsewhere. The aviator should be educated to look for pigmented lesions in addition to reporting nodular developments or the

development of amelanotic lesions in and around the area of the initial biospy. Tumors of the head, neck, trunk, hands and feet have a worse prognosis than those on the arms and legs and should be monitored more vigilantly. The 10 year survival rate reported by the American Joint Committee on Cancer Staging (AJCC) for tumors without evidence of ulceration is 87.9 percent for lesions with a depth < 1.0mm, 80.0 percent for tumors 1.0 to 2.0mm, 63.8 percent for tumors 2.0 to 4.0 mm, and only 53.9 percent for those >4.0 mm. Lymphatic mapping and sentinel lymphadenotomy are technological advances that allow the more accurate staging of melanoma. The AJCC recommends all patients with tumors > 1.0 mm in depth have pathologic nodal staging with lymphadenectomy. Newer technologies are being investigated for the staging of malignant melanoma and include reverse transcriptase polymerase chain reaction, positron emission tomography scanning, and the use of antimelanoma antibodies. These modalities are still being investigated and are not required for submission with a waiver request.

NEUROLOGICAL TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Normal neurologic function is critical to aviation safety, and tumor disturbance may span the range of subtle loss of fine motor function to catastrophic seizure or loss of major function.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended when the tumor is clearly small, benign, there is no risk of recurrence, and a neurological exam is completely normal. Those with tumors of the spinal cord may be granted a waiver provided there is no recurrence and any remaining neurological sequelae are acceptable 5 years after therapy. Waiver may be granted for tumors of the peripheral nervous system if there is no appreciable impairment of function. In general, the likelihood of waiver is inversely proportional to potential for tumor recurrence. All tumors involving the brain or meninges, irrespective of therapeutic outcome, are permanently disqualifying in class 2, 3 or 4 applicants and require aeromedical suspension in trained aircrew. Please also see Pituitary Tumors APL and Acoustic Neuroma APL as applicable.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Detailed neurologic exam/evaluation by a neurologist is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Work-up may vary upon the type and staging of the tumor, the organ infected, the treatment regimen, and is normally determined by the consulting Neurologist/Neurosurgeon.

TREATMENT: Complete surgical removal is the preferred means of therapy. A history of CNS radiation is incompatible with continued aviation duties.

DISCUSSION: The spectrum of neurologic tumors is broad. Terms such as "benign" mean little with tumors that, despite the lack of "invasive" potential, continue to grow and compress surrounding structures. The tremendous variation of neurologic tumors in their natural history, the lack of ability to "get clear margins", the recurrence potential even for "benign" tumors, and the multiple potential deficits therapy may induce and the criticality of an intact neurologic system for safe aviation makes clear guidance for each tumor type impossible. Fifteen thousand new cases of primary brain tumors and more than 4,000 new spinal cord tumors occur each year. Twenty to 40% of brain tumors are metastatic lesions from lung, breast, kidney, melanoma, and the gastrointestinal tract. Gliomas comprise 50% of all primary brain tumors, occur most commonly in the cerebrum, and most frequently between the ages of 40 to 74 years. Approximately 33% of all patients with malignant brain tumors experience unexpected and incapacitating seizures. Survival rates for malignant gliomas approach 20% after one year. Survival rates for other tumors range up to 90% but in most there is a greater than 10% chance of recurrence. Those tumors with the best prognosis (i.e., the least chance for subsequent seizure disorders or loss of neurologic function) are subtentorial, axial, and encapsulated. Those with the greatest chance of subsequent seizure disorder are supratentorial, extra-axial, and unencapsulated.

NON-HODGKIN'S LYMPHOMA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Early disease usually presents little risk to aviation, though advanced disease can cause dysfunction of multiple organ systems due to tumor invasion and bulk.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended after successful treatment of aviators with malignant lymphoma, diffuse, large cell, especially stage I or II, or low grade stage I lymphomas. Cure of other types of lymphomas are not yet a reality (most low grade lymphomas), or involve therapy of such intensity (i.e., lymphoblastic, Burkitts-type, etc.), that waiver is inappropriate.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Oncologist and hematologist consultation together with report of recent CT scans of the chest and abdomen.
- Bone marrow biopsy may be indicated.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up will vary and is normally determined by either the treating subspecialist or the Aeromedical Oncology Consultant.

TREATMENT: Ongoing treatment is not compatible with flying.

DISCUSSION: Each year, approximately 31,700 patients in the U.S. are diagnosed as having non- Hodgkin's lymphoma, and about 16,500 patients die of this disease. Extranodal presentation occurs in 20-30% of patients. Primary lymphoma of the stomach represents up to 10% of all gastric cancers; the presenting symptom is pain in 80% of cases and hemorrhage in 20%. The non-Hodgkin's lymphomas represent an extremely diverse group of malignancies. Current classification schemes have not yet incorporated advances in molecular biology for characterization, and, especially for T-cell lymphomas, are excessively complicated and diagnoses are often not reproducible among different pathologists. Paradoxically, the more aggressive tumors are the most curable, and the indolent lymphomas, though often characterized by years of symptom-free survival, are ultimately progressive and fatal.

OVARIAN CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Abdominal enlargement secondary to ascites may cause discomfort with restraint harness. Even with advanced disease, however, ascites and pain may be the only prominent finding.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for early stage 1A or B following completion and recovery from therapy. ETP is not recommended for more advance/extensive disease. ETP is not required for benign ovarian tumors that don't impact safe aviation operations. Please see Leiomyoma of the Uterus APL as applicable.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for early stage 1A or B following completion and recovery from therapy. Waiver may be considered for aircrew with higher stage for those rendered free of disease following recovery from surgery and/or chemotherapy. Most patients present with advanced disease, and even with surgical debulking and chemotherapy, will relapse, thus waiver will not be recommended in these individuals. Waiver is not required for benign ovarian tumors that don't impact safe aviation operations. Please see Leiomyoma of the Uterus APL as applicable.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Gynecology and/or Oncology consultation.
- CT scan of the abdomen, retroperitoneum and pelvis.
- Intravenous pyelogram if recommended by evaluating/treating specialist.
- Negative tumor markers may also be helpful.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Determined by medical and gynecologic Oncologists.

TREATMENT: Surgical debulking of tumor is critical. Post-operative chemotherapy appears to enhance the chance of remaining disease free in those patients with large tumors or intra-abdominal spread. Hormone replacement therapy after bilateral oophorectomy is acceptable.

DISCUSSION: There are 20,000 new cases of ovarian cancer diagnosed annually. A female born in the U.S. has about 1.4% chance of developing ovarian cancer within her lifetime. Almost 75% of ovarian tumors are benign. Of those with malignant disease, 80% will have metastases by the time of diagnosis and partly as a result of this, yearly mortality in ovarian cancer is approximately 65% of the incidence rate. Metastasis of breast or colonic carcinoma to the ovary is more common than primary carcinoma of the ovary. The 5 year survival of early ovarian carcinoma can reach 90%. CA-125 antigen assay is most useful in the detection of treatment failure and recurrence of epithelial ovarian cancer. AFP and BCG are useful in following response to therapy and recurrence of germ cell tumors that are antigen-positive, i.e., endodermal sinus tumor, embryonal carcinoma, and choriocarcinoma. Screening for ovarian carcinoma is currently not productive. Female aviators with a marked family history of ovarian cancer should consider innovative screening protocols, and prophylactic oophorectomy, though even this surgery does not absolutely eliminate the risk of developing this malignancy.

PITUITARY TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The major complications of pituitary tumors arise from enlargement. Hormonal hypersecretion may cause heat intolerance, diabetes mellitus, diabetes insipidus, hypercalciuria, hypothyroidism, nerve entrapment syndromes, hypertension, cardiomyopathy and spondylosis. Local pressure effects of the tumor can cause headache, cranial nerve palsies and visual defects.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis following completion and recovery from therapy in those with zero sequelae from either the primary disease or required treatments. ETP is not recommended in those with Diabetes insipidus resulting from the original tumor or following surgery/radiotherapy.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended following completion and recovery from therapy. Waiver is possible in select aircrew with minor residual deficits that are unlikely to compromise aviation safety. Waiver is not recommended in those with Diabetes insipidus resulting from the original tumor or following surgery/radiotherapy.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Endocrinology consultation
- Postoperative visual field studies are required for initial waiver.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up will be dictated by the treating subspecialist. Annual endocrinology consultation is also required.

TREATMENT: Surgical removal of the tumor and insertion of radiotherapy implant are both compatible with waiver if there are no complications or sequelae. Treatment with bromocriptine is also waiverable once the dosage is stable and the initial side effects have disappeared.

DISCUSSION: Cure rates of up to 80% for anterior pituitary tumors resulting in acromegaly can be expected with any of the treatment modalities. Prolactinomas have an even better success rate. There is no increased risk of seizure after normal trans-sphenoidal resection of a pituitary adenoma. Improvements in visual loss depends on the duration and extent of pretreatment visual loss but overall can be expected in 50% to 95% of patients.

PLASMA CELL DYSCRASIAS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Plasma cell dyscrasias encompass a diverse spectrum of diseases with varying clinical manifestations. Those that secrete the amyloid proteins result in diffuse organ damage due to these abnormal proteins. The "malignant" disease (multiple myeloma) infiltrate and crowd out bone marrow elements and suppress the immune system. Abnormal proteins can also result in intravascular sludging (Waldenstrom's and Heavy Chain Disease), organ damage, immune suppression, and infection.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew for soft tissue plasmacytomas that are eliminated by treatment. Benign Monoclonal Gammopathy may also be considered for waiver provided that the monoclonal spike comprises <2 g/dl of protein, there are fewer than 5% plasma cells in the bone marrow, the serum viscosity is normal, and there is no hematopoietic compromise or osteolytic lesions. Most other associated conditions/processes are progressive, incurable, not easily controlled, and are thus not candidates for waiver. These include amyloidosis associated with plasma dyscrasias, heavy chain disease, cold agglutinin disease and cryoglobulinemia.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Oncology/hematology consultation results.
- MEB recommendations if MEB was required.
- Tumor Board results and recommendations.
- An extensive restaging post-treatment to ensure all of the organs/organ systems that may be affected by the process in question are uninvolved must be included in initial waiver packet.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Appropriate follow-up will be established by the treating subspecialist. Those aviators granted waiver must anticipate evaluation every three months for life.

TREATMENT: Treatment will be determined by the type of plasma cell dyscrasia. Continuing therapy is not compatible with waiver.

DISCUSSION: The risks of benign monoclonal gammopathy are of progression to multiple myeloma and of increased serum viscosity leading to neurological impairment. The median survival for patients with gamma heavy chain disease is 12 months. Neuropathic involvement is insidious and, although usually a condition of older patients, has been reported in those as young as 23. Alpha heavy chain disease is associated with progressive and fatal abdominal lymphoma. There is a risk of sudden hemolysis in cold agglutinin disease and a risk of sudden vascular accidents and neurological dysfunction in cases of cryoglobulinemia. Up to 60% of patients with myeloma present with skeletal pain while anorexia and depression associated with hypercalcemia are present in 30%. About 10% present with paraplegia while others exhibit mental impairment or visual disturbance resulting from hyperviscosity. Amyloidosis is encountered in 5-10% of myeloma patients. Two year survival ranges from 9-76% depending on the stage of the disease at the time of diagnosis.

PROSTATE CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Growth of the prostate cancer into the urethra or bladder neck may result in obstructive or irritative voiding symptoms (i.e., hesitancy, urgency, nocturia, decreased force of the urinary stream, and intermittency, etc.) that can interfere with aviation duties. Metastatic disease can occur affecting bony sites, especially the spine, with resultant impairment or incapacitation secondary to pain or paraplegia.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis provided the applicant has undergone treatment and is at least one year out from therapy.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for individuals at least 6 months out from therapy provided they are able to perform all duties without discomfort, they have regained full bladder continence (does not require pads/diapers), they have no other side effects from treatment(s) affecting conduct of flying duties, and they have an acceptable PSA as defined by treating specialist recommendations and/or current clinical practice guidelines.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course including all applicable labs (i.e. pre and post-operative PSAs, UAs, renal function, etc.) and discussion concerning any physical limitations, bladder continence/function, and any requirement for ongoing medication(s)/treatment(s).
- Tumor board results and recommendations.
- MEB recommendations if MEB was required.
- Results from Oncologist and/or Urologist evaluations including required follow up frequency.
- Bone scan/MRI if recommended by Urologist.
- Surgical and pathological reports (histology/Gleason grade).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up will be per urology/oncology recommendations.

TREATMENT: All forms of therapy are compatible with waiver. Present therapeutic options for the treatment of clinically localized prostate cancer include (1) watchful waiting/deferred therapy; (2) definitive local therapy, radical prostatectomy, and external beam radiation therapy; or (3) interstitial seed radiation therapy and cryosurgery. Each form of therapy is associated with undesirable risks and side effects.

DISCUSSION: Over their lifetime, 15 percent of the United States men eventually will be diagnosed with prostate cancer, three-fourths of whom will be diagnosed after age 65. A man in the United States has a 3 percent chance of dying from prostate cancer. Because many prostate cancers grow slowly, many men diagnosed with prostate cancer will die of other causes, especially men older than 65. Considerable debate is ongoing concerning the best mode of therapy for each particular stage of carcinoma of the prostate. The rational selection of treatment options often places the patient and treating physician in the dilemma of attempting to maintain quality of life while increasing the duration of survival. Many older men with carcinoma of the prostate have other comorbid illnesses that may pose a greater threat than prostate cancer to their overall survival. Prostate cancer rarely causes symptoms early in the course of disease because the majority of adenocarcinomas arise in the periphery of the gland distant to the urethra and other pelvic organs. The presence of symptoms as a result of prostate cancer suggests locally advanced or metastatic disease such as that which occurs from bony and neurologic involvement of the spine.

SKIN CANCERS (OTHER)

INFORMATION ONLY: Yes, a single occurrence of either squamous cell or basal cell carcinoma that has been adequately treated, that does not require extensive skin grafting, and that does not interfere with the wear of aviation uniforms/equipment, can be listed IO. Any subsequent recurrence requires waiver/ETP action.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The lesion may be irritated by the wearing of protective equipment or, if it is on the face, may prevent adequate mask seal.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for cases of squamous cell carcinoma and/or basal cell carcinoma not meeting IO criteria above, depending on the stage, mode of therapy, efficacy of therapy, and complications from treatment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for cases of squamous cell carcinoma and/or basal cell carcinoma not meeting IO criteria above, depending on the stage, mode of therapy, efficacy of therapy, and complications from treatment.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- Pathology report with histology is required.
- MEB recommendations if MEB was required.
- Dermatology consultation is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Requirements may vary based upon the nature of the tumor, its stage, and the treatment program. Annual dermatology consultation is required.

TREATMENT: The aircrew member should be grounded during treatment and until positive waiver disposition from the waiver authority has been granted.

DISCUSSION: Basal and squamous cell carcinomas are the most common types of malignant skin disease. Actinic keratoses (solar keratoses) are extremely common, but only a small fraction progress to frank cancer. The incidence of metastasis varies. The incidence of metastatic basal cell carcinoma is reported as less than 0.1%. Primary cutaneous squamous cell carcinomas have a secondary rate of 3%, compared to 11% with mucocutaneous lesions and 10-30% with tumors secondary to inflammatory and degenerative processes. Metastases tend to be in the regional lymph nodes.

TESTICULAR TUMORS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Bulky disease may cause varying discomfort, especially back pain. Pulmonary and rare CNS metastasis may cause hypoxia and seizures, respectively, though these are signs of advanced disease. Aviators returning to non-high performance aircraft will be evaluated by the Local FS, assessing risks of tumor recurrence and potential toxicity from chemotherapy. If member never developed Bleomycin pneumonitis during therapy, then there are no restrictions from altitude chamber or other sporadic oxygen exposure.

Note: If the aircrew member does develop Bleomycin pneumonitis during therapy, then those aircrew are prohibited from ever being exposed to high (over 40% FiO2) concentrations of oxygen. This precludes chamber rides or operations in aircraft with oxygen use as a part of the mission thus possibly necessitating permanent aeromedical suspension depending on the aviation MOS and airframe in question.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis in applicants determined to be free from disease and that have recovered from surgery, chemotherapy, and/or radiotherapy with no aeromedically significant sequelae. Specialist follow up requirements must not be so frequent that they result in significant lost duty time or deployment/assignment limitations for favorable ETP consideration.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for individuals determined to be free from disease and that have recovered from surgery, chemotherapy, and/or radiotherapy with no aeromedically significant sequelae. Specialist follow up requirements must not be so frequent that they result in significant lost duty time or deployment/assignment limitations for favorable waiver consideration.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Oncologist and/or Urologist evaluation documenting absence/acceptable levels of tumor markers.
- MRI scan report and/or any other specialist recommended imaging.
- If Bleomycin-based chemotherapy has been used, a complete set of pulmonary functions testing is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up frequency, tumor marker lab testing, and any required imaging for all testicular tumors will be guided by specialist recommendation and appropriate clinical practice guidelines.

TREATMENT: Treatment involves surgical excision of the primary tumor, and extensive surgery may be required with NSGCT for residual masses after chemotherapy. Chemotherapy is used for residual disease in NSGCT. Radiotherapy is used adjunctively, and/or chemotherapy, for extensive disease in seminoma. Treatment with Bleomycin-based chemotherapy may result in permanent suspension of flight duties as noted above. Testicular tumors represent one of the few curable solid tumors. The care of these patients, however, requires absolute expertise to maximize this likelihood of cure. Aircrew with these tumors must receive care at institutions skilled in the multidisciplinary approach required for this disease process.

DISCUSSION: Testicular tumors comprise 1% of all tumors in men and 0.1% of all cancer deaths. Seminoma (40% of the total) has a peak incidence at 30 years of age. The results of treatment, particularly for seminomas, are impressive. In Stage 1 tumors, orchiectomy alone leads to relapse in 26% in 2 years (the vast majority occurring in the first 9 months) but orchiectomy with retroperitoneal radiotherapy or dissection gives a relapse rate of 5-16% at 2 years, and approaches 100% survival at 5 years after chemotherapeutic salvage of those who relapse. Overall relapses after 2 years are uncommon. On the other hand, non-seminomatous tumors (i.e., embryonal carcinoma, teratocarcinoma, and teratoma, etc.) have a peak incidence at 20 years. Approximately 33% are Stage 1 at presentation (disease confined to the testis). The risk of relapse of non-seminomatous tumors after treatment depends on stage (14% when limited to the body of the testis, 47% when extending through to the tunica albuginea), the type (teratoma <teratocarcinoma <embryonal carcinoma) and whether or not there is vascular/lymphatic invasion.

THYROID CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: There is a substantial risk of hypothyroidism after surgical treatment. Local invasion and/or surgical damage may rarely result in injury to the parathyroid glands and/or recurrent laryngeal nerves.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for successfully treated papillary or follicular carcinoma of the thyroid. ETP is not recommended for medullary or anaplastic thyroid tumors due to their poorer prognosis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for successfully treated papillary or follicular carcinoma of the thyroid. Waiver is not recommended for medullary or anaplastic thyroid tumors due to their poorer prognoses.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Internal medicine or Endocrinology evaluation.
- Confirmation of euthyroid status and evidence of TSH suppression are also needed for initial waiver action.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Continuation of waiver requires annual submission of Internal medicine/Endocrinology consultation to include complete thyroid function testing.

TREATMENT: Surgery is the preferred form of therapy. Some authorities prefer to use radioiodine treatment after surgery.

DISCUSSION: Thyroid cancers are for the most part characterized by slow growth, delayed symptoms, and low morbidity and mortality. Thyroid nodules are quite common in our population, occurring in about 4%. Fortunately only few of these nodules prove to be malignant at time of biopsy. Generally, men over 40 years old and women over 50 have a worse prognosis. Another poor prognosticator is a primary tumor over 5 cm. Papillary carcinoma is slow growing, spreading locally to the strap muscles of the neck, lymph nodes and occasionally trachea but it may metastasize to lungs or bone. Some 20% are said to be multicentric. Overall 5/10 year survivals of better than 95 -90% can be achieved. Because the growth rate is slow and there is no particular trend to early recurrence (recurrence rates from 10-24% have been reported), patients should be able to return to flying as soon as they are euthyroid. Medullary carcinoma is often associated with the MEN II syndromes and routine screening should be conducted for the early detection of these syndromes. Follicular carcinoma tends to metastasize to lungs and bone rather than infiltrate locally. A major determinant of outcome is the extent of microinvasion. The usual treatment of choice is total thyroidectomy because there is an 87.5% chance of the opposite lobe containing microscopic follicular carcinoma. For patients treated with total thyroidectomy and radioactive iodine, the death rate at 5 years is quoted as 11%, rising to 30% when treatment is by incomplete thyroidectomy alone. This can be largely explained by the fact that only total thyroidectomy allows subsequent accurate localization and treatment of distant metastases by I-131. Medullary carcinoma and anaplastic carcinomas have a 10 year survival of 50 and essentially 00%, respectively.

MEN II Syndromes: Multiple endocrine neoplasia (MEN) syndromes arise from Amine Precursor, Uptake, and Decarboxylation (APUD) neuroendocrine cells, and are inherited as an autosomal dominant trait.
MEN 2a Syndrome: MEN type 2a involves patients with virtually a 100% incidence of medullary thyroid carcinoma (MTC), a 50% incidence of clinically significant, usually bilateral pheochromocytomas, and a lesser incidence of parathyroid adenomas with associated hyperparathyroidism.
MEN 2b Syndrome: Men type 2b patients also have 100% incidence of MTC and frequent pheochromocytomas. They have a characteristic physical appearance due to multiple neural defects including mucosal neuromas of the eyelids, lips, and tongue. These neural abnormalities within the gastrointestinal tract often lead to diarrhea, constipation, or megacolon. Patients with MEN 2b seldom have hyperparathyroidism.

UTERINE CANCER

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Some cases develop anemia but there are otherwise very few specific aeromedical concerns in carcinoma of the uterus.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended after a minimum of 3 months following hysterectomy provided that there has been a full recovery and there is no indication of metastases. ETP is not recommended for cases of disseminated disease.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended after a minimum of 3 months following hysterectomy provided that there has been a full recovery and there is no indication of metastasis. Waiver may be requested 2 years after treatment of disseminated disease provided there is no evidence of sequelae or recurrence.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- Tumor Board results and recommendations.
- MEB recommendations if MEB was required.
- Gynecology and/or Oncology evaluation.
- Results of Intravenous pyelogram and/or CT scan of the abdomen, retroperitoneum, and pelvis unless otherwise indicated as unnecessary by evaluating/treating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual Gynecology and/or Oncology consultation are required.

TREATMENT: Aircrew are grounded during treatment, during the immediate postoperative period and until positive waiver disposition is granted by the waiver authority.

DISCUSSION: Endometrial carcinoma is the most common of the cancers of the female genital tract in the U.S. Thirty-four thousand new cases are diagnosed annually, but an effective screening program has reduced the death rate to 3,000 women annually. The median age at onset is 61, however, 2.9% - 14.4% of patients with endometrial cancer are less than 40 years of age. The earliest truly invasive carcinoma of the endometrium has a cure rate of 90%. Spread is usually slow and recurrence is usually local for long periods of time. However, recurrence for all stages is unpredictable. The incidence of leiomyosarcoma arising in uterine fibroids has been reported to be 0.1-0.6% with a 5-year survival rate of 31%.

MEDICATION WAIVERS

INTRODUCTION

AEROMEDICAL CONCERNS: Aircrew members should be evaluated for restriction from aviation duties when initiating any medication and also be advised of potential side effects. Often the underlying or associated condition is disqualifying in addition to specific medication(s). In some instances, the medication may be “waiverable” but the medical condition necessitates aeromedical suspension or referral to an MEB. Please see “Waivers” section for all new medication requirements.

WAIVERS: Medications are designated Class 1, 2, 3, and 4. Medications not on this list (or not specifically stated to be acceptable by USAAMA) are currently incompatible with the aviation environment or little information of its safe use in the aviation environment exists. New medications are reviewed constantly and ETP/waiver requests are considered on a case by case basis but often take a great deal of time. Flight providers are encouraged to use the medications on this list to avoid lengthy delays in the waiver action process.

NOTE: It is not possible to include every new medication in a policy letter due to the speed of new medications entering the market. Because of this reality, USAAMA enforces some general rules and requirements when a local aeromedical provider is interested in determining waiver eligibility of any new medications. ETP/waiver action will only be favorably recommended when a new medication meets ALL the following criteria:

- New medications must have been FDA approved for a minimum of 3, and preferably 5 years, prior to ETP/waiver consideration.

- New medications must be used specifically for the condition FDA approval is for.

- Use of any medications not FDA approved for the condition they are being used for, will not be favorably recommended for ETP/waiver with 2 exceptions:
    - Use is well established as the “standard of care” as dictated by clinical practice guidelines or professional society recommendations.
    - Use is stated as medically necessary by an appropriately trained physician specialist.

- The medication must be effective for the condition being treated. Burden of proof of efficacy is on the submitting aeromedical provider.

- The medication must be well-tolerated with no aeromedically significant side effects after a satisfactory length of continual dosing/intake (generally a minimum six medication half-lives).

- While not specifically disqualifying, those medications that require refrigeration, are injectable, require unusual/difficult to obtain labs, cause immune suppression, or that otherwise negatively impact retention, assignment, or deployments, will generally not be recommended favorably.

Class 1: Over the counter medications which may be used without a waiver. Occasional and infrequent use of these over the counter medications does not pose a risk to aviation safety or violate the intent of AR 40-8, Temporary Flying Restrictions Due to Exogenous Factors, when a flight provider is not available. These are approved for acute non-disqualifying conditions and do not require ETP/waiver action. Use in accordance with standard prescribing practices.

Class 2: These medications require a prescription and may be used short term or chronic use under the supervision of a flight provider without a waiver. CAUTION: The underlying medical condition may be disqualifying and require an ETP/waiver. These medications must be noted annually on the flight physical and the flight provider must comment on usage and dosage. First time use requires an initial grounding period of ~ six medication half-lives to ensure the aircrew member is free of significant side effects. Subsequent use does not require grounding.

Class 3: These medications require a prescription and typically receive favorable ETP/waiver recommendation for treatment/control of certain chronic conditions. The associated disease may also require ETP/waiver. An initial grounding period is required as in Class 2, followed by temporary clearance pending ETP/waiver in most cases.

Class 4: Any use of these medications necessitates grounding the aircrew member and chronic use is not waiverable for aviation duty. Short term use is acceptable is some cases (i.e., pain medication following a dental procedure, muscle-relaxer course following spasm, etc.) and ETP/waiver may or may not be required for the associated/underlying diagnosis.

Supplements and Herbals: A majority are prohibited for aviation duty as many are used in cases of self-diagnosis and self-treatment. In many cases, studies do not reveal significant clinical efficacy. Some preparations may be used under the guidance of the flight provider. See the Supplements and Herbals APL for more information.

INFORMATION REQUIRED:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome. Essential information pertaining to the medication includes dosage, frequency of use, any side effects, and summary of the medical condition.

FOLLOW-UP: Appropriate follow up is predicated upon the specific medication and the underlying medical condition. These requirements are listed under the applicable APL(s).

TREATMENT: N/A.

DISCUSSION: Medication side effects are very hard to predict. They occur with irregularity and often differently in any given population group. The side effects relating to central nervous, cardiogenic, ophthalmologic, and labyrinthine systems are understandably the most troubling in the aircrew member. One must also consider the unique environmental considerations present in the aviation environment (i.e., G- forces, hypoxia, pressure changes, noise, heat, cold, acute and chronic fatigue, prolonged immobilization, and forced dehydration, etc.) and how these effect the medication or the underlying medical condition.

CLASS 1: OVER THE COUNTER MEDICATIONS

AEROMEDICAL CONCERNS: Self-medication in anyone on flight status is prohibited by AR 40-8. Over the counter (OTC) medications frequently are combination medications, with one or more components contraindicated for safety of flight or aviation duty. Many OTC medications do not provide a listing of ingredients on the package and often give only vague information on side effects.

WAIVER: The OTC medications listed below are Class 1 medications. If a flight provider is not immediately available, the below listed medications can be used on a short term basis until a flight provider can be seen for appropriate evaluation and treatment. Combination medications are acceptable only when each component in the combination is separately acceptable. Any prohibited component makes the combination a prohibited medication.

Antacids: (Tums, Rolaids, Mylanta, Maalox, Gaviscon, etc.).
Antihistamines: Loratadine (Claritin)-Short term use by individual aircrew is authorized but the aircrew member must report use of this medication to the flight provider as soon as possible. The concern is not only with the use of this medication but also the underlying problem that the individual is self-treating (e.g. allergic rhinitis) and the aeromedical implications of the diagnosis.
Artificial Tears: Saline or other lubricating solution only. Visine or other vasoconstrictor agents are prohibited for aviation duty.
Aspirin/Acetaminophen/NSAIDs: When used infrequently or in low dosage.
Cough Syrup Or Cough Lozenges: (Guaifenesin [Robitussin plain]). Many OTC cough syrups contain sedating antihistamines or Dextromethorphan (DM) and are prohibited for aviation duty.
Decongestant: Pseudoephedrine (Sudafed) or Phenylephrine. When used for mild nasal congestion in the presence of normal ventilation of the sinuses, and middle ears (normal valsalva).
Pepto Bismol: If used for minor diarrhea conditions and free of side effects for 24 hours.
Multiple Vitamins: When used in normal supplemental doses. See Supplements and Herbals APL.
Nasal Sprays: Saline nasal sprays are acceptable without restriction. Phenylephrine HCL (Neosynephrine) may be used for a maximum of 3 days. Long-acting nasal sprays (oxymetazoline [Afrin]) are restricted to no more than 3 days. Use of neosynephrine or oxymetazoline for longer than the above time must be validated and approved by a flight provider. Recurrent need for nasal sprays must be evaluated by the flight provider. Use requires the aircrew member to be free of side effects.
Psyllium Mucilloid: (Metamucil). When used to treat occasional constipation or as a fiber source for dietary reasons. Long term use (over 1 week) must be coordinated with the flight provider due to possible side effects such as esophageal/bowel obstructions.
Throat Lozenges: Acceptable provided the lozenge contains no prohibited medication. Benzocaine (or similar analgesic) containing throat spray or lozenge is acceptable. Long term use (more than 3 days) must be approved by the local flight provider.

DISCUSSION: The aircrew member requires constant alertness with full use of all of their senses and reasoning powers. Many OTC medications cause sedation, blurred vision, disruptions of vestibular function, etc. Often the condition for which the medication is used is mild; however, it can produce very subtle effects which may also be detrimental in the flight environment. Just like the subtle deterioration of cognitive ability that occurs with hypoxia and alcohol intoxication, medication effects may not be appreciated by the individual taking the medicine. These effects may have disastrous results in situations requiring full alertness and rapid reflexes.

CLASS 2: NO ETP / WAIVER ACTION REQUIRED

AEROMEDICAL CONCERNS: Certain medications, available by prescription only, have proven to be quite safe in the aviation environment. These medications, when dispensed and their usage monitored by flight providers, have been quite effective in returning aircrew more rapidly to their respective aviation positions. While generally safe, one still must take into consideration the underlying medical condition and the ever present possibility of side effects.

WAIVERS: This APL combines the now obsolete policies letters that previously separated Class 2A and 2B medications. Chronic use has been generally removed as necessitating a waiver. Years of clinical and epidemiological data has shown that many medications used for minor, chronic ailments, are safe and effective in the aviation environment. Authorizing IO consideration for otherwise safe medications also removes potential barriers for aircrew members to seek healthcare as part of primary and secondary preventive measures. No waiver is usually required for short term or chronic use of the following list, provided the medication is aeromedically acceptable and the underlying condition doesn't require a waiver.

ALLERGIC RHINITIS AGENTS: (See Allergic/Nonallergic Rhinitis APL).
Intranasal Steroids: Dexamethasone (Dexacort), Flunisolide (Nasarel or Nasalide), Beclomethasone (Beconase, Beconase AQ, Vancenase, Vancenase AQ DS), Budesonide (Rhinocort), and Triamcinolone (Nasacort or Nasacort AQ), Fluticasone (Flonase), and Mometasone (Nasonex). This is the recommended first line treatment for moderate disease.
Intranasal Anticholinergics: Ipatropium bromide (Atrovent) 0.03% nasal spray is effective when rhinorrhea is the predominant symptom.
Cromolyn sodium (Nasalcrom): This is effective, but requires frequent (qid) dosing.
Antihistamines: Loratadine (Claritin), Desloratidine (Clarinex), and Fexofenadine (Allegra) – No waiver required. All other antihistamines are grounding (See Class 4).

ANTI-HYPERLIPIDEMICS: (See Hyperlipidemia/Hypercholesterolemia APL).
HMG COA Reductase Inhibitors (statins): Lovastatin, Pravastatin, Simvastatin, Atorvastatin, and Fluvastatin.
Ferric Acids: Gemfibrozil, Fenofibrate.
Bile-Acid Binding Resins: Cholestyramine, Colestipol.
Nicotinic Acid: Niacin, Niaspan.

ANTIMICROBIALS, ANTIFUNGALS, ANTIVIRALS: (Short and long term use can typically be IO, a minimum of ~ six medication half-lives of observation to ensure the lack of side effects and the overall general health of the aircrew member is required prior to return to flight status).
Acyclovir (Zovirax), Valcyclovir (Valtrex), Famcyclovir (Famvir), Augmentin (Amoxicillin), Bactrim/Septra, Cephalosporins, Chloroquine (Aralen) or Chloroquine/Primaquine, Clindamycin, Erythromycins to include Azithromycin and Clarithromycin, Ethambutol hydrochloride (Myambutol), Fluconazole (Diflucan), Metronidazole (Flagyl), Nitrofurantoin (Macrodantin), Penicillins, Quinolones, Rifampin (Rifadin), Tetracyclines, Doxycycline (Vibramycin) for prophylaxis - includes malaria or leptospirosis.
Minocycline (Minocin) is Class 4. Many potential drug interactions. Short term use does not require a waiver.

ANTI-MOTION SICKNESS AGENTS:
Promethazine/ephedrine, or Scopolamine/dextroamphetamine (alternative, monitor intraocular pressure), or Transdermal Scopolamine (alternative, monitor intraocular pressure and wash hands after application). When used in accordance with approved Motion Sickness Protocols (See Motion Sickness APL). Other use is disqualifying. (See Class 4).

GI MEDICATIONS:
Calcium polycarbophil (FiberCon)
Antacids: Occasional or infrequent use is Class 1. Chronic use is Class 2, provided underlying condition is not disqualifying.
H2 Blockers: Cimetidine (Tagamet), Ranitidine (Zantac), Famotidine (Pepcid), Nizatidine (Axid). Occasional drowsiness is associated with these medications so when treatment is first initiated, a 72-hour observation while the aircrew member is DNIF is required.
Proton Pump Inhibitors: Omeprazole (Prilosec), Lansoprazole (Prevacid), Pantoprazole (Protonix), Rabeprazole (Acifex), and Esomeprazole (Nexium).
Pepto Bismol: Class 2 for diarrheal prophylaxis.

Loperamide (Imodium): OTC short term use is Class 1, prescribed is Class 2.
Sucralfate (Carafate): Class 2 provided underlying condition does not require waiver.

HORMONAL PREPARATIONS:
Estrogen/progesterone preparations when used solely for contraception or replacement following menopause or hysterectomy. (Class 3 for most other conditions). No other information required. Other hormonal drugs are generally Class 3.

NON-STEROIDAL ANTI-INFLAMMATORY AGENTS:
Acetic acids: Diclofenac (Voltaren), Indomethacin (Indocin), Sulindac (Clinoril), Tolmentin (Tolectin).
Fenamates: Meclofenamate, Mefenamic acid (Ponstel)
Naphthylalkanones: Nambumetone (Relafen) Oxicams: Piroxicam (Feldene), Meloxicam (Mobic).
Propionic acids: Fenoprofen (Nalfon), Flurbiprofen (Ansaid), Ibuprofen (Motrin), Ketoprofen (Orudis; Oruvail), Naproxen (Naprosyn; Anaprox), Oxaprozin (Daypro).
Pyranocarboxylic acid: Etodolac (Lodine)
Pyrrolizine carboxylic acid: Ketorolac (Toradol)

OTHER:
Finasteride (Propecia): Class 2 when used for hair loss; other usage is Class 3.
Sildenafil (Viagra): Individuals using this preparation are restricted from flying duties for 12 hours after use.

NOTE: As with all medications in this class there is a greater risk for side effects so a 24 hour period of grounding and observation is required with the first dose. After this observation period, the aircrew may be returned to full flying duties after follow up with the aeromedical provider. Each subsequent dose requires 12 hour grounding period as stated above. Be aware of the short-term visual disturbances that can occur in up to 5% of those using this medication. These visual disturbances include blue/green discrepancy, increased brightness of lights, and halos. Visual disturbances tend to occur at peak levels (1.5 hours after use) and are not usually persistent. Individuals should be questioned about visual changes and referred to an eye care specialist for persistent abnormalities.

PRE-DEPLOYMENT REST OR SUSTAINED OPERATIONS AGENTS: See Pre-Deployment Rest Or Sustained Operations Agents APL.

PROPHYLAXIS: Class 2 when used for prophylaxis. Must be prescribed by a flight provider or under a protocol reviewed by the flight provider.

Diarrheal Prophylaxis: In general (especially when periods of risk exceed 3 weeks) early treatment is preferable to prophylaxis. Ciprofloxacin (Cipro), Bismuth subsalicylate, or Trimethoprim/Sulfamethoxazone DS (Bactrim DS) are acceptable forms of prophylaxis. Local resistance specific drug regimens may also limit the effectiveness of antibiotic prophylaxis.

Leptospirosis Prophylaxis: Doxycycline.

Malarial Prophylaxis: Chloroquine phosphate, Doxycycline (Vibramycin), or Primaquine phosphate. Sulfadoxine/pyrimethamine is a treatment medication, not prophylaxis, and cannot be used without temporarily grounding the aviator. Mefloquine may be used ONLY when Chloroquine resistance is known and Doxycycline is contraindicated due to allergy and only when monitored closely by a flight provider. (Note: Recommendations for malarial prophylaxis change frequently due to the variability of susceptibility of the organism to treatment. Prior to deployment to an endemic area the latest recommendations should be obtained using such sources as the Armed Forces Medical Intelligence Center (AFMIC), Fort Detrick at 1-301-619-7574 (DSN 343) / http://mic.afmic.detrick.army.mil or the Center for Disease Control (CDC) at Traveler's Hotline 1-877-394-8747 / www.cdc.gov.

Subacute Bacterial Endocarditis Prophylaxis: Penicillin, Amoxicillin, Ampicillin, Clindamycin, Azithromycin, Clarithromycin, or Cephalosporins may be used in appropriate doses and when indicated.

Tuberculosis Prophylaxis: After documentation of skin test conversion, a course of Pyridoxine (Vitamin B6) with Isoniazid (INH) is an acceptable prophylaxis, unless INH resistance is likely. See Antimicrobials, Antifungals, and Antivirals for documentation of use of INH.

SMOKING CESSATION AIDS:

Nicotine gum, patch, or inhaler. (Use of any tobacco with initial patch may cause nicotine toxicity). Recommend enrollment in a smoking cessation program, under supervision by the program director or designated representative, and remaining abstinent from any tobacco use. Requires initial grounding of 72 hours and if tolerating treatment well, may be returned to flying duty. Effectiveness of smoking cessation aids without participation in an ongoing support program is minimal to ineffective.
Zyban (Wellbutrin) and Chantix (Varenicline) can typically be Class 2, verify no concomitant behavioral health concerns. Also, see Smoking Cessation APL.

TOPICAL PREPARATIONS:
Topical preparations are generally Class 2 due to the minimal systemic absorption of most topical treatments. Remember that the underlying condition may require a waiver.
Topical Minoxidil 2% & 5% for use in male pattern hair loss is Class 2.

CLASS 3: CHRONIC USE REQUIRING WAIVER

AEROMEDICAL CONCERNS: These medications are generally given for treatment of underlying conditions which require a waiver, may have significant side effects, or require specialty evaluation as follow up for safe use.

WAIVERS: May receive favorable ETP/waiver recommendation only on an individual basis for treatment or control of certain chronic conditions. The underlying disease process may also require a waiver. Other medications may be waiverable upon complete presentation to USAAMA but often require extensive evaluation before approval. Please see the "Waiver" section of the Medications Introduction APL for ETP/waiver requirements of new medications.

INFORMATION REQUIRED: Complete AMS with full details of drug use and underlying condition is required. Requirements as dictated by the underlying medical condition may also be added at the discretion of USAAMA. This list is not all-inclusive.

ANTIHYPERTENSIVES: See Hypertension APL for single agent hypertensive medications that may be listed IO. Any use of combination medications (even if contained within a single pill) are not considered "single agents" and thus require ETP/waiver action. For those unable to be listed IO, ETP/waivers are recommended for medication class, not individual medications.
Ace Inhibitors: Captopril (Capoten), Enalapril (Vasotec), Lisinopril (Zestril), Zenazepril (Lotensin), Fosinopril (Monopril), Quinapril (Accupril), Ramipril (Altace), Trandolopril (Mavik), Moexipril (Univasc).
Angiotensin II Receptor Blockers: Losartan (Cozaar), Valsartan (Diovan), Irbesatan (Avapro), Candarsartan (Atacand). ACE and ARB II in combination with approved diuretics may be used.
Alpha Blockers: Prazosin (Minipress), Doxazosin (Cardura), Terazosin (Hytrin).
Beta Blockers: ATC/UAS PERSONNEL ONLY- Atenolol (Tenormin), Metoprolol (Lopressor), Propranolol (Inderal). These are considered Class 4 medication for all other aircrew.
Calcium Channel Blockers: Amlodipine (Norvasc) can be used with ETP/waiver in any aircrew member. ATC/UAS PERSONNEL ONLY - Verapamil (Calan), Nifedipine (Procardia), Diltiazem (Catapres). These are considered Class 4 medications for all other aircrew.
Clonidine: ATC/UAS PERSONNEL ONLY – This is considered Class 4 medication for all other aviation classes.
Diuretics: Thiazide, Potassium-sparing, and combinations. All LOOP DIURETICS are Class 4 medications and will not be waived. Triamterene (Dyrenium).

ANTI-INTRAOCULAR HYPERTENSION/GLAUCOMA AGENTS: (See Glaucoma APL).
Acetazolamide (Diamox): Must be free of side effects before resuming aviation duties. Betaxolol (Kerlone), Dipiverin (Propine), Levobunolol (Betagan), Timolol Maleate (Timoptic), Dorzolamide (Trusopt), Latanoprost (Xalatan).

HORMONAL PREPARATIONS: Class 3 medications unless specified otherwise below.
Clomiphene Citrate: (Clomid) Documentation of infertility evaluation required. Must be free of side effects for 24 hours before resuming any aviation duties.
Estrogen/Progestin Preparations: Class 2 medication when used solely for contraception or hormonal replacement following menopause or hysterectomy. Class 3 when used for any other condition.
Orally Inhaled Steroid Preparations: Beclomethasone (Vanceril, QVAR), Flunisolide (AeroBid, AeroBid-M), Fluticasone (Flovent), Triamcinolone (Azmacort), and Budesonide (Rhinocort) inhalers may be Class 2 or 3 depending on associated condition. Full aeromedical summary with justification for use may be required.
Testosterone: Topical patches or gel, injectable depots, and implanted pellets are all authorized. Full aeromedical summary with justification for use is required.
Thyroid Preparations: Levothyroxine (Synthroid, Unithyroid, and Levoxyl) is an acceptable treatment.

MISCELLANEOUS AGENTS/TREATMENTS: Class 3 medications unless otherwise indicated. Appropriate medical evaluation is required. ETP/waiver has been granted for each of the following agents under the appropriate circumstances and conditions.

Allopurinol
B12 Injections
Botulinum Toxin
Desensitization Therapy/Injections: must be grounded for 12 hours (See AR 40-8).
Folic Acid

Hydroxychloroquine sulfate
KCL Supplements
Metformin (Glucophage): See Diabetes APL.
Mesalamine (Rowasa, Asacol, and Pentasa): See applicable APL.
Beta 2 Agonists: Metaproterenol (Alupent), Terbutaline (Brethaire), Albuterol (Proventil/Ventolin), Salmeterol (Serevent), Bitolterol (Tornalate), Pirbuterol (Maxair), Isoproterenol (Isuprel), and Formoterol (Foradil). Inhaled use only. May be Class 2 or 3 depending on associated condition and length of use.
Olsalazine (Dipentum)
Pentoxifylline (Trental)
Probenecid (Benemid)
Prophylthiouracil (Propyl-Thyracil)
Sulfasalazine (Azulfidine): See applicable APL.

CLASS 4: MANDATORY DISQUALIFYING MEDICATIONS

AEROMEDICAL CONCERNS: Use of certain medications is strictly contraindicated in the aviation environment due to significant side effects. The underlying cause or need for chronic use of these medications may result in a permanent aeromedical suspension. Even short term use may necessitate ETP/waiver action depending on the underlying condition and/or reason for use.

WAIVERS: A period of continuous grounding is mandatory (AR 40-8, Temporary Flying Restrictions Due to Exogenous Factors) from the initiation of therapy through cessation of these drugs plus a specified time period to rid the drug completely from the body (usually at least six medication half-lives). Chronic or continuous use of these medications is incompatible with continuation of aviation status. ETP/Waiver is generally not recommended though possible in select agents that require infrequent usage (anti-migraine agents).

Abstinence assistance: Waiver is not recommended.
Alcohol: Requires 12 hours of flight restriction following termination of use with no residual effects.
Non-alcoholic beer: Require 12 hours of flight restriction following termination of use with no residual effects.
Anabolic steroids: Waiver is not recommended.
Anti-arrhythmics: Waiver is not recommended.
Anti-depressants: Waiver is recommended on a case by case basis. The typical medication schedule is as follows: 1) Medication initiation requires 4 to 6 weeks prior to seeing positive changes; 2) Monitor for no improvements between 6 to 8 weeks following initiation of medication; 3) Titrating a medication may take an additional 2 to 4 weeks requiring frequent Local FS assessments or consultation for further management. Note: Medication usage must be at a stable dose for ***at least 4 months*** without Aeromedically significant symptoms/side effects before ETP/Waiver AMS submission.
Anti-migraine agents: Waiver is recommended on a case by case basis. See applicable APL.
Anti-motion sickness agents: Temporary use is approved when used in accordance with approved Motion Sickness Protocol. Chronic use is not waiverable.
Anti-psychotics: Waiver is not recommended.
Anti-vertigo agents: Waiver is not recommended.
Anti-convulsives: Waiver is not recommended.
Anti-histamines: Cetirizine (Zyrtec). Waiver is not recommended for this medication; see other medication policy letters and Allergic/Nonallergic Rhinitis APL for acceptable medications.
Beta-blockers: Waiverable for ATC/UAS personnel. Waiver is not recommended for all other classes.
Barbiturates, mood ameliorating, tranquilizing, or ataraxic drugs: Requires 72 hour flight restriction following termination of treatment. The half-life of Phenobarbital is 2-5 days. Waiver is not recommended for chronic use.
Calcium channel blockers: Waiverable for ATC/UAS personnel. Waiver is not recommended for all other classes with exception of Norvasc which may be approved for all other classes.
Clonidine: Waiverable for ATC/UAS personnel. Waiver is not recommended for all other classes.
Cough preparations with Dextromethorphan, Codeine, or other Codeine-related analogs: Require 24 hours of flight restriction following termination of treatment. ETP/Waiver is not recommended for chronic/ongoing use.
DEA scheduled medications: Waiver is generally not recommended. See applicable APL for more information.
Hypoglycemic agents: Chlorpropamide (Diabinese), Glipizide (Glucotrol, Glucotrol XL), Glyburide (Micronase, Diabeta, Glynase), Tolbutamide (Orinase), Tolazimide (Tolinase), Acetohexamide (Dymelor), Glimerpiride (Amaryl). All of these agents are waiverable for Classes 2F, 2P, 3, and 4. Waiver is not recommended for all other classes.
Hypnotics: Waiver is not recommended. Temazepam (Restoril), Zolpidem (Ambien), Zaleplon (Sonata), and Triazolam (Halcion) may be used for pre-deployment rest only. This is not approved for ongoing manipulation of work/rest cycle or as a sleep aide during normal operations.
Insulin: Waiver is not recommended.
Isotretinoin: (Accutane). Waiver is not recommended.
Minocycline: (Minocin). Waiver is not recommended.
Motility enhancing agents: Metoclopramide (Reglan), Waiver is not recommended.
Narcotics: Waiver is not recommended. Short term use following a procedure or surgery is authorized but requires local grounding/DNIF.
Quinine, bitters, tonic water: Requires 72 hour flight restriction following termination of treatment when these formulations are used for medical conditions. Ingestion of tonic water or bitters on an infrequent basis does not require flight restriction.
Loop diuretics: Waiver is not recommended.

Sleeping aids: Requires ~ 6 half-lives of restriction after use. (See Pre-deployment drugs).
Serotonin (5ht) receptor agonists: Sumatriptan (Imitrex), Naratriptan (Amerge), Rizatriptan (Maxalt; Maxalt-MLT), Zomitriptan (Zomig; Zomig ZMT), Almotriptan (Axert). Requires 12 hours of flight restriction following termination of treatment.
Tranquilizers: Waiver is not recommended.

PRE-DEPLOYMENT REST OR SUSTAINED OPERATIONS AGENTS

INFORMATION ONLY: Yes, if: 1) Agents are used only for short term circadian dysrhythmia; 2) Any use is part of a structured and command-approved Sustained Operations/Rest standard operating procedure (SOP); 3) There is strict aeromedical provider oversight of the program and all medication use. Use of any medications/agents not listed below should be coordinated with USAAMA prior to deployment or period of presumed operational need.

TEMPORARY CLEARANCE: N/A. Though trial doses of any stimulants or sleep aids should be given (with associated grounding/DNIF period) prior to operational need to ensure tolerance and absence of aeromedically significant side effects.

AEROMEDICAL CONCERNS: Continuous and sustained operations are based on the premise that the enemy's systems (i.e., logistic, materiel, and human, etc.) can be fatigued to failure faster than friendly systems. Army doctrine places fatigue and fatigue countermeasures under the purview of the operational commander. The flight provider's role is as advisor to the commander in developing and monitoring unit crew rest SOPs in accordance with published regulations and policies.

Fatigue is a state of feeling drowsy or sleepy resulting from a number of factors to include prolonged mental or physical work, exposure to harsh environments, extended periods of anxiety, loss of sleep, or monotonous tasks. All of these may be present in the aviation operational environment. Fatigue interrupts attention and causes slow and inaccurate performance, with a greater tolerance for error on the part of the individual. Lapses of attention and failure of crew coordination stemming from fatigue has been shown to cause mishaps in the high task load environment of the cockpit.

Acute or chronic fatigue in sustained or continuous Army flight operations is expected and can lead to poor flight performance and increased safety risks. A vigorous program emphasizing non-pharmacological measures to optimize crew rest and dissemination and incorporation of these guidelines is necessary to ensure aeromedical readiness and is the primary means to combat aircrew fatigue.

The administration of rest agents to assist in circadian cycling and ensure adequate sleep OR stimulant agents for continued mission execution in sustained operations, is an additional measure to consider to manage fatigue and maintain aircrew performance after non-pharmacological measures have been considered/implemented and deemed inadequate. Use must be on a short-term basis. Stimulant or rest agents should only be in combat or during exceptional ("fly or die") circumstances of operational necessity. Use of these agents and medication accountability must be under the direct supervision of the flight provider and must be authorized by the local commander.

WAIVERS:
Pilot Applicants (Class 1A/1W):
N/A. ETP is not required for agents used IAW this policy and unit SOP.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
N/A. Waiver is not required for agents used IAW this policy and unit SOP.

INFORMATION REQUIRED:
Local aeromedical providers should submit a statement on the annual flight physical as to what operational variables necessitated use of these agents and verification of aircrew member tolerance without aeromedically significant side effects. This statement is important to ensure USAAMA reviewers are aware that any discovered use of otherwise disqualifying medications is legitimate and part of a formal program.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: There are no annual waiver requirements associated with the Pre-Deployment Rest and Sustained Operations APL. The unit aeromedical provider must rigorously monitor and document use of these agents for any adverse medication effects and for strict administration/dosage accountability. This information should be submitted on the annual flight physical.

TREATMENT: Administering a test dose (ground testing) and monitoring for adverse effects assures safe use of these interventions. Anyone with suspicious symptoms (i.e., palpitations, headache, dizziness, and/or mood disturbance, etc.) should be immediately grounded until symptom resolution. Use of these agents should be under the direct supervision of the supporting flight provider following pre-established SOPs approved by brigade level or higher.

REST AGENTS: Class 2 (No waiver action required) when prescribed and closely monitored by the unit flight provider. Do not mix with alcohol.
TEMAZEPAM (Restoril) – Indicated for long duration rest due to long half-life (~12 hours). May perform crew duties 24 hours after administration.
TRIAZOLAM (Halcion) – May perform crew duties 9 hours after use. (NOTE: Memory loss with associated alcohol use and night terrors have been reported).
ZOLPIDEM (Ambien) or ZALEPLON (Sonata) – Indicated for short duration rest due to short (~2.5 hour) half-life. May perform crew duties 8 hours after use.

STIMULANTS: Class 2 when used in support of sustained operations.
DEXEDRINE: May use in dosages of 5mg or 10mg not to exceed 30mg in 24hour period. May not use to prevent sleep for longer than 64 continuous hours. Be aware of the after effects of sustained use of stimulants due to its long half-life of ~10.25 hours. For example, aviators have required two 8-hour night sleep periods following 64 hours of continuous wakefulness using Dexedrine to recover near normal sleep architecture and performance.

MODAFINIL: May use in dosages of 100mg or 200mg every 8 hours as needed. Aircrew are not to exceed 400mg in 24 consecutive hours. May not use to prevent sleep for longer than 64 continuous hours. Be aware of the after effects of sustained use of modafinil due to its long half-life of ~13 hours. Aviators will likely require two 8 hour night sleep periods following 64 hours of continuous wakefulness using modafinil to recover near normal sleep architecture and performance.

DISCUSSION: A recommended guideline for Flight Provider administration of these agents:

- Employment of rest or sustained agents should be part of a comprehensive Fatigue Risk Management System plan.
- Ground testing must be completed prior to operational use of Dextroamphetamine (Dexedrine), Modafinil (Provigil), or Temazepam (Restoril), Triazolam (Halcion), Zolpidem (Ambien), or Zaleplon (Sonata). No flying will be done the day of the pretest (minimum 24 hour DNIF period). An entry will be made in the medical record documenting conduct of the pretest, medications administered, and any side effects. All involved crew should sign an informed consent form to be kept in the medical record.
- Fully brief all aircrew and supervisors on the proper use of the medication and possible side effects.
- Ensure the line commander has authorized use of the medication. It is essential that the administering aeromedical provider ground tests or employs these medications in consultation with the next higher medical authority in the chain of command.
- Issue the stimulant in amounts for one flight and document with an entry in the medical record. Aircrew are not authorized to carry additional doses of sedative. Sedatives will not be carried in the aircraft to preclude inadvertent use during flight operations. A check to ensure aircrew are not carrying sedatives in flight must be part of safety, mission, and pre- flight briefings during use of these agents.
- Collect unused medication at the end of continuous operations.
- It is a flight provider responsibility to monitor medication use and levels of aircrew fatigue during daily interactions with aircrew. Screen for unauthorized use and possible interactions with over the counter or other prescription medications.

SUPPLEMENTS AND HERBALS

INFORMATION ONLY: Yes, if considered aeromedically acceptable by USAAMA. See Class 1 and Class 2 supplement and herbal lists below.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: This aeromedical policy letter is to outline those products which may be viewed as acceptable and safe in limited doses and can be used in the aeromedical environment with the knowledge and monitoring of the local aeromedical provider. The majority of herbal and dietary preparations are prohibited for aviation duty as many are used in cases of self-diagnosis and self-treatment. Any herbal and dietary supplements being used will be entered on the FDME/FDHS. Recent surveys in the United States reveal that 69% of those surveyed use some form of complementary or alternative medicine. This undoubtedly affects Army aircrew. Some dietary supplements have clear benefits, some have uncertain benefits, and others are unsafe especially if taken in combination with medication or in certain work environments. The short term effects of some of these preparations are dangerous and use can result in sudden incapacitation in flight. The long term effects of many of these unregulated preparations are unclear and have not been studied to any degree in the aeromedical environment. Ascertaining the use of dietary supplements is an important aircrew safety issue. Aeromedical providers need to research and provide information and education on dietary supplements to all aircrew.

Any preparation not clearly permitted for use per this policy is not authorized for aviation personnel without clearance from USAAMA.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for supplements or herbals that are not considered aeromedically acceptable by USAAMA.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended for supplements or herbals that are not considered aeromedically acceptable by USAAMA.

Class 1: Individual aircrew may use the following supplements without prior approval of an aeromedical provider. Any use, whether periodic or regular, must be reported on the annual FDME/FDHS:

- Single multivitamin/mineral tablet per day. No mega-doses, multivitamins known to contain unauthorized substances (i.e., Vita-pak which contains a stimulant, etc.), or those with proprietary blends.
- Vitamins C, E, B6, and/or B12
- Calcium
- Folate
- Protein supplementation to include shakes, capsules, and nutritional bars, but they may only contain additives specifically approved as Class 1. Single or branch-chained amino acids (BCAA) are acceptable.
- Sports drinks which contain a mixture of carbohydrates, vitamins, and minerals and without creatine, ephedra, herbal supplements.
- Any supplement that is considered a food product or concentrate (i.e., turmeric, cinnamon, fish oil, red yeast rice, fiber supplements, probiotics, great tea extract, garlic, etc.) provided no mega-doses are used, use is not to diagnose or treat an underlying medical problem that is disqualifying, and containing no unauthorized types or unknown quantities of any additives.

Class 2: Individual aircrew may use the following supplements with prior approval of a flight provider. Any use, whether periodic or regular, or as part of beverages or other supplement combinations must be reported on the annual FDME/FDHS:

- Vitamins A, K, D, Niacin, Riboflavin, Thiamine
- Magnesium, Zinc, Chromium, Selenium, Copper
- Glucosamine with or without Chondroitin
- Echinacea for short term (less than two weeks) use
- Saw Palmetto
- Creatine
- Ginseng- this preparation is prohibited 24 hours before flight.

Class 3: All other preparations not specifically listed above are currently disqualifying for aviation duties without review by the flight provider and concurrence with USAAMA. Again, it may not be the actual herbal or supplement, but the underlying condition that is of aeromedical concern. Waivers may be applied for on a case by case basis with an accompanying AMS discussing the underlying condition of concern and aspects of herbal/supplemental therapy.

Please note, there is no rule authorizing or prohibiting energy drink consumption. Local aeromedical providers should apply the general rules and guidelines in this policy towards energy drinks. If all ingredients in the energy drink are listed, are otherwise considered aeromedically acceptable, are not in excessive amounts, and are not part of a proprietary or trademarked blend, then consumption is authorized and listed Class 1 or 2 depending on the ingredients. Any consumption used to offset poor lifestyle/sleep hygiene choices, any excessive consumption resulting in any aeromedically significant side effects, or any use to manage or treat an underlying problem, is not authorized in aviation personnel.

NOTE: Commonly used categories of supplements and herbals that are specifically disqualifying include:

- Any melatonin or melatonin containing preparations (or any preparations that cause drowsiness, fatigue, somnolence, or are otherwise used to promote sleep). Individual minerals supplements known to support normal, healthy sleep (i.e., zinc, magnesium, etc.) that themselves do not cause drowsiness are Class 2 as listed above.

- Any stimulants beyond caffeine use. Caffeine use and tolerance is widely variable and any use should be IAW local aeromedical provider guidance. Other fat-burners, diet aids, “cutting agents”, or those preparations that can be reasonably assumed to affect heart rate, rhythm, blood pressure, thermogenesis, or metabolism, etc., are generally not authorized for aviation personnel.

- Any hormonal modulators, pro-hormones, pro-steroids, estrogen blockers, or other similar preparations that can be reasonably assumed to impact the hypothalamic–pituitary–adrenal axis.

- Any pre-workout supplements, specifically those with vaso-dilatory properties and/or containing nitric oxide (NO) or NO precursors/boosters. Pre-workout supplements containing only authorized ingredients (i.e., caffeine, green tea, BCAA, etc.) in “acceptable” dosages and with no trademarked or proprietary blends are authorized for use provided they are tolerated well with no aeromedically significant side effects. Use must be reported on the annual flight physical.

- Any supplement, herbal, or other preparation without specific label details of EVERY ingredient and its amount/ concentration. Proprietary or trademarked blends or formulations that do not list every ingredient OR those that list ingredients but omit the amount/concentration are unauthorized. This applies even if each ingredient itself is not considered disqualifying.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting specific supplement and dosage as well as tolerance without aeromedically significant side effects.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Use of any form of dietary supplement will be addressed at each visit with the aeromedical provider to include the annual FDME/FDHS. Any side effects of use must be documented.

TREATMENT: N/A.

DISCUSSION: With the use of these supplements by aircrew, the flight provider needs to be concerned not only with the use and potential side effects of the supplement, but also with the underlying medical condition that the individual is potentially treating. The individual aircrew may be using these preparations for self-medication and should be carefully screened with regard to underlying medical problems. Local flight providers MUST educate themselves on the indications, use, and side effects of the preparations used by their aircrew.

MISCELLANEOUS WAIVERS

ALLERGIC REACTIONS TO INSECT VENOM / EXOGENOUS EXPOSURE

INFORMATION ONLY: Yes, mild, local reactions can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Anaphylactic reactions to insect bites, stings, dietary exposure and/or any other exogenous exposure may cause symptoms ranging from just mild local reactions to more severe reactions, i.e., generalized hives, angioedema, shortness of breath, wheezing, cardiac arrhythmias, and even death. Acute anaphylactic reactions may cause significant incapacitation within as little as three to five minutes. Although avoidance procedures and the availability of personal anaphylactic kits help to minimize the possibility of an acute reaction, deployment to field sites may place such individuals in significant jeopardy of health and cause mission delay or even mission failure.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended following a course of desensitization and verification of no reaction to a challenge dose.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended following a course of desensitization and verification of no reaction to a challenge dose.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire clinical presentation and treatment summary.
- Allergy consultation is required.
- Medical records of previous treatments may also be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required unless an anaphylactic reaction recurs.

TREATMENT: Avoidance procedure and anaphylactic treatment kits, when immediately available, may be waivered for those individuals with mild generalized allergic reactions. Desensitization therapy may also be waivered.

DISCUSSION: Following an initial anaphylactic reaction to an insect sting, the likelihood of a second anaphylactic reaction is 28 - 74 % (depending upon the study), and is unrelated to the time interval since the initial sting reaction. Traditional evaluations of susceptibility to allergic reactions, i.e., IgE, IgG4, skin venom tests are of little help in predicting the severity or likelihood of this second reaction. Too often the risk of a potentially lethal secondary reaction is minimized or completely ignored. Avoidance procedures and anaphylactic kits are generally of minimal benefit in severe anaphylactic reactions. Immunotherapy can reduce the risk of subsequent reaction from about 60% to less than 5%.

ANTHROPOMETRY

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Individuals with short sitting height may not be able to see over the instrument panel. With short leg length, they may be unable to apply full range to the antitorque pedals. With short arm length, they may be unable to reach flight controls, adjust instruments, or assess circuit breakers. Individuals with a tall sitting height often sit in hunched positions or must tilt one's head forward to avoid the greenhouse or canopy; this reduces their range of vision, increases fatigue during long missions, and puts one at greater risk of significant spinal injury during heavy G-loading, e.g., hard landing or crash. Excessive leg length, normally present in those with excessive sitting height, may interfere with full range of antitorque application by knee or shin contact with the instrument panel. Any combination of the above may exceed the optimal safety envelope during the aircraft's development as well as become uncomfortable enough to be distracting during flight. An Exception to Policy/Aeromedical Summary (AMS) is required for anyone not meeting anthropometric standards. **Note: All inquiries can be addressed by the primary POC, the 110 AB Deputy Chief of Standardization at (334) 255-3259 (voice mail capable). The alternate POC is the 110 AB CCWO at (334) 255-1713. Note: Alternate POC <u>will not assist</u> until referred by primary POC.**

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP recommendation is considered following completion of an In-Cockpit Evaluation (ICE) conducted by USAACE 110th Aviation Brigade and a final recommendation from command on a case-by-case basis. Applicants will be evaluated with current ALSE, helmet, and body armor.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is rarely required. Note: Necessary in Class 3 individuals if, in the aeromedical provider's professional opinion, anthropometric measurements and/or body composition are incompatible with aviation safety or may negatively impact operational effectiveness**.** Local ICE should be completed and assessed by both the Unit HCP and Unit Instructor Pilot or Unit Standardization Instructor Pilot. Note: Applicants will be evaluated with complete fitting of ALSE and body armor.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete anthropometric measurements in centimeters with tenth of a centimeter accuracy are required in Block 73 of DD 2808. These may be repeated under the direct supervision of a flight surgeon.
- The average of three such measurements may be submitted for waiver action, if required. An aeromedical summary is required for anyone not meeting anthropometric standards.
- ICEs of individuals will be performed in accordance with the USAACE established guidelines, as described herein. All evaluations will be conducted with ALSE vest, body armor, and helmet. A unit instructor pilot or standardization instructor pilot, with the presence of or in consultation with a flight surgeon may conduct the evaluation.
- **<u>Total arm reach (TAR)</u>**: Less than 160cm to greater than or equal to 154cm, the evaluation may be conducted at home station by an IP or SP of each of the respective aircraft: UH-72, UH-60A/L/M, CH-47F, AH-64E.
    - If the TAR is less than 154cm to greater than or equal to 150CM, the <u>only accepted evaluation</u> is an ICE that is conducted at Fort Rucker AL through the POCs provided. <u>TAR of less than 150cm is not considerable nor evaluated</u>.
    - <u>TAR Evaluation Procedure</u>: The person is evaluated in the pilot's station as well as the copilot's station to determine if they can safely reach required switches, circuit breakers, engine power levels, flight controls, and make flight control inputs throughout full flight control ranges.
    - The shoulder harness shall <u>not</u> be locked. Leaning and/or stretching to make a flight control input or reach a lever/switch, etc., while acceptable, must <u>not</u> inhibit any other flight control input(s), e.g., leaning to fully lower the collective may inhibit full range application of anti-torque pedals. Emphasis is placed on determining that the person can reach those switches and circuit breakers as a normal course of flight posture and expectable tasks and inputs that are necessary for safe flight.

 Total Leg Length/Crotch Height (CH): Less than 75cm to greater than or equal to 72cm, the evaluation may be conducted at home station by an IP or SP of each of the respective aircraft: UH-72, UH-60A/L/M, CH-47F, AH-64E.

- If CH is less than 72cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided.
- CH Evaluation Procedure: The person is evaluated with consideration to preflight safety (climbing on and about aircraft) and from the pilot's station for the ability to make anti-torque pedal inputs throughout full range.
- The shoulder harness shall not be locked. Pivoting the ankle in the use of the ball of the foot to make an anti-torque pedal input is acceptable. Leaning and/or stretching to the degree that the seating position is changed in order to make an anti-torque pedal input is not acceptable.

 Sitting Height (SH): Greater than 97cm to less than or equal to 108cm, the evaluation may be conducted at home station by an IP or SP of each of the respective aircraft: UH-72, UH-60A/L/M, CH-47F, AH-64E.

- If SH is greater than 108cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided.
- SH Evaluation Process: The person is evaluated the pilot's position to determine if they can safely sit in the aircraft and reach the flight controls while in a normal sitting position.
- The shoulder harness shall not be locked. Check for helmet contact on the overhead greenhouse or canopy from a properly adjusted seating position. Check for shin or knee contact with the instrument panel when properly seated and feet properly positioned on the antitorque pedals.
- Helmet contact with the greenhouse or canopy, and/or shin or knee contact with the instrument panel is not acceptable.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Additional in-cockpit evaluations are required before transition to new aircraft. Any failure of initial anthropometric in-cockpit evaluation must be re-evaluated at Ft. Rucker AL through the POCs provided. Refer to **Tables 1 and Table 2** for specific guidance. Note: All inquiries can be addressed by the primary POC, the 110 AB Deputy Chief of Standardization at (334) 255-3259 (voice mail capable). The alternate POC is the 110 AB CCWO at (334) 255-1713. Note: Alternate POC will not assist until referred by primary POC.

DISCUSSION: The cockpits of most aircraft are developed using measurements based upon a normal distribution curve. On several aircraft, the seating is either not adjustable or has limited adjustability, therefore making the distribution curve even narrower. As new anthropometric standards are developed for newer aircraft, modifications to existing standards will be developed.

Reference:

Moczynski, A. Weisnebach, C., McGhee, J. (2018). Assessment of U.S. Army Anthropometric Standards and Methodology. USAARL Technical Report #2018-20.

Aeromedical Technical Bulletin (ATB Section)

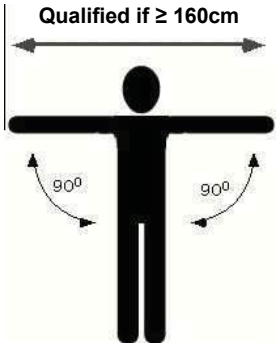
Crotch Height (Leg Length) - The subject must stand completely erect against a wall, heels together, weight evenly distributed, and knees locked. The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline.

Total Arm Reach - The subject must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked. The fingertips of one hand must be in contact with the adjacent wall in the corner of the room. The horizontal distance between fingertips is recorded.

Sitting Height - The subject must sit on a hard, flat surface, facing forward, feet flat on the floor, with buttocks, shoulders, and back of head against the wall. Using a right angle on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.

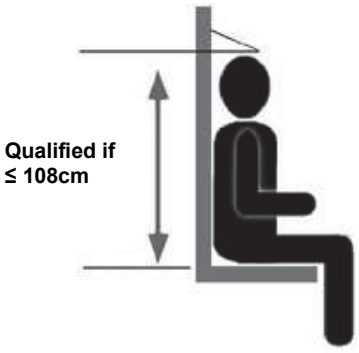
Measurement	Qualified if:
Crotch Height	$\geq$ 72.0cm
Total Arm Reach	$\geq$ 160.0cm
Sitting Height	$\leq$ 108.0cm

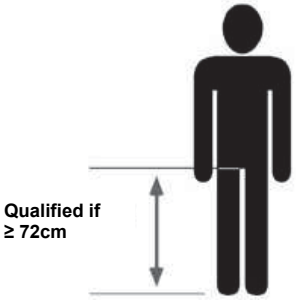
Anthropometric Diagrams



TOTAL ARM REACH (TAR) —the aviator candidate must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked with the fingertips of one hand in contact with the adjacent wall in a corner of that room. The horizontal distance between fingertips is recorded in centimeters.

SITTING HEIGHT (SH) — the aviator candidate must sit on a hard flat surface, facing outward, feet flat on the floor, with the buttocks, shoulders, and back of head against the wall. Using a straight angle ruler on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.





CROTCH HEIGHT (CH) — the aviator candidate must stand completely erect against a wall in bare feet, heels together, weight evenly distributed, and knees locked.
The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline. Results are recorded in centimeters.

ATB: Table 1: Summary of Anthropometric Standards

TAR	▪ Greater than or equal to 160cm is a qualified measurement. ▪ If the range is < 160cm to >/= 154cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 154cm to greater than or equal to 150cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ TAR of less than 150cm is not considerable nor evaluated; this is disqualifying with no ETP recommended.
CH	▪ Greater than or equal to 72cm is a qualified measurement. ▪ If the range is < 75cm to >/= 72cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 72cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.
SH	▪ Equal to or less than 97cm is a qualified measurement. ▪ If the range is > 97cm to </= 108cm, the ICE may be conducted at home station as previously explained. ▪ If the range is > 108cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.

ATB: Table 2: Procedures for each Anthropometric Standard

TAR	▪ Greater than or equal to 160cm is a qualified measurement. ▪ If the range is < 160cm to >/= 154cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 154cm to greater than or equal to 150cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ TAR of less than 150cm is not considerable nor evaluated; this is disqualifying with no ETP recommended.
CH	▪ Greater than or equal to 75cm is a qualified measurement. ▪ If the range is < 75cm to >/= 72cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 72cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.
SH	▪ Equal to 106cm to </= 108cm is a qualified measurement. ▪ If the range is > 97cm to </= 106cm, the ICE may be conducted at home station as previously explained. ▪ If the range is > 108cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.

Note: All inquiries can be addressed by the primary POC, the 110 AB Deputy Chief of Standardization at (334) 255-3259 (voice mail capable). The alternate POC is the 110 AB CCWO at (334) 255-1713. Note: Alternate POC will not assist until referred by primary POC.

COLD INJURIES

INFORMATION ONLY: Yes, minor and fully resolved cold injuries with no sequelae can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Previous cold injuries including frostbite, chilblain, immersion foot, or trench foot may lead to residual extremity damage resulting in extensive tissue and vascular damage, nerve injury, leaving the extremity sensitive to cold re-exposure (e.g., Raynaud-like phenomena). Resulting numbness or pain may interfere with proper use of controls or may lead to distraction in flight.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis in applicants with no residual sequelae, no limitations on aircraft control/operations, and no restrictions from cold-weather operations and/or assignments.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided any residual injury is mild/minor, when there are no limitations on ability to perform all aviation MOS functions safely, and when there are no restrictions from cold-weather operations and/or assignments.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course. Photographs may be necessary for USAAMA reviewers to recommend a positive ETP/waiver disposition.
- Neurologic exam
- In-Flight Evaluation may be required depending on the extent of the injury.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None normally required unless an associated neurovascular injury exists.

TREATMENT: Education and cold weather survival training is essential to successful military operations in cold weather and high altitude environments. Avoidance of fatigue, proper use of dry and insulated or layered clothing, and a buddy system of inspection are important prevention techniques. Once cold injury occurs rapid rewarming is the most affective initial therapy. The goal is to save as much viable tissue as possible. Do not do this rewarming if re-exposure to cold is likely. Subsequent efforts are oriented toward preventing injury to and infection of the involved areas.

DISCUSSION: Frost bite is a localized lesion preferentially affecting the extremities: feet 57%, hands 46%, and open areas such as the face (i.e., ears, nose, and cheeks, etc.) 17%. Chilblain, a mild form of frost bite, is the presence of red, itchy lesions found on the dorsum of the foot due to prolonged and repeated exposure to above-freezing temperatures in the presence of high humidity. Trench foot or immersion foot is directly due to prolonged exposure (over 12 hours) to cold water, generally under 32°F. Hypothermia, unlike all the other cold injuries, can occur with prolonged exposure to any temperature below body temperature.

HEAT / EXERTIONAL INJURIES

INFORMATION ONLY: Yes, minor, fully resolved heat and/or exertional injuries may be listed IO following demonstration of normal heat and exertion tolerance. These injuries must also not be specifically unfitting for retention IAW AR 40-501, chapter 3, in order to be listed IO.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Susceptible aircrew members are at risk for recurrence of heat injury during critical operations in hot environments, thus putting their own safety and the accomplishment of these missions in jeopardy. A previous heat injury may result in residual damage which will compromise flight safety or the individual's health. Exertional rhabdomyolysis following an extreme or uncommon event may not require ETP/waiver action though documentation of tolerance to the normal stressors of military and aviation duties as well no residual sequelae or end organ damage are vital.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is only recommended if: (1) There is no evidence of a congenital predisposing condition (e.g., anhidrosis); (2) An identifiable situational stressor led to the episode, such as lack of acclimatization, dehydration, coexisting infectious disease, medication effect, fatigue, or sleep deprivation; (3) No residual injury exists; (4) A minimum of three months have passed since the injury; and (5) There is evidence of normal heat and/or exertional tolerance following recovery.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended if: (1) There is no evidence of a congenital predisposing condition (e.g., anhidrosis); (2) An identifiable situational stressor led to the episode, such as lack of acclimatization, dehydration, coexisting infectious disease, medication effect, fatigue, or sleep deprivation; (3) No residual injury exists; (4) A minimum of three months have passed since the injury; and (5) There is evidence of normal heat and/or exertional tolerance following recovery.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Complete Cardiology and Neurology evaluations in cases where the etiology is not readily identifiable.
- Aeromedical provider attestation of evidence of subsequent heat or exertional tolerance.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required unless the aircrew member experiences another heat injury.

TREATMENT: Prevention is the key. Encourage gradual acclimatization to the heat accomplished by gradually increasing, over 10 to 14 days, daily exposure to work and heat. Also, increased fluid intake with intake of at least 8oz of water before heat exposure and moderate amounts of fluid every 15-20 minutes during intense exertion, vapor-permeable clothing, and frequent rest periods are important in preventing injury. Persons taking high-risk medications and those suffering from a mild illness or fever should avoid heat or extreme exercise.

DISCUSSION: Military operations, especially those in tropical and desert locations, continue to place crew members at risk for heat injury. Prolonged preflight exposure to extreme heat, humidity, dehydration, and the additional heat load occurring in an enclosed heated cockpit are major contributors to this increased risk. Studies show that exertional heat stroke in a young, healthy individual usually results from situational factors; an intrinsic predisposition to heat intolerance is extremely rare. Dehydration, febrile or infectious illness, skin disorders, poor physical fitness, the elderly, and obesity are all well accepted predisposing situational factors. Some of these are temporary or treatable, while others are permanent and thus put individuals at higher risk for heat injury. Exertional heat stroke is a state of hyperthermia that occurs when excess heat generated by muscular exercise exceeds the body's ability to dissipate it. Any individual with an alteration of consciousness in the presence of physical exertion in hot weather should be considered having a heat stroke; a core temperature of < 105° C does not preclude the diagnosis of heat stroke. Heat stroke may cause damage to the brain, liver, heart, kidneys, and occasionally result in adult respiratory distress syndrome, and coagulation disturbances. Complications of acute respiratory distress syndrome (ARDS), renal failure, and intractable disseminated intravascular coagulation is a common cause of death.

HIV PRE-EXPOSURE PROPHYLAXIS (PrEP)

INFORMATION ONLY: Yes, for historical Truvada or Descovy use that is currently discontinued following thorough sexually transmitted infection (STI) work-up and no clinical concern for risk taking behavior or poor judgment.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Truvada (tenofovir disoproxil fumarate/emtricitabine [TDF/FTC]) and Descovy (tenofovir alafenamide-emtricitabine [TAF/FTC]) were FDA approved in 2012 and 2019, respectively, for HIV pre-exposure prophylaxis (PrEP) for certain high-risk individuals to mitigate the risk of HIV transmission. Thorough guidelines have been established by the Centers for Disease Control (CDC) and ETP/waiver will only be considered when these are strictly adhered to. Both TDF/FTC and TAF/FTC are well-tolerated medications, and the rate of aeromedically-relevant adverse effects is considered acceptable with consistent adherence to proper clinical and laboratory monitoring. Adverse effects of both medications are similar, though mildly less frequent with TAF/FTC, and include nausea, vomiting, diarrhea, headache and fatigue. The majority of these symptoms appear to resolve within one month of taking either preparation ("start-up syndrome"), necessitating a grounding period of no less than one month after starting HIV PrEP. There are no reported neurocognitive or neuropsychiatric side effects from either TDF/FTC or TAF/FTC use.

* This policy DOES NOT cover personnel infected with HIV. Please see HIV APL for waiver guidance and AR 600-110 for administrative and counseling guidance in these individuals.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended and contingent on medication tolerance and adherence to CDC guidelines.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended and contingent on medication tolerance and adherence to CDC guidelines.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Consultation report from treating PrEP provider, which includes:
  - Clear delineation of the underlying clinical indication(s) for use of HIV PrEP therapy.
  - Documentation of completed initial evaluation of HIV infection screening.
  - Assessment of current medication(s) including dates of initiation, dose, tolerance, and adherence to therapy.
- Documentation of the following required, at a minimum, laboratory studies:
  - Recent 4th generation HIV antigen/antibody test
  - Baseline serum creatinine
  - Baseline Hepatitis B (HBV) status
  - Baseline STI screening to include Treponema, Gonorrhea and Chlamydia.
- Specific aeromedical provider comments:
  - "No aeromedically significant adverse effects due to antiretroviral therapy."
  - "Safer sex counseling completed and documented in AMS."

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Clear documentation of member's compliance with required quarterly clinical follow-up and all required quarterly/semi-annual laboratory monitoring.
- STI symptom assessment, documentation of medication adherence, and behavioral risk reduction counseling with education and reinforcement of safe sex practices at least every three months.
- HIV testing every three months.
- Bacterial STI testing at least every six months; at least every three months for members considered at very high risk for STIs (i.e., multiple sex partners, history of STIs, etc.).
- Serum creatinine testing every six months.

TREATMENT: Historical use of TDF/FTC or TAF/FTC is not considered disqualifying and can be listed IO so long as aeromedical provider clearly documents a negative STI workup and attestation of no risk taking behavior. Current use of HIV PrEP is disqualifying with ETP/waiver required. The member should be on a stable dose for no less than one month and report no aeromedically significant side effects prior to return to flight and AMS

submission. Re-evaluations of previously approved waivers can occur at any time, as needed per the discretion of the member's command, aeromedical provider, or HIV PrEP provider. TDF/FTC and TAF/FTC are currently the only approved medications for HIV PrEP in Army aviation. AAMA routinely requires a time interval (minimum of three, preferably five years) following FDA approval of new medications prior to ETP/waiver consideration. This is necessary to ensure post-marketing surveillance has revealed any side effects of concern in the general public that portend unnecessary risk in the unique aviation population. Despite a somewhat recent FDA approval in 2019, TAF/FTC contains the same active ingredients as TDF/FTC, varying only slightly in its pro-drug chemical composition. It has shown equal efficacy and an improved side effect profile with lower kidney toxicity and better bone safety, hence, waiver/ETP can be considered.

DISCUSSION: Truvada first gained FDA approval in 2004 for use as a component of combination antiretroviral therapy in individuals with a diagnosis of HIV. TDF and FTC are nucleoside/nucleotide reverse transcriptase inhibitors (NRTIs) that inhibit HIV replication and can prevent seroconversion in HIV-negative individuals who are exposed to the virus. The efficacy of TDF/FTC at reducing the risk of HIV-seroconversion has been demonstrated in multiple studies of high-risk HIV-negative individuals. TDF/FTC was FDA approved in 2012 for HIV PrEP in high-risk individuals to mitigate the risk of HIV transmission. Individuals considered at high-risk of new HIV infection include those with HIV-positive sexual partners, injection drug users who share injection equipment or were in treatment for injection drug use within the preceding six months, and both heterosexual and homosexual individuals engaging in high-risk sexual behaviors as described in CDC practice guidelines. TAF/FTC was FDA approved for PrEP in 2019 with similar indications and CDC guidelines with one major difference: TAF/FTC is recommended to prevent HIV infection among persons at risk through sex, ***excluding people at risk through receptive vaginal sex***. This exclusion is due to the lack of clinical data regarding its efficacy in this setting.

Discontinuation of HIV PrEP with appropriate counseling about stopping/restarting PrEP is required should the member be TDY/deployed to a location that cannot support continued strict compliance with the CDC guidelines (i.e., any TDY/deployment greater than 90 days). Interval discontinuation of PrEP for the purpose of TDY/deployment followed by resumption upon return to home station does not require new waiver evaluation in the absence of any other clinical changes.

The identification and mitigation of risk is paramount to an effective aviation medicine program. HIV PrEP use is only approved in those whose self-reported circumstances and/or behavior have been deemed high-risk. Special precaution should be taken to ensure only those with legitimate clinical indications are using PrEP. Unnecessary risk taking or careless behavior, deleterious personality traits or any aeromedical adaptability concerns interfering with completion of the aviation mission in a mature and responsible fashion are unfitting for aviation service with ETP/waiver not recommended.

REFERENCES:

(1). CDC website: https://www.cdc.gov/hiv/risk/prep/index.html
(2). Centers for Disease Control and Prevention. Prexposure prophylaxis for the prevention of HIV infection in the United States. https://www.cdc.gov/hiv/pdf/risk/prep/cdc-hiv-prep-guidelines-2017.pdf
(3). Workowski KA, Bolan GA. Sexually transmitted diseases treatment guidelines (2015). Morbidity and Mortality Recommendations and Reports. 2015;64(RR3):1-137.

MOTION SICKNESS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Motion sickness may present with profuse sweating, nausea, vomiting, drowsiness, lethargy, apathy and headache. Depending upon the degree of these symptoms the pilot may be distracted or totally incapacitated. Motion sickness occurs most commonly in initial trainees. The early symptoms of motion sickness, especially in the student, may be interpreted incorrectly as the lack of skill or ability. Simulator sickness, a form of motion sickness, may occasionally occur in even highly experienced aircrew members. Aircrew members with intractable airsickness are considered disqualified and are normally permanently suspended from aviation duties.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis following successful completion of an airsickness desensitization program.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following successful completion of an airsickness desensitization program. Waiver is routinely recommended in aircrew whose MOS/duty description does not involve activities predisposing to air or motion sickness.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting detailed history of airsickness.
- Results of airsickness desensitization program, if required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required unless symptoms reoccur.

TREATMENT: The majority of aviators become habituated to the stimuli and do not require treatment other than frequent regular flying. Others may benefit from a combination of desensitization, biofeedback training, relaxation training and psychological counseling. Promethazine (Phenergan) 25 mg. combined with ephedrine 25 mg. or L-scopolamine hydrobromide alone or in combination with dextroamphetamine (Scop/Dex) taken 1 hour prior to flight is permitted for up to 3 flights during training or for reacclimatization of a rated aviator provided the patient is accompanied in flight by an instructor pilot. The scopolamine transdermal patch achieves peak blood levels 8-12 hours after application, but peak levels may not be needed to achieve symptom control.

DISCUSSION: In the RAF, 39% of flying students had airsickness at some stage during their training and in 15% of students, this is sufficiently severe to disrupt or abandon the flight. The USN experience is that 13.5% of all flights will lead to airsickness in non-pilot crews with vomiting occurring in 5.9%. Up to 63% of students were sick on their first flight, with only 15-30% not experiencing airsickness at all during their training. Females are almost twice as likely to report nausea as males and the incidence declines with age. While rare in rated aviators, most cases may be attributed to lack of acclimation to the flight environment. Occasionally, airsickness will present as a manifestation of an underlying psychological disorder or even fear of flying. Treatment utilizing biofeedback training, relaxation and psychological counseling achieves a success rate of 40%; when exposure to incremental Coriolis effect and flying is included, these success rates rise to 85%. All of the drugs used for motion sickness control have unacceptable side effects. Scopolamine and antihistamines act as central depressants; the former particularly degrades tasks that involve continuous attention and memory storage, as well as causing blurred vision, sedation and dizziness in some individuals. Mild in-flight conditions cause air sickness in only 10% of the untreated population, 0.4 mg. of scopolamine will reduce that number to 2%. Similarly, in rough conditions, airsickness occurs in 50% of the untreated population, 1 mg. of scopolamine will reduce the incidence to 8%, but with unacceptable side effects.

SMOKING AND TOBACCO CESSATION

INFORMATION ONLY: Yes, short term use of any aeromedically acceptable smoking/tobacco cessation medications or nicotine replacement aids can be listed IO.

TEMPORARY CLEARANCE: N/A.

AEROMEDICAL CONCERNS: Cigarettes smoking is the leading cause of preventable death and disability in the United States. Smoking is associated with heart disease, stroke, certain cancers, chronic obstructive pulmonary disease, and adverse pregnancy outcomes. Smokeless tobacco products increase the risk for oropharyngeal cancers. In the US, 25% of the adult population smokes and this is felt to contribute to 400,000 + deaths per year. In the aeromedical environment, tobacco use leads to increased carbon monoxide levels with subsequent ophthalmologic effects and potentially harmful peripheral capillary effects on thermoregulation. Heavy smokers may desaturate as much as 10% of their oxyhemoglobin with carbon monoxide. This produces at sea level a 90% oxygen saturation level equivalent to an altitude of 10,000 feet. Visual changes at this equivalent or physiologic altitude include loss of 20% of night vision, and decreases in accommodation, convergence, brightness sensitivity, color detection, oculomotor coordination, flicker detection, and peripheral vision. As aeromedical healthcare providers, assisting our aircrew in smoking cessation is associated with substantial health benefits and furthers our work in health promotion, and improves flight safety. This policy helps to provide an effective, safe methodology for achieving smoking cessation while ensuring a close monitoring program to provide a supportive platform, as well as to detect significant side effects as soon as possible. This policy also applies to weaning from smokeless tobacco products.

WAIVERS:
Pilot Applicants (Class 1A/1W):
N/A. ETP is not required.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
N/A. Waiver is not required.

INFORMATION REQUIRED:
Local aeromedical providers must be fully familiar with the potential effects of any prescribed medication, assess the patient's motivation for smoking cessation, and thoroughly counsel the patient regarding the role of medication in smoking cessation, the need for absolute smoking abstinence while using a patch or gum, the correct technique for chewing gum to avoid nicotine overdose, the possible side effects, and a discussion of all restrictions while under treatment. Bupropion (Zyban) use must be closely monitored, annotated on the annual flight physical, and provided it is tolerated well with no aeromedically significant side effects, can be listed IO.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: While there are no annual waiver requirements, local aeromedical providers are advised to perform follow up as described here. For Nicotine replacement therapy (NRT) (patch, inhaler, gum), initial follow-up should occur after 72 hours and then within 14 days; subsequent visits should be at least every 30 days. Nicotine gum may not be used while flying. Nicotine patches may be worn while flying; however, it is advisable to fly with another fully qualified, rated aviator. Local flight surgeons are responsible for prescribing and managing the nicotine weaning program for all aviation personnel. When initially prescribed a nicotine patch or gum, the aviator will be restricted from flying for 72 hours. Once 72 hours has passed with no evidence of significant side effects and the patient has successfully abstained from smoking, the aviator may return to full aviation duties. Smoking is absolutely forbidden at all times. One episode of smoking voids the contract made with the flight surgeon and the aviator must be considered to be medically restricted until cleared by the flight surgeon (FS). Temporary clearance should be granted for the duration of treatment while under the direct guidance of the FS.

For Bupropion (Zyban) therapy, aircrew that meet criterion for treatment must be grounded for at least the initial 2 weeks of therapy. During this time, the FS must closely monitor the individual for medication side effects. At the end of the two week grounding period, the FS must determine if the individual can resume flight duties and a temporary upslip can be issued. The aircrew should be seen by the flight surgeon every two weeks while on therapy to assess effectiveness, potentially hazardous side effects, and to offer support to the individual. Those on combination Bupropion (Zyban) and NRT must be closely monitored for elevations in blood pressure. Using Bupropion (Zyban) in association with group or individual counseling in a smoking cessation program is highly encouraged.

For Chantix (Varenicline), two weeks ground trial to evaluate for irritability/aggression, attention deficit, SI/HI, seizure, sleep and any cardiac side effects. Encourage alcohol abstinence to prevent seizures and completion of 90 minute tobacco cessation (on-line or in-person) program to maximize efficiency.

Contraindications to Bupropion (Zyban) use are as follows:
- History of seizure disorder
- Conditions predisposing to lowered seizure threshold:
    - History of head trauma or seizures
    - Excessive alcohol use/abuse/dependence
    - Concomitant use of other drugs: theophylline, or corticosteroids
- History of eating disorder (bulimia, anorexia nervosa)
- Hepatic or renal disease
- Uncontrolled hypertension
- Pregnancy or lactation
- Recent use of other medications: monoamine oxidase (MAO) inhibitors, other antidepressants, and antipsychotics. (These are not authorized for use in aviation personnel).

Contraindications to Varenicline (Chantix) use are as follows:
- History of prior neuropsychiatric events (e.g., depression, suicidal ideation, mood disorder, psychotic disorder, anxiety disorder)
- Conditions predisposing to lowered threshold:
    - History of hypersensitivity or angioedema (e.g, swelling of face; mouth – tongue, lips, gums; extremities; and neck; Steven-Johnson syndrome)
    - Excessive alcohol use/abuse/dependence
    - History of cardiovascular disease
- History of eating disorder (bulimia, anorexia nervosa)
- Hepatic or renal disease
- Uncontrolled hypertension
- Pregnancy or lactation
- Recent use of other medications: monoamine oxidase (MAO) inhibitors, other antidepressants, and antipsychotics. (These are not authorized for use in aviation personnel).

TREATMENT: Aircrew members are encouraged to participate in formal smoking cessation or similar tobacco abuse programs with individual or group counseling offered. Bupropion (Zyban) dosing for smoking cessation starts at 150 mg qd for 3 days and then increases to 150 mg bid. Doses should be taken 8 hours apart and doses higher than 300 mg should not be used. Usual treatment course is 8-12 weeks. The medication is started while the aircrew is still smoking and a target quit date is set for within the first two weeks of treatment. If no progress towards abstinence has been made, stopping treatment should be considered after 7 weeks of therapy.

DISCUSSION: Cigarette smoking is the leading cause of pulmonary illness and related deaths in the U.S. Smoking has also been shown to increase the risk of miscarriage and stillbirth and smokers have a higher risk of neonatal death. The health benefits of smoking cessation are substantial. After 10-15 years of abstinence, the overall risk of mortality approximates the mortality rate of those people who have never smoked. After one year of abstinence, excess risk of CAD is reduced by one-half and approaches normal after 3 to 4 years. After 10 years of abstinence, the risk of lung cancer is reduced by 50-70% and almost all other smoking-related cancers occur less frequently. Behavioral modification is the mainstay of most smoking-cessation programs.

Nicotine-replacement therapy has clearly been established as effective when used in combination with such programs. There have been no controlled studies showing that nicotine replacement is effective when used alone. Complications of nicotine replacement therapy are mostly minimal, but occasionally excessive nervousness, gastrointestinal complaints, sleep disturbance including insomnia and vivid dreams, and lightheadedness have been reported. A simple strategy to aid in smoking cessation attempts uses the 5 “A”s: 1) Ask about tobacco use, 2) Advise to quit, 3) Assess willingness to make quit attempt, 4) Assist in quit attempt, and 5) Arrange follow- up- starting with one week after quit date. The most frequently used method for smoking cessation is to quit “cold turkey.” Fifty percent of those who attempt this method do have success but only after 7-9 attempts. Of those who quit on recommendation of a health care provider, 8.5-10% are still successful at six months.

NEUROLOGY WAIVERS

CRANIAL NEURALGIA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The pain of cranial neuralgia can be incapacitating in flight. The symptoms of trigeminal neuralgia may be stimulated by the wearing of an oxygen mask.
Glossopharyngeal neuralgia has been associated with syncope and cardiac arrest.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for mild neuralgia not impacting safe aviation duty and not requiring any unacceptable medications and/or treatments.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for mild neuralgia not impacting safe aviation duty and not requiring any unacceptable medications and/or treatments.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Neurology and/or Neurosurgical consultation.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual neurology or neurosurgical consultation is required only in the presence of continued or recurrent symptoms.

TREATMENT: Pharmacological treatments (Tegretol, Triavil, Prolixin, Mexitil), although effective, are not waiverable due to their side effects profiles. Surgical "cures" (microvascular decompression) may be achieved in selected cases and subsequent waivers may be considered.

DISCUSSION: Although most cranial neuralgias are probably due to microvascular compression at the root entry zone, other etiologies need to be considered, especially in the young adult population in whom demyelinating disease, aneurysms, neoplasms, and infectious etiologies (post-herpetic, Lyme disease, etc.) may be more common. The finding of sensory loss with neuralgia should alert the flight surgeon to consider these other causes of cranial neuralgia. The branches of the nerve involved in trigeminal neuralgia are mandibular alone (20%), maxillary alone (16%), both combined (36%), ophthalmic alone (3%), maxillary/ophthalmic (11.5%), and all 3 divisions (16%). Medical treatment with carbamazepine, which is also used for glossopharyngeal neuralgia, can produce dizziness, somnolence, ataxia, disorders of accommodation and increased reaction times. Over time, the effectiveness of medication declines in 50-75% of patients. Microvascular decompression of the trigeminal root has a failure rate of 65% by 5 years. Gangliolysis, by a variety of techniques, has a failure rate of 20% after 2 years. Surgical treatment of glossopharyngeal neuralgia is of uncertain benefit.

DECOMPRESSION SICKNESS

INFORMATION ONLY: Yes, a single episode of Type 1 Decompression Sickness (DCS) that is fully resolved with zero sequelae, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.\

AEROMEDICAL CONCERNS: DCS is one of the two medical conditions described under Decompression illness (DCI), which is a result of rapid exposure to low ambient pressure that cause bubble formation in a tissue or a vessel. The bubbles formed from an inert gas (mainly nitrogen), which normally dissolved in the blood stream. It is further divided into Type I DCS or Type II DCS depending on its clinical presentation or organ system involvement. It has a wide range in terms of clinical presentation from minor skin itching, to joint or limb pain, and to neurological injury or circulatory collapse. Type II DCS is the more serious of the two presentations and it is usually involved with the neurological system. Since there are no pathognomonic signs for this condition, clinical suspicion coupled with a history of recent hypobaric exposure is the key for diagnosing this condition. Prompt treatment is required to relieve the symptoms. Delay in treatment may result in residual neurologic/neuropsychological impairment, which is detrimental to the aviator. Most but not all individuals who have suffered from DCS make a full recovery and are not at increased risk for recurrent DCS.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended for recurrent Type 1 DCS or any episode(s) of Type 2 DCS.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for recurrent Type 1 DCS or an episode(s) of Type 2 DCS.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course including what treatment was utilized/required.
- Neurology and/or Neuropsychological consultation is required for any cases presenting with behavioral, neurological, and/or cognitive signs or symptoms.

TREATMENT: Recompression therapy is the overall standard, however many Type I patients will respond completely to surface oxygen therapy and may not require hyperbaric oxygen.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: No follow-up is required unless the aircrew member has a recurrent DCS event or has residual abnormalities, which require monitoring.

DISCUSSION: This is a difficult diagnosis to make and often we err on the conservative side. Patients whose findings and symptoms may be equivocal get treated anyway. This is especially true in the training commands where students are instructed to report all and any symptoms that occur following low pressure chamber flights. A high index of suspicion in this setting coupled with enthusiasm for treatment is factors that must be weighed in evaluating the outcome and disposition of these patients. Diving related cases of DCS tend to be more straightforward as well as more severe. Patients who receive relatively delayed treatment are more likely to suffer permanent residual effects of DCS. Except for age (older versus younger), no other factors are clearly linked to increased risk for recurrent DCS. Individuals who do suffer recurrent DCS are probably at higher risk for reasons that cannot be defined or predicted and should not be considered for waiver without careful evaluation of risk-benefit factors. The incidence of DCS in high altitude reconnaissance fliers has been reported to be 4.2%, with 62% of the pilots having experienced DCS. The predominant symptom was pain (51%) but skin (14%), neurological (14%) and respiratory (3%) symptoms were also reported. The US Navy has not found any evidence that divers who have had "Type II" DCS were statistically more likely to have a second episode than the remainder of the population. In another study of sub atmospheric DCS, there was a 7.4% incidence of recurrent symptoms. Female risk generally is just over 2 times that of males; the incidence is highest just after the menstrual period, declining linearly to the next period. A variety of studies have shown that the incidence of residual sequelae is 2-4%; however, another study which looked very carefully for neurological involvement in divers found that the sequelae is about 70% for those with initial CNS symptoms one month after decompression.

EPILEPSY / SEIZURE

INFORMATION ONLY: Yes, a single, febrile seizure during childhood can be listed IO. No, in all other cases.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The risk from a seizure in flight or while controlling aircraft is obvious. Even in dual pilot aircraft, a seizing aviator or aircrew member can be catastrophic creating/forcing an unsustainable aircraft attitude, accidentally altering controls, or engaging weapon systems. Any myoclonic activity associated with G-LOC or hypoxia is not considered seizure activity and is therefore not disqualifying.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is only recommended for a history of 2 or more remote (greater than 10 years) febrile seizures OR a single adult seizure clearly attributable to an identifiable and avoidable stimulus.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is only recommended for a history of 2 or more remote (greater than 10 years) febrile seizures OR a single adult seizure clearly attributable to an identifiable and avoidable stimulus.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Neurological consultation
- EEG (routine and sleep-deprived) may be required as well as any other testing recommended by evaluating specialist.
- Imaging as clinically indicated or recommended by evaluating specialist.

TREATMENT: N/A. Any seizure activity requiring medications is non-waiverable.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Since aircrew with seizures are rarely granted waivers, follow-up per neurology recommendation.

DISCUSSION: The risk of having a first seizure falls from about 0.4% at age 20 to 0.06% at age 50 before rising sharply to 0.8% by age 70. The late rise is because of the increase in precipitating factors such as neuronal degeneration and cerebrovascular disease. After a single, unprovoked seizure in adults, the risk of a second episode while not taking anticonvulsants is 64% over 3 years and 80% at 5 years, with over two-thirds of these occurring during the first year. With no risk factors such as previous neurological insult or a sibling with epilepsy, the risk of a second seizure is 23% at five years. Relapse even after many years of symptom-free existence without therapy is possible. These figures apply to individuals living at one atmosphere and one +Gz. The risk for seizure recurrence associated with exposure to the physiological stressors of military aviation is likely to be much higher. Etiologies for seizures in the adult: alcohol (25%), brain tumor (16%), cerebral infarction (14%), trauma (4%), miscellaneous (5%) and unknown (38%). The EEG does not prove or disprove the diagnosis, although an unequivocally abnormal EEG with a good history of seizure does support the diagnosis. EEGs are normal in half the patients with frank epilepsy. An epileptiform EEG does not, by itself, signify the presence of epilepsy.

GUILLAIN-BARRE SYNDROME

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Skeletal muscle weakness which can involve extremity, truncal or bulbar groups and typically evolves over a matter of several hours to a few days can affect flying and aircrew abilities creating safety of flight as well as mission completion concerns. In the C. Miller-Fisher variant, ataxia as well as ophthalmoplegia (internal and external) accompany the obligatory findings of areflexia. Dysautonomia may also be present, posing an additional concern regarding tolerance of gravitational force changes, blood pressure and cardiac rhythm disturbances that may be especially life- threatening in the aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following full recovery of strength and autonomic nervous system function. Tendon-stretch reflexes may never return but would not prohibit waiver recommendation.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Neurology or Physical Medicine and Rehabilitation consultation.
- Quantified strength testing of all motor groups
- Assessment of autonomic nervous system function (i.e., orthostatic BP measurements, treadmill testing and, if appropriate, thermal stress testing, etc.).
- Consider performing functional cockpit and egress testing.
- If autonomic instability is a concern, then gravitational tolerance testing should also be performed.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual neurology evaluation is required only in the presence of continued neuromuscular deficit.

TREATMENT: Plasmapheresis and/or intravenous immunoglobulin therapy is warranted in those cases which involve weakness progressing to the point of impairing walking or respiratory abilities. Adrenocorticosteroid therapy is not beneficial and may actually worsen the outcome.

DISCUSSION: Antecedent flu-like illness within two weeks prior to the onset of neurological symptoms occurs in approximately 65% of cases. This syndrome often occurs in clusters of small epidemic proportions and may have broad spectral presentations ranging from minor (e.g., Bell's palsy) to severe (complete paralysis of all skeletal muscle groups with respiratory and cardiovascular support dependency). Some of these patients may experience relapses and progress to chronic inflammatory demyelinating polyneuropathy (CIDP). HIV victims may present with AIDP. Lyme disease may mimic AIDP. The presence of pleocytosis in the CSF is incompatible with AIDP and suggests alternative diagnoses (e.g., sarcoidosis, leptomeningeal lymphomatosis). When adequate intensive care and respiratory support are available, overall mortality is less than 5%.

HEAD AND TRAUMATIC BRAIN INJURIES

INFORMATION ONLY: Yes, see Table 2 for IO consideration.

TEMPORARY CLEARANCE: Yes, if currently asymptomatic, in TBI determined to be no worse than aeromedically "Mild" or "Moderate," following mandatory DNIF observation period.

AEROMEDICAL CONCERNS: Head and traumatic brain injuries (TBI) are a diverse set of conditions with varying characteristics and physiological effects. A TBI event can be defined as a traumatically induced, structural injury and/or physiological disruption of brain function as a result of an external force (i.e., head strike, acceleration or deceleration injury, exposure to blast/explosion, penetrating foreign body, etc.) that is indicated by new onset or worsening of specific clinical signs following the event. These signs include any period of loss or decreased level of consciousness (LOC), loss of memory immediately before or after the injury (post-traumatic amnesia), alteration in mental state at the time of the injury (i.e., confusion, disorientation, slowed thinking, etc.), neurological deficits such as imbalance, change in vision, praxis/paresis/plegia, sensory loss, anxiety, headaches, or personality changes (post-traumatic syndrome), or any resultant intracranial lesion.

Risk linked with a fixed neurologic deficit following TBI is evident and unacceptable in any aviation operations. Subtle incapacitation from less apparent cognitive deficits is of equal concern and can be exacerbated by common aviation stressors such as hypoxia, temperature extremes, sleep disruption, and nutritional deficiencies. Each case has unique features and the overall safety of flight-related activity varies broadly across differing aviation positions. As such, waiver/ETP consideration is on a case by case basis, taking into account all factors and their effects on overall aeromedical risk. Severity classification is based on the 2007 DoD guidance, and incorporates clinical and radiographic information. Recommended post-injury observation periods prior to waiver/ETP consideration are evidence-based ensuring recovery of cerebral dysfunction and aeromedically-acceptable seizure risk. Minor head injuries not meeting the diagnostic criteria for TBI are not disqualifying and can be listed IO, provided member is fully asymptomatic and has returned to pre-injury baseline function with zero sequelae. Please see Table 1 for specific aeromedical classifications of TBI and Table 2 for guidance on eligibility of waiver/ETP based on flying duty class.

Table 1: Traumatic Brain Injury Classification Criteria

Classification	Criteria
Head Injury without TBI	- No post-traumatic syndrome - No post-traumatic headaches - No amnesia, delirium or disorientation - No LOC
Mild TBI	- Post-traumatic syndrome < 48 hours - Post-traumatic headaches < 14 days - Amnesia, delirium, or disorientation < 12 hours - LOC < 15 minutes - Best available Glasgow Coma Scale (GCS) in first 24 hours ≥ 13
Moderate TBI	- Linear or basilar skull fracture with LOC < 15 minutes - Post-traumatic syndrome > 48 hours but < 14 days - Post-traumatic headaches > 14 days but < 1 month - Amnesia, delirium, or disorientation > 12 hours but < 24 hours - LOC > 15 minutes but < 2 hours - Cerebrospinal fluid rhinorrhea or otorrhea < 7 days with no evidence of cranial nerve palsy - Best available GCS in first 24 hours of 9-12
Severe TBI	- Linear or basilar skull fracture with LOC > 15 minutes but < 2 hours - Post-traumatic syndrome > 2 weeks but < 6 weeks - Amnesia, delirium, disorientation, or impairment of judgment > 24 hours - LOC > 2 hours but < 24 hours - Best available GCS in first 24 hours of < 9
Profound TBI	- Intracranial hemorrhage or hematoma, to include epidural, subdural, intracerebral, or subarachnoid hemorrhage - Any penetration of the dura mater or brain substance - Radiographic or other evidence of retained intracranial foreign bodies or bony fragments - Transient or persistent neurological deficits indicative of parenchymal central nervous system injury, such as hemiparesis or cranial neuropathy - Persistent focal or diffuse abnormalities of the EEG reasonably assumed to be a result of an accident - Depressed skull fracture with or without dural penetration - Linear or basilar skull fracture with or without dural penetration and LOC > 2 hours - Post-traumatic syndrome > 6 weeks - LOC > 24 hours - Cerebrospinal fluid rhinorrhea or otorrhea persisting > 7 days

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended IAW Table 2.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended IAW Table 2.

Table 2: Waiver/ETP Eligibility By Class

Condition	Class 1A/1W	Class 2, 3 and 4
Head Injury without TBI	Information Only – fully document incident on DD 2807	Information Only – fully document incident on DD 2807
Mild TBI	ETP recommended after 3 months	Information Only – fully document incident on DD 2807
Moderate TBI	ETP recommended after 24 months	Information Only – fully document incident on DD 2807
Severe TBI	ETP recommended on a case by case basis after 5 years	Waiver recommended on a case by case basis after 24 months
Profound TBI	ETP not recommended	Waiver not recommended but may be considered in select low-density aircrew based on needs of the Army for remote cases.*

* Minimum 5 years since injury (where post-traumatic seizure risk approaches that of the general population) in fully asymptomatic members with normal imaging and no deficits on current neuropsychological assessment/testing.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Historical details of the injury (to include prior injuries if present) and initial treatment.
- Complete neurological and mental status examination by residency-trained physician.
- Results of imaging (either following injury or current if results not available).
- Neurology and/or Neuropsychology evaluation not required unless felt to be clinically indicated by aeromedical provider.

Additional Requirements for Moderate and Severe TBI:

- Neurology consultation
- Neuropsychology consultation and results of testing to include at a minimum assessment of general cognitive functioning and major cognitive domains.
- Sleep-deprived EEG required if TBI was associated with any seizure activity > 7 days after injury, if prior EEG demonstrated abnormalities or if otherwise currently clinically indicated.
- Results of MEB if DES referral was required due to injury severity or residual sequela.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on continued absence of symptoms.
- Neurology follow up would only be required if recommended previously by evaluating specialist OR if symptoms related to TBI develop/reappear.

TREATMENT: Treatment will be based upon severity of TBI and dictated by current practice guidelines. This can cover a broad range starting with “watchful waiting” all the way through intubation and neurosurgical intervention. Current VA/DoD Clinical Practice Guidelines for the assessment, management, and disposition of mild TBI is available at: http://www.dvbic.org/. These represent an evidence-based, regularly updated approach to TBI, but are applicable to the general military population. They should be adapted as appropriate for aeromedical risk management and tailored to the specific clinical presentation. Any history of required surgical intervention likely signifies a severe or profound TBI unlikely to be considered favorably for waiver/ETP. The need for chronic medication management likely suggests an incompletely resolved TBI or one with unacceptable sequelae and therefore is also not considered favorably for waiver/ETP.

DISCUSSION: Even those TBIs designated as aeromedically-mild can be associated with significant cranio-cerebral damage that may go undiscovered without sufficient clinical suspicion. Therefore, required observation periods are necessary to mitigate aeromedical risk in this population. Waiver/ETP waiting periods are described in Table 2 whereas grounding periods for trained aviation personnel will be discussed here. Please note, these are evidence-based recommendations and grounding periods may need to be extended based upon symptoms, neurology and/or neuropsychology results, image findings, and other clinical variables. Those determined to have head injury without TBI may be returned to flight at the discretion of the treating aeromedical provider. Trained personnel determined to have aeromedically-mild TBI should be temporarily grounded for no less than 1 month prior to gaining FFD clearance via DD 2992. Trained personnel determined to have aeromedically-moderate TBI should be temporarily grounded for no less than 3 months prior to gaining FFD clearance via DD 2992. If a full neurology and neuropsychology evaluation is normal, all associated imaging is normal and member is fully asymptomatic, moderate TBI can be listed IO. Any abnormalities will necessitate waiver action which can be requested 3 months post-injury. Those determined to have aeromedically-severe or profound TBI are considered to have a Table 11 condition (please see Aeromedical Technical Bulletins) and thus NOT authorized to receive temporary clearance via DD 2992 until waiver disposition has been made by the appropriate waiver authority.

Head injuries in the military/aviation environment are unfortunately all too common and can result from combat, training mishaps, sports-related injuries, motor vehicle and motor cycle accidents/collisions, occupational hazards, and recreational activities. Interestingly, immediate and early (7 days or less) post-traumatic seizures (sometimes referred to as “concussive convulsions”) do not produce an increased future seizure risk, while seizures occurring over 7 days post-TBI do. The relative risk of seizures following even mild TBI compared to the normal population remains elevated for five years, while the relative risk after moderate or severe TBI remains elevated for over ten years. The actual incidence of seizures, however, becomes aeromedically acceptable much sooner, reflected in recommended waiting periods listed in Table 2. Certain clinical features such as penetrating TBI and/or brain volume loss, herald a much poorer clinical outcome and increased risk for post-TBI seizures. Additionally, imaging findings consistent with more serious injury and increase post-traumatic seizure risk include subdural hematoma, contusions, micro-hemorrhages, diffuse axonal injury, and blood breakdown product (hemosiderin) deposition. Aeromedical providers should default to a more conservative approach/higher severity classification in borderline cases or in remote cases where very little post-injury data/imaging/evaluations are available. When ETP/waiver is required, corroborating information pertaining to an individual’s current function can be extremely useful. This includes but is not limited to completion of a college/technical degree, maintaining a high grade point average with difficult post-high school course work, graduation from a challenging military occupational specialty, attaining “Dean’s List” or Commandant’s List” at a military course or professional military education, and serial civilian/military performance evaluations documenting satisfactory job performance.

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HEADACHE

INFORMATION ONLY: Yes, minor and infrequent headaches requiring nothing more than occasional OTC preparations/NSAIDS AND that don't cause frequent lost duty time can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Headaches are common and estimated to affect over 70% of Americans. Occasional minor/mild headaches are not a major aeromedical concern and do not require extensive evaluation. Severe headaches can be incapacitating in flight while milder headaches will act as a distraction. Cluster headaches are incapacitating and may be associated with transient neurologic symptoms, rhinorrhea, lacrimation, and a unilateral Horner's syndrome. Please also see the Migraines APL. The specific nomenclature or diagnostic label of the headaches is not the key factor for determining fitness for aviation duty. Of greater concern is the effect on general performance, special senses, and the risk of recurrence. Two main questions must be answered with regard to aeromedical evaluation of headaches: 1) Are the headaches primary or secondary to an underlying condition? 2) Are the headaches chronic, recurrent, and /or of sufficient severity to pose a risk to flight safety?

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and largely depending on the frequency and severity of symptoms, the etiology, and the specific medication required to control the headaches.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and largely depending on the frequency and severity of symptoms, the etiology, and the specific medication required to control the headaches.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting headache timing, duration, frequency, triggers, predictability of episodes, and response to treatment is required.
- Neurology consultation may be required for severe cases or those with unknown etiologies.
- Requirement for imaging will be at the discretion of the evaluation provider/specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual Neurology follow up would only be required if previously recommended by evaluating/treating specialist or if clinically indicated due to lack of control of frequency and/or severity of headaches.

TREATMENT: Simple analgesics and/or NSAIDs are acceptable. Life-style changes, biofeedback and relaxation therapy, if successful, may permit return to flight status for the muscle-contraction or "tension" headache sufferer. Psychiatric/psychologic evaluation of these members is strongly recommended. Treatments for cluster headaches that are effective but not compatible with flight training include lithium, methysergide, intranasal lidocaine, adrenocorticosteroids, and oxygen inhalation. Sumatriptan or other 5HT serotonin receptor agonists may be used but require a 12 hour mandatory grounding period following use; frequency of its use should be carefully evaluated by the local aeromedical provider. Frequent use of medications in this class may reflect vascular or migraine headaches. Verapamil may be an effective prophylactic treatment for cluster or vascular headaches and cane be considered for waiver in select aircrew.

DISCUSSION: Cluster headaches occur almost exclusively in men, begin in the third or fourth decade, are unilateral, and never change sides. Clusters consist of recurrent headaches lasting about 45 minutes, several times a day and night for a few weeks to months at a time with a tendency to recur annually, often around the summer or winter solstice. Recurrence patterns may be characteristic for an individual, but may vary considerably between sufferers. Recurrent muscle-contraction or tension headaches are normally associated with some psychosocial stress in the majority of cases; however, underlying cervical spondylosis and DJD may be a contributing factor and will respond to NSAIDs and physical therapy. Exertional headaches, cough headaches and immersion headaches may be associated with posterior fossa pathology (especially Arnold- Chiari Malformation) warranting an MRI scan. Coital headaches are almost always benign, but are sometimes associated with subarachnoid hemorrhage and should be evaluated with CT with and without contrast, MRI, and possibly even Lumbar Puncture (LP). Incorrect prescription for astigmatism may be a cause for headache. In general, however, eye and ENT pathologic explanations for headache are unlikely unless the patient has obvious gross clinical findings of disease in these areas.

MIGRAINE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Migraine headache may be incapacitating if not distracting for flight. Visual and other aura, nausea and vomiting, transient neurologic deficits (i.e., aphasia, hemisensory and hemimotor impairment, vertigo, syncope, confusion, and disorientation, etc.) may accompany migraines and are of obvious concern. Please also the Headache APL.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis if the individual has been symptom free for 12 months on no medication and the information required below reveals no underlying problems.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended if the information required below reveals no underlying medical problems. Waivers are usually not recommended if visual or other neurologic symptoms accompany the headaches, but final determination with regard to aviation duties will be based on effects on general performance, special senses, and the risk of recurrence.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting headache timing, duration, frequency, triggers, predictability of episodes, and response to treatment is required.
- Neurology consultation may be required for severe cases or those with unknown etiologies.
- Requirement for imaging will be at the discretion of the evaluation provider/specialist or when history/physical exam indicates a potentially structural etiology.
- Ophthalmology evaluation is required for any cases with visual disturbances.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual Neurology follow up would only be required if previously recommended by evaluating/treating specialist or if clinically indicated due to lack of control of frequency and/or severity of headaches.

TREATMENT: Although there are many effective pharmacologic treatments for migraine, most are incompatible with waiver. Standard migraine therapy includes prophylactic, therapeutic, and abortive measures. The first line of prevention is avoiding known triggers.

DISCUSSION: Those patients who have returned to flying duties claimed to have had no symptoms for periods ranging from 6 months to several years. This suggests that the original diagnosis was incorrect, that our understanding of the natural history of migraine is at fault or that symptoms are being deliberately suppressed in order to return to flying. The International Headache Society criteria for migraine without aura include: episodic attacks of headache lasting 4-72 hours, with two of the following symptoms: 1) Unilateral pain, 2) Throbbing, 3) Aggravation on movement, 4) Pain of moderate or severe intensity, and either nausea/vomiting or photo / phonophobia. Diagnosis is almost entirely dependent on the individual's description of the attacks. Migraines often begin in adolescence then may remit for several years, usually returning by mid-life. The prevalence of migraines is 11% overall with 6% among men and 15-18% among women. At least 70% of patients with migraines have a family history for the same. Less than one third of patients have "classic" migraine with visual aura, but nearly one half will have paresthesias with their attacks. Vertigo occurs in about 10% of the cases. Auras typically last 15 - 20 minutes and are followed by unilateral, throbbing headaches associated with photo/phonophobia, nausea, anorexia, and torpor. Most patients prefer to lie in a dark quiet room for relief. Precipitants for migraine may include dairy products, chocolate, alcoholic beverages, MSG, nitrates (preserved meats), tyramine (i.e., aged cheese, pickled herring, yogurt, and fava beans, etc.), food deprivation, barometric pressure changes, hormonal changes, certain scents/smells (i.e., cigar smoke, perfumes, oils, etc.), sleep deprivation, and/or altered sleep patterns. Digital pressure applied to the temples, cold packs, and caffeine may be beneficial. Many patients have a history of car sickness in childhood.

MULTIPLE SCLEROSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: MS typically presents with visual disturbance, vertigo, lower body weakness or sensory changes. The symptoms can present over a period as short as a few hours. Mild dementia may occur in 20% or more of patients. In some cases, paroxysmal events lasting less than 5 minutes (i.e., trigeminal neuralgia, abdominal "crises", and myoclonus, etc.) can be the presenting feature.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended. Waivers may be considered for uncertain diagnoses that may be classified as monosymptomatic demyelinating disease, possible MS, etc. Usually a period of grounding for observation of 6 to 12 months after full recovery from the "attack" of monosymptomatic disease is required. Additionally, laboratory findings are critical in predicting the likelihood of progression to MS.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- □ Neurology consultation
- □ Multimodality evoked potentials
- □ MRI scans (brain and spinal cord)
- □ CSF (cells, protein electrophoresis, IgG, oligoclonal bands, myelin basic protein)
- □ Monocular color vision testing
- □ Visual fields
- □ Where indicated, retinal photographs
- □ Where indicated, neuropsychological testing

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual neurology evaluation is required.

TREATMENT: High dose intravenous methylprednisolone (250 mg qid x 3 days) followed by seven days of tapering prednisone (1 mg/kg) given ASAP for the first "attack" of MS may reduce or delay the subsequent progression to relapsing- remitting or chronic progressive MS. Beta Interferon may also have a prophylactic or delaying effect on the development of MS.

DISCUSSION: The average age of onset is 33 years, with a male:female ratio of 2:3. The onset is of a single CNS white matter lesion in 55% of cases, optic neuritis (ON) occurring in 16-30% of initial presentations. ON will occur at some time during the disease in 30-70% of cases and 25% of these will have a recurrence of ON. In 90% of persons with ON, recovery is complete. Up to 20% of cases follow a benign course with no permanent disability; 20-30% follow an exacerbating/remitting course; 40% follow a remitting/progressive course; and 10-20% show steady progression. In the early stage, the attack rate is 0.5/year falling to 0.25/year in intermediate years. In 5% of cases, there is a latent period of several years between first and second attacks while in a few cases the disease becomes totally quiescent. The features suggesting favorable prognosis are onset before 35 years, acute onset with only 1 symptom, and predominantly sensory symptoms. Poor prognosis is associated with onset older than 35 years, more than 1 symptom with each attack, early onset of motor signs within 5 years, and male gender.

PERIPHERAL NEUROPATHY

INFORMATION ONLY: Yes, if mild, transient, and attributable to peripheral nerve compression that resolves with conservative therapy.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Depending upon the nerve or nerves involved, peripheral nerve dysfunction may represent a trivial nuisance (i.e., meralgia paresthetica) or a grounding impairment (i.e., radial nerve palsy). Full recovery of neurologic function, elucidation of the underlying etiology and certainty regarding the prognosis are issues to be considered in the individual with peripheral nerve abnormalities.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended provided peripheral neuropathy has been successfully treated medically or surgically. Those with any residual deficits will not be favorably considered for ETP.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided peripheral neuropathy has been successfully treated medically or surgically. Select aircrew with minor residual deficits will be considered for waiver on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Neurology consultation including supporting laboratory findings (where appropriate) such as EMG, NCV, Evoked Potentials, thyroid functions, Lyme serology, VDRL, HIV, B12, folic acid, ESR, protein electrophoresis, heavy metals, or any other testing as dictated by evaluating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Required follow-up may vary due to the type of condition, its severity, and response to treatment, etc.

TREATMENT: Depends on the underlying cause, if known and if treatment exists.

DISCUSSION:
Bell's Palsy: During the acute phase of the paralysis, grounding is required both as a result of the disabling nature of acute facial nerve weakness (i.e., difficulty speaking clearly, inability to blink and close the eye in response to visual threats, etc.) and because of the fact that not all Bell's palsies are mononeuropathies (i.e., may evolve into acute inflammatory demyelinating polyneuropathy a.k.a. Guillain- Barre, or may be associated with other systemic conditions such as Lyme disease or sarcoid). Once full function has returned, the aircrew member is considered fully qualified, no wavier required. In the event of incomplete recovery or recurrence of facial palsy, waivers are considered on a case by case basis.

Carpal Tunnel Syndrome: Safety of flight concerns due to impaired fine motor coordination, strength, sensation and abnormal sensations in the fingers and hands require grounding until adequate resolution of the neuropathy has been achieved. Waiver is not required for mild cases that fully resolve with conservative therapy. For surgical cases or those with residual deficits/symptoms, waiver requests should include results of electrophysiologic studies and functional demonstration of satisfactory recovery (i.e., performance in simulator, cockpit egress testing, operation of safety harness and parachute fittings, etc.).

Ulnar/Radial Neuropathy: Same as for Carpal Tunnel Syndrome.

Peroneal Neuropathy: Please also submit electrophysiologic test results.

Sciatica: Must demonstrate sufficient return of strength to control rudder and brake pedals and safely egress from aircraft (document by actual testing) to be considered for waiver. In addition, the disappearance of pain (while off medication) is required for waiver consideration.

Meralgia Paresthetica: As this is only a sensory neuropathy, waiver can be recommended as long as the member is not disabled or impaired by discomfort and can tolerate the symptoms without need of medication.

SUBARACHNOID HEMORRHAGE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The major risk is rebleeding but there is also a risk of developing hydrocephalus. Bleeding usually follows sudden increases in blood pressure, and it is likely that the anti- G straining maneuver could be just as potentially harmful in this as exercise, lifting, or defecation.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is rarely recommended and only considered on a case by case basis in select aircrew. Waiver is not usually granted for patients who have undergone surgical repair of leaking intracerebral aneurysms or removal of arteriovenous malformations (AVM). Patients who have recovered fully from idiopathic subarachnoid hemorrhage (SAH) with conservative measures may be considered for waiver after 1 year. Patients who have undergone surgical repair of unruptured aneurysms and exceptional cases of repaired ruptured aneurysms also may be considered for waiver.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Neurologic and Neurosurgical evaluations and recommendations.
- Imaging confirmation of successful obliteration/treatment of the vascular anomaly and no associated pathology/swelling from the lesion or the required treatment.
- Neuropsychological evaluation may be required in select cases involving any cognitive, processing, speech, memory, etc., deficits.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual neurology/neurosurgical consultations are required.

TREATMENT: Intracranial surgery is medically disqualifying for flying duties.

DISCUSSION: Other than case reports there are no major studies on subarchnoid hemorrhage in the active duty population age range. Most studies focus on the population at risk, those over the age of 55. Most patients with this condition have ruptured a Berry aneurysm. Approximately 5% have bled from an AVM and 15% have no identifiable cause. About 25% of patients treated conservatively die within 24 hours of rupture of intracranial aneurysm and up to 25% die in the following 6 months from recurrent hemorrhage, cerebral infarction or following vasospasm. In the survivors, the risk of rebleeding is just over 2% for the first year declining to almost 1%/year after that. Only 32% of such cases are reported to lead a normal life after the bleed. Those patients in whom no cause is found tend to have a better prognosis. Aneurysms are multiple in 10-20% of cases and the rate of rebleeding for these is 3% a year. In those patients treated surgically, the risk of rebleed is negligible if the aneurysm is solitary and has been successfully isolated from the cerebral circulation; but up to 20% of such patients exhibit cognitive or psychosocial decrements at one year. AVMs cause less early death (about 10%); the risk of rebleeding is 7% in the first year and 3% a year thereafter. In those patients with no prior surgery with AVMs followed for 20 years, there was a 42% incidence of hemorrhage, 29% incidence of death, 18% risk of epilepsy, and a 27% chance of having neurological impairment.

SYNCOPE

INFORMATION ONLY: Yes, if vaso-vagal in nature and clearly precipitated by a known, reversible/avoidable cause (i.e., pain, standing at attention for lengthy periods, or the sight of blood, etc.) and that cause itself is not considered disqualifying for aviation duty IAW AR 40-501. Additionally, normal physiological syncope in response to an uncommon training event (i.e., hypoxia demonstration in an altitude chamber or G-induced loss of consciousness in a centrifuge, etc.) can also be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission UNLESS syncope is reasonably determined to be unexplained and thus, a condition on Table 11 of the ATBs.

AEROMEDICAL CONCERNS: An episode of syncope in flight could obviously cause catastrophic results. The ability to determine which individuals are at a greater risk for recurrence under any given set of circumstances is, thus, of greatest interest.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis. ETP is not recommended for cases of unexplained syncope or any cases of recurrent syncope as a result of cough, Valsalva maneuver, certain postural positions, or exertion.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis. Waiver is not recommended for cases of unexplained syncope or any cases of recurrent syncope as a result of cough, Valsalva maneuver, certain postural positions, or exertion.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course/history of events.
- Cardiology and/or Neurology consultations may be required for unexplained cases.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up is rarely required unless an underlying etiology requires recurrent evaluation.

TREATMENT: Avoidance, if possible, of known precipitating causes is the single most effective treatment.

DISCUSSION: In 12% of patients with syncope, some type of convulsive movement may occur. Careful history taking, the presence of facial pallor and the rapid recovery without amnesia help to distinguish syncope from epilepsy. Head injury sustained during the fall may confuse the issue. Presence or absence of incontinence does not help in distinguishing between syncope and seizure. Tongue-biting is strong evidence in support of a seizure and unlikely in syncope. Recurrent, unexplained syncope often can be attributed to psychiatric causes, especially panic disorder, depression, and somatization. Brain scans, EEGs, carotid ultrasound, and lab tests are not usually helpful in arriving at a cause for syncope. If the history, PE, and ECG don't provide the diagnosis, it is unlikely that further studies will help. In cases of cough-, Valsalva-, and exertion-induced syncope, remember to consider posterior fossa pathology, especially Arnold-Chiari malformation. Patients with micturition syncope rarely have underlying disease and can often safely continue unrestricted flying; they should, however, be warned that it would be wise to reduce alcohol intake.

TRANSIENT ISCHEMIC ATTACK / STROKE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The symptoms develop abruptly and unrelated to any particular activity. Symptoms depend on the distribution of the blood vessel concerned and can range from distracting to incapacitating.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew where a curable cause is identified and treated (i.e., atrial septal defect with aneurysmal defect - surgically cured).

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- Neurology consultation
- Imaging as dictated by treating specialist which may include MRI, echocardiogram to include bubble-contrast and if negative, trans-esophageal echocardiogram, and/or cerebral angiography, etc.
- Laboratory evaluation as dictated by treating specialist which may include Lupus anticoagulant, antiphospholipid antibodies, platelet count, CBC, PT, PTT, protein S, and/or, homocysteine levels, etc.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual neurology consultation is required.

TREATMENT: Depends upon underlying cause, if identified. If no surgically correctable etiology, then ASA, low-dose Coumadin or ticlopidine may be appropriate. Life-style changes and treatment of risk factors (i.e., smoking, obesity, HBP, diabetes, hyperlipidemia, alcohol excess, sedentary behavior, etc.) need to be explored.

DISCUSSION: About 25% of patients with TIA do not appear to have any identifiable serious disease. Approximately 30% have a potential cardiac cause and diabetes is present in 6-28% of patients with TIA. The risk of developing cerebral infarction following TIA is 5-7% a year with a further 5% a year developing myocardial infarction. The risk of stroke and/or death is 10% a year. These risks rise with age, blood pressure and the presence of ischemic heart disease. In cases of purely retinal TIA (amaurosis fugax), the 7-year cumulative rate of cerebral infarction is 14% and the 5-year cumulative rate of recurrence is 37%.

OBSTETRICS & GYNECOLOGY WAIVERS

ABNORMAL PAP SMEAR

INFORMATION ONLY: Yes, in cases with benign cellular changes with or without atypia (i.e., inflammation, infection, repair, reactive, etc.). Atypical squamous cells of undetermined significance (ASCUS) and Low–grade squamous intraepithelial lesions (LGSIL) require no waiver action and are filed IO. For Pap intervals greater than or equal to 36 months, Local FS will comment on DD Form 2807 (block 30) attesting that the applicant/member meets current ACOG or USPSTF guidelines.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission for High-grade squamous intraepithelial lesions (HGSIL). No, for carcinoma in-situ (CIS).

AEROMEDICAL CONCERNS: The purpose of the Pap smear screening test is to detect premalignant conditions of the cervix. When positive, regardless of the nature of the underlying abnormality, this may be devastating news to the female aircrew member. Concern over the potential findings and the delay often associated with definitive diagnosis is most certainly a detractor to aviation duties. If cytology is positive for malignant cells, it is 95% predictive of cervical cancer. Please see Cervical Carcinoma APL as appropriate.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is routinely recommended following successful resolution/treatment of HGSIL. Cases designated as CIS should be processed IAW the Cervical Cancer APL.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is routinely recommended following successful resolution/treatment of HGSIL. Cases designated as CIS should be processed IAW the Cervical Cancer APL.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- OG/GYN consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual OB/GYN consultation. High risk patients will require serial cytological studies as indicated for their class of disease. For Pap intervals greater than or equal to 36 months, Local FS will comment on DD Form 2807 (block 30) attesting that the applicant/member meets current ACOG or USPSTF guidelines.

TREATMENT: Treat underlying etiology of inflammatory changes [Human Papilloma Virus (HPV), bacteria, Trichomonas vaginalis, Herpes simplex virus, etc.]. Cryosurgery, laser therapy, loop electrosurgical excision procedure (LEEP), and electrocoagulation are methods used most commonly to treat LGSIL. HGSIL lesions require laser, LEEP or definitive surgical therapy. CIS is often treated with hysterectomy but cervical conization may be considered for patients who desire pregnancy. Close monitoring is required.

DISCUSSION: Cervical cancer is the end result of progressive cervical epithelial alterations. Risk factors include multiple sexual partners, early first coitus (< 20 years of age), young age of first pregnancy, lower socioeconomic status, smoking, male partners with multiple sexual partners, current or prior infection with HPV, condylomata, or herpes simplex infection, HIV infection, abuse of alcohol or other substances, and immunosuppression. Approximately 36% of treated CIS cases progress to invasive cervical cancer. 75% of lower grade dysplasias regress or persist without treatment with the remaining number progressing over various time intervals. The average time for progression of HGSIL to CIS varies and often depends on HPV serotype and can vary from just a few months to several years. Screening may reduce the risk of death from cervical cancer by as much as 80%. A review of current data in the AEDR indicates that in the past 15 years, screening revealed only four cases of CIS on initial exams and only three of these were disqualified. Other initial cases involved dysplasia of various degrees, and the majority of these cases went on to enter aviation service after treatment.

ENDOMETRIOSIS

INFORMATION ONLY: Yes, if mild/minor and managed conservatively with aeromedically acceptable treatment.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Pelvic pain, infertility, and abnormal menstrual bleeding are the primary symptoms. These symptoms may become severe enough to become distracting and the bleeding may be heavy enough to result in significant anemia. There is also a rare association with spontaneous pneumothorax. Recalcitrant cases or those requiring disqualifying medications may require permanent aeromedical suspension and impart retention considerations.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended provided cases are effectively treated.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided cases are effectively treated.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- OB/GYN consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Those patients with a waiver may require periodic OB/GYN consultation. Frequency of consultation will vary by severity of disease process.

TREATMENT: Mild analgesia with NSAID or equivalent is permitted without waiver action. The use of progesterone or antigonadotrophin agents such as Danazol may be compatible with selected flying duties once the patient is stabilized. Patients may also be returned to flying duties after laser ablation of the lesions.

DISCUSSION: Endometriosis is the extrauterine occurrence of endometrial glands and stroma, most often involving the ovaries or dependent visceral peritoneal surfaces. Although a benign disease, endometriosis is progressive, tends to recur, may be locally invasive, may have widespread disseminated foci, and may exist in pelvic lymph nodes (30%). Ten to twenty percent of menstruating women are affected and it is found in 30% to 45% of all infertile women. Danazol is a common medical treatment but almost 80% of patients have side effects (10%-20% severe enough to discontinue medication). These symptoms include: acne (15%), hot flashes (15%), uterine spotting (10%), gastrointestinal disturbances (8%), weakness and dizziness (8%), hirsutism (6%), edema (6%), decreased breast size (5%), weight gain, (5%), and change in libido (3%-5%). In addition, migraine headaches (2%), emotional lability, and depression may occur. Spontaneous pneumothorax, sometimes called catamenial pneumothorax, occurs more on the right side (93%) than the left.

LEIOMYOMA OF THE UTERUS (FIBROIDS)

INFORMATION ONLY: Yes, if minor/mild and managed with aeromedically acceptable treatment.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The majority (about two-thirds) of women with leiomyomas are asymptomatic. When symptoms occur, they depend on the number, size, location, situation, and status (usually vascular supply) of the tumor(s). Symptoms most often are abnormal uterine bleeding, pressure effects, pain, and infertility. Iron deficiency anemia commonly occurs as a result of increased menstrual blood loss. Larger tumors may exert pressure on various organs, producing symptoms of urinary frequency and ureteral obstruction. Pelvic congestion may occur rarely with very large tumors with resulting lower extremity edema or constipation. There is also an association between fibroids and polycythemia.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended provided symptoms don't interfere with aviation duty and don't require any disqualifying medications.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided symptoms don't interfere with aviation duty and don't require any disqualifying medications.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course.
- OG/GYN consultation and recommendations.
- Surgical treatment requires verification of pathology of tumor and clearance to return to work and unrestricted activity from treating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: No follow-up is required for asymptomatic or surgically removed fibroids; however, routine OB/GYN follow-up is suggested. Symptomatic aircrew members require annual OB/GYN consultation with ultrasonic imaging as indicated.

TREATMENT: The majority of small asymptomatic leiomyomas can be managed conservatively with close observation. Surgical removal of the tumor or hysterectomy are possible options for symptomatic or large fibroids. Fibroids requiring surgical removal do not require waiver action provided member has fully recovered and meets all other IO criteria. If hysterectomy is performed, the aircrew member may be returned to full flight status following a 90 day recovery period. Aircrew members must be grounded during treatment with gonadotrophin releasing hormone agonist (GnRH) because of the incidence of depression and abdominal pain.

DISCUSSION: Fibroids are discreet, rounded, firm, white to pale pink, benign myometrial tumors composed primarily of smooth muscle with some connective tissue. About 95% arise from the uterine corpus and about 5% from the cervix. Only rarely do they arise from the fallopian tube or round ligament. They are the most frequent pelvic tumor, occurring in 25% of white and 50% of black women by age 50 years. Repeated surgery for adnexal disease occurs in up to 7% of patients following hysterectomy. Solitary fibroid removal results in 27% recurrence; for multiple fibroids the figure rises to 59%. The incidence of leiomyosarcoma arising in uterine fibroids has been reported to be 0.1 - 0.6%, with a 5 year survival rate of 31%.

PELVIC INFLAMMATORY DISEASE

INFORMATION ONLY: Yes, once fully resolved.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Symptoms of pelvic inflammatory disease (PID) may include acute or chronic lower abdominal or pelvic pain, possibly radiating from the back to the leg, fever, headache, malaise, nausea, and vomiting. Such symptoms may cause distraction in flight or, in severe cases, could cause incapacitation. Sequelae may include hydrosalpinx, pyosalpinx, tubo-ovarian abscess, infertility, ectopic pregnancy, and chronic pelvic pain, many of which may cause acute abdominal emergencies. Anxiety, depression, and tension can become important if the illness becomes chronic and treatment provides little relief. Frequent or recalcitrant episodes or those requiring disqualifying medication/treatments may necessitate permanent aeromedical suspension.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease course.
- OB/GYN consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required when symptoms do not reoccur. Any recurrence of symptoms will require repeat OB/GYN consultation. This information must be referred to USAAMA for review.

TREATMENT: Mild cases of PID may be treated with oral antibiotics. Full flight status may be granted provided symptoms are absent, approved medications are used, and duty does not compromise the possibility of recovery. More severe cases may require intravenous medication and even exploratory surgery. Once recovered from surgery they may return to full flight status. Patients can return to flying one week following laparoscopy provided they are asymptomatic.

DISCUSSION: PID is an extraordinary health problem. There are about 1 million cases of acute PID a year in the United States, and the total cost is estimated to exceed $3.5 billion per year. PID affects 1% - 2% of sexually active females yearly and is more frequent in young women (75% of those affected are less than 25 years of age). PID is responsible for .29 deaths/100,000 women of age 15-44. A first attack of PID is followed by subsequent attacks in 20% of women. Perihepatitis can occur in 5% of patients with PID. Intraluminal adhesions, especially if the Fallopian tube is kinked, predisposes to ectopic pregnancy; the risk for patients who have had PID is increased from 0.7% to 4%. Up to 20% of patients develop chronic pelvic pain. Primary infertility has been reported in up to 20% and this is likely to have a psychological effect. Patients who have had gonococcal rather than non-gonococcal PID have a better prognosis since the symptoms are more acute, provoking much more rapid medical treatment.

PREGNANCY

INFORMATION ONLY: Yes, otherwise uncomplicated, low-risk pregnancies can be listed IO, regardless of mode of delivery, however; temporary aviation duty restrictions will apply.

TEMPORARY CLEARANCE: Yes, temporary aviation duty is authorized in uncomplicated, low-risk pregnancies in aircrew who have no comorbidities and have received clearance to work without restrictions from their obstetrical care provider. Class 2 and 3 personnel are restricted to flying between gestational weeks 12-28, roughly corresponding to the second trimester. Class 4 personnel who meet the above requirements have no trimester restrictions.

AEROMEDICAL CONCERNS: Pregnancy is a normal female condition but one that results in myriad physiologic changes spanning nearly every major system and organ in the body. These include, but are not limited to, vision changes, hypercoagulability, hemodynamic/cardiovascular changes, propensity for renal stones, reflux disease, hyperemesis, endocrine changes, ergonomic considerations, and sleep disruption. These changes vary throughout the pregnancy and can occur unpredictably. Additionally, certain pregnancy-specific disorders such as ectopic pregnancy, hemorrhage, and miscarriage carry potential for distraction, disabling pain or incapacitation, and convey unacceptable aviation risk. Finally, the risks to both mother and the developing fetus have not been thoroughly researched and are therefore incompletely understood. Vibration, excess G forces, noise exposure to mother and fetus, exposure to aviation fuel, prolonged immobility, pressure variations, hypoxia, and exposure to crash dynamics, among many other factors, are potentially dangerous thus necessitating a joint and informed FFD or DNIF decision between all involved stakeholders.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is rarely required and reserved for pregnancies with persistent or unresolved physiologic or psychologic complications. ETP can be considered on a case by case basis after 6 months of stability following completion of pregnancy and will be dependent upon the specific residual sequelae, pathology, or condition.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is rarely required and reserved for pregnancies with persistent or unresolved physiologic or psychologic complications. Waiver can be considered following completion of pregnancy plus a minimum of 42 days of recovery and will be dependent upon the specific residual sequelae, pathology, or condition.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- OB/GYN evaluation including clearance to return to unrestricted work and strenuous activity with no restrictions.
- Other specialist evaluation dependent upon associated condition or pathology. If an otherwise disqualifying condition (i.e., hypertension or diabetes, etc.) results from the pregnancy and persists beyond what would normally be expected, waiver action would be required IAW the applicable APL.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on current status, absence of aeromedically relevant symptoms, and/or compliance with medication regimen if required.
- Specialist evaluation if previously required due to associated comorbidity or if clinically indicated.

TREATMENT: Short term medications for pregnancy-specific use such as iron, folate and prenatal vitamins are authorized and do not necessitate waiver action. Some medications may require temporary grounding if otherwise not authorized for flight duty such as sleep aids, certain pain medications, and anti-emetics due to unacceptable side effects. The need for long term medications following recovery from pregnancy may require waiver action but is dependent upon the specific prescription in question and ultimately, the underlying condition.

DISCUSSION: Aviators meeting all listed trimester restrictions and consultation requirements may fly in either fixed or rotary wing aircraft limited to < 10,000 feet cabin altitude with dual pilot status, but should be thoroughly counseled on the potential risks. For those cases that meet IO criteria, the aeromedical provider may include all necessary information on the DD 2807 and/or DD 2808/4497. For those rare cases requiring waiver/ETP, an aeromedical summary should be completed and submitted via AERO as is required with any disqualifying condition. The abbreviated pregnancy worksheet from the previous version of the APLs should be considered obsolete and is NOT REQUIRED for either IO submissions or waiver/ETP requests.

Pregnancy is not considered disqualifying in a vast majority of cases. Local aeromedical providers may list pregnancy as IO in AERO and then utilize the DD Form 2992 to clear or ground the aircrew member appropriately based on the above trimester restrictions and specific patient variables. Some characteristics can cause a pregnancy to be labeled “high risk” such as multiple gestations and maternal age > 35. While these likely will require stricter grounding procedures based on obstetrical recommendations, they do not necessarily require waiver action. Further, spontaneous miscarriage, elective abortion, or selective termination in the setting of a multifetal gestation (or when otherwise clinically indicated), are not considered disqualifying unless accompanied by persistent physical or psychological symptoms. Temporary grounding periods in this setting will be based upon the specific clinical situation as well as the patient response. Aircrew members can reasonably be returned to flight duty following a minimum of 42 days after completion of the pregnancy to allow for return to normal physiological baseline. Shorter grounding periods may be considered for first trimester pregnancy loss with normal obstetrical and aeromedical examination as well as an appropriate grieving period, if necessary.

It is imperative that the aeromedical provider assess each situation separately including the individual patient, their medical/obstetrical history, and all comorbidities. Of equal importance is an assessment of the unit, the mission, the airframe, and the specific flight duty of the pregnant aircrew member. Clearance to perform aviation-related duty must be a joint and informed decision between the patient, the aeromedical provider and the obstetrical care provider. Physiological training such as the altitude chamber or modular egress training simulator/shallow water egress trainer (METS/dunker or SWET chair) is not authorized during pregnancy. Synthetic Flight Training (simulator) should be maximized in an effort to maintain necessary skills and Readiness Level (RL) status. However, due to the high fidelity simulators used in Army aviation, it is highly recommended for aeromedical providers to enforce similar trimester restrictions for class 2 and 3 personnel. RL status is still likely to be affected but this should not otherwise negatively impact an aircrew member’s career or professional status. Following clearance to fly, multiple symptoms, alone or in combination, may develop and/or fluctuate leading to distraction and loss of situational awareness. Aeromedical providers should therefore cultivate an environment that empowers an aircrew member to self-ground if necessary. Further, an informed decision to abstain from flight duty is not consistent with poor motivation, lack of proficiency, or deficiency of character, as defined in AR 600-105, and therefore will not be used as a basis for a Flying Evaluation Board.

REFERENCES:
(1). Van Dyke P. A Literature Review of Air Medical Work Hazards and Pregnancy. Air Med J, 2010; 29(1): 40-47.
(2). Hezelgrave NL, Whitty CJM, Shennan AH, and Chappell LC. Advising on travel during pregnancy. BMJ, 2011; 342: d2506.
(3). Irgens Å, Irgens LM, Reitan JB, et al. Pregnancy outcome among offspring of airline pilots and cabin attendants. Scand J Work Environ Health, 2003; 29(2): 94-99.

OPHTHALMOLOGY WAIVERS

CATARACT

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Aircrew members with cataracts are prone to develop uncorrectable visual acuity changes. When the cataract involves the visual axis, visual acuity can be further reduced in bright sunlight and conditions of glare. Cataracts are considered disqualifying once diagnosed even if they are asymptomatic since most are progressive.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for asymptomatic cataracts (zero visual impairment) and for symptomatic cataracts following surgical correction. If waiver for asymptomatic cataracts has been previously granted and member subsequently requires surgical intervention due to progression, a new AMS is required.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Ophthalmology/Optometry evaluation
- Glare testing should be performed prior to and after surgery with visual acuity documented for each eye separately at all settings recommended by evaluating eye specialist.
- Confirmation of exclusion of, or no clinical concern for, underlying pathology such as Wilson's disease, diabetes, or hypoparathyroidism.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual comprehensive ophthalmologic/optometric evaluation is required unless more frequent follow up is recommended by the evaluating/treating specialist or if otherwise clinically indicated.

TREATMENT: Extracapsular lens extraction with intraocular lens (IOL) implants usually provides a sufficiently acceptable visual acuity result for military aviation duties. IOL implants are waiverable for non-aviator applicants and trained aircrew.

DISCUSSION: The visual effect of a cataract depends on its encroachment on the visual axis and the proximity to the nodal point. A posterior subcapsular cataract can have a devastating effect on vision. Two to three episodes of serious dehydration can increase the risk of developing a cataract 21-fold. Surgical success rates of greater than 90% in achieving a 20/40 best corrected VA after 1 year has been reported. The RAF restricts the flying of personnel with IOL from high performance aircraft and helicopters. This is because of the risk of pressure on ciliary body blood vessels under high Gz or vibration and because of the unknown long term effect on the corneal epithelium.

COLOR VISION DEFICITS

INFORMATION ONLY: No

TEMPORARY CLEARANCE: No

AEROMEDICAL CONCERNS: Color vision is required to accurately identify warning lights, obstructions and hazards. It is necessary for interpretation of visual displays in the cockpit or ground control station, external cues including airfield lighting, aircraft formation lights, and colored smoke and light signals commonly used in military operations. The presence of even a mild degree of hypoxia can be deleterious to those with normal color vision and potentially catastrophic in those with persistent deficits. Interactions with other optical devices such as laser protective visors may also worsen color vision. While color vision deficiencies are largely congenital, some occur as a result of ocular disease, occupational exposures and medication side effects.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended. Rabin Cone Contract Test (CCT) score of 55-74 or Waggoner score of “Normal” or “Mild.” Scores of <55 on Rabin CCT or “Moderate” or “Severe” on Waggoner will rarely be considered for waiver.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver may be considered based on the needs of the Army in rare cases for select aircrew. Rabin Cone Contract Test (CCT) score of 55-74 or Waggoner score of “Normal” or “Mild.” Scores of <55 on Rabin CCT or “Moderate” or “Severe” on Waggoner will rarely be considered for waiver.

INFORMATION REQUIRED FOR INITIAL WAIVER:

- Ophthalmology/Optometry evaluation IOT rule out underlying pathology and/or acquired etiology for color vision deficit.
- Documentation of demonstrated ability to complete essential MOS functions and emergency procedures completed by an appropriate unit trainer or supervisor.
- All CCVT scoring sheets must be uploaded to AERO documents.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical Provider comment on absence of interval subjective color vision changes.
- Ophthalmology/Optometry evaluation per specialist recommendations.
- CCVT testing with every comprehensive FDME (to include following Class A or B mishaps).

TREATMENT: Cessation of medication or exposure avoidance in cases of acquired color vision deficit.

DISCUSSION: PIP testing, with proper lighting and randomized presentation, remains an approved screening test with passing scores outlined in the algorithm and table below as well as the ATB. CCVT is the required confirmation testing method following a PIP failure. Those aircrew with previously approved color vision deficit ETPs/waivers will remain disqualified with exception/waiver approved/continued, provided they meet annual waiver requirements above. In these cases, no additional waiver or suspension action is necessary unless indicated by additional interval history/physical exam changes. **The Farnsworth Lantern (FALANT) is no longer a valid color vision test for US Army Aviation IAW AR 40-501.** The Farnsworth Dichotomous Test for Color Blindness Series D-15 remains unauthorized in US Army Aviation.

Defective color vision is usually congenital, showing the X-linked recessive pattern. Congenital color vision deficits are typically stable and show no further degradation over time. In Caucasians, more than 8% of males and 0.5% of women have inherited color defective vision and more than 2% are dichromats with severe deficiency. The largest group is trichromatic, considered color weak rather than color deficient. Deuteranopes and protanopes have difficulty interpreting visual approach slope indicator (VASI) light’s red-white color relationship. Protanopes have difficulty interpreting red high-speed taxiway exit and runway end marker lights. At

night, dichromats may be further reduced to monochromaticity when the physiological phenomenon of small field tritanopia is added which is relevant in distinguishing navigation and anti-collision lights.
Acquired color vision deficits may either show degradation, remain stagnant or improve over time. Aeromedically significant causes of acquired color vision deficits include optic neuritis, macular degeneration, central serous retinopathy, multiple sclerosis, diabetes, hepatic disease, alcoholism, sequelae to heavy metal poisoning, or by a number of regularly waived medications. The phosphodiesterase type 5 (PDE5) class have become one of the most widely prescribed medications worldwide. However, any associated color vision abnormalities appear mild and directly correlated with plasma concentrations so they are considered safe in aviators whom adhere to required grounding periods following their use.

REFERENCES:
(1). Assessment of Color Vision Screening Tests for U.S. Navy Special Duty Occupations Supplement 2, Reddix M, Gao H, Kirkendall C, 2014.
(2). Rings, Picken, NAMI research; CCVT validation study vs. PIP vs. FALANT vs. Nagel, 2013.
(3). CAA Paper 2009/04 Minimum Colour Vision Requirements for Professional Flight Crew.
(4). Assessing the Severity of Color Vision Loss with Implications for Aviation and Other Occupational Environments, Rodriguez-Carmon m. O'Neill-Bib M., Barbur JL, Aviation, Space and Environmental Medicine, Vol 83(1), 2012.
(5). Procedures for Testing Color Vision: Report of Working Group 41, Committee on Vision, National Research Council, 1981 Assessment of Color Vision Screening Tests for U.S. Navy Special Duty Occupations, Reddix M., Kirkendall C., Gao H., NAMRU-Dayton, AsMA 85th Annual Scientific Meeting, 2014.
(6). NATO WG-24, Operational Colour Vision in the Modern Aviation Environment.
(7). Cole, B.L., & Maddocks, J.D. (2008). Color vision testing by Farnsworth lantern and ability to identify approach-path signal colors. Aviation, Space, & Environmental Medicine, 79(6), 585-90.
(8). Dille, J.R., 1976 Accident Experience of Civilian Pilots with Static Physical Defects, FAA, AsMA, Feb, 1980.

Figure 1: Color Vision Deficits Revised Standard (Algorithm):

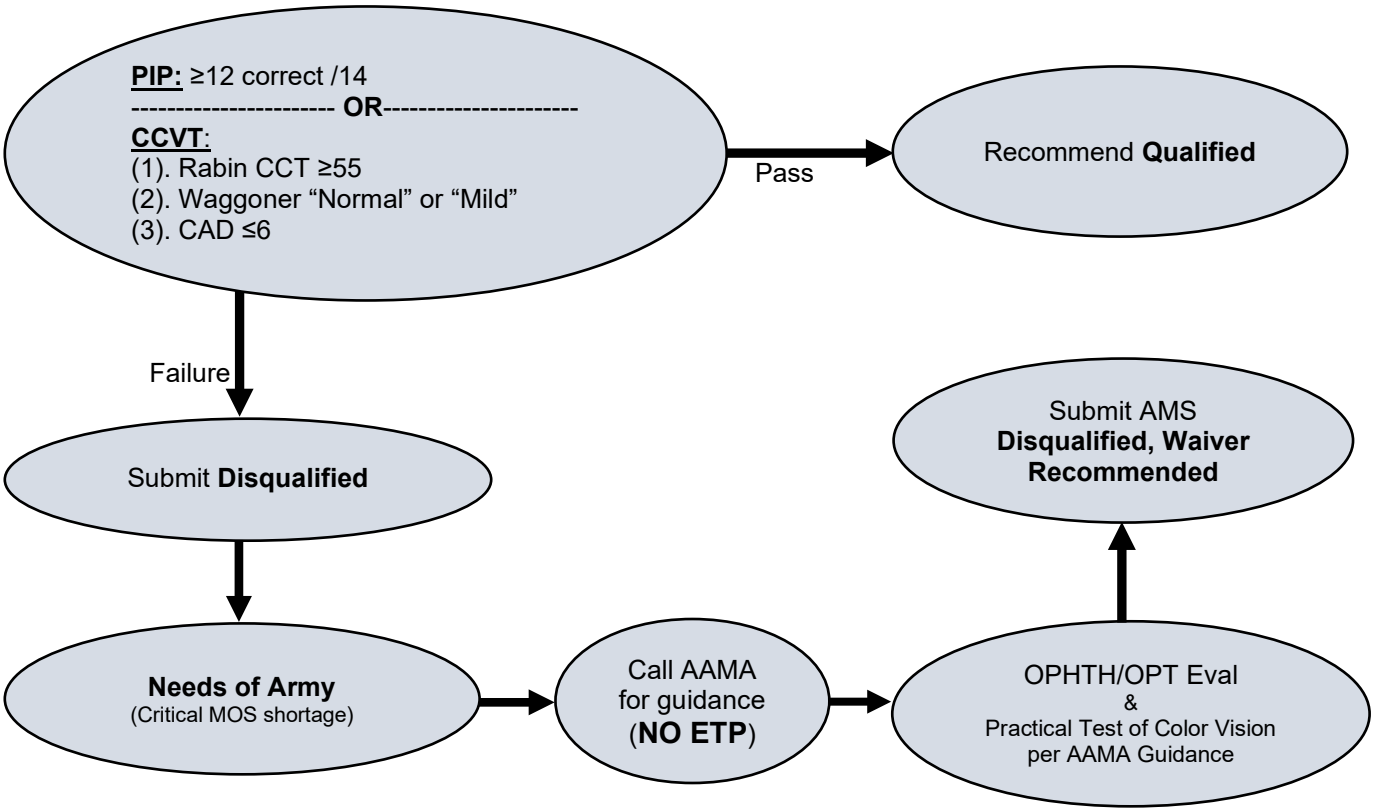

TABLE 1: PIP & CCVT AEROMEDICAL STANDARDS IN US ARMY AVIATION:

	PIP	Rabin CCT	Waggoner	Colour Assessment & Diagnosis (CAD)
QUALIFIED	(≥12)/14	≥55	"Normal" or "Mild"	≤6 CAD units
DISQUALIFIED	≤11/14	<55	"Moderate" or "Severe"	>6 CAD units

(1). Color lenses & colored contact lenses are NOT allowed (i.e. "Enchroma" glasses). This negates the proper administration of the test by skewing color perception.
(2). Each CCVT may be administered only once per day with a recommended minimum of 1-3 days between attempts. Other CCVTs may be used as a backup and testing may be attempted up to a maximum of three (3) times. If multiple trials are attempted, select the one CCVT score sheet with the best calculated score and enter into AERO. Do not take the best result from each trial.
(3). All CCVT scoring sheets must be uploaded to AERO documents.
(4). Farnsworth Lantern Test (FALANT) is no longer authorized in US Army Aviation IAW current AR 40-501.
(5). Farnsworth Dichotomous Test for Color Blindness Series D-15 remains unauthorized in US Army Aviation.

CONTACT LENS WEAR

INFORMATION ONLY: Yes, if individual meets all other vision testing requirements and contact lens issuance and wear is IAW AR 40-63, Ophthalmic Services.

TEMPORARY CLEARANCE: N/A.

AEROMEDICAL CONCERNS: Soft contact lens wear in place of spectacles is acceptable in all classes of aviation after meeting the unaided and corrected visual standards. The use of non-medical soft contact lenses poses no significant medical risk in the aviation environment while supervised by the military optometrist or ophthalmologist and unit flight surgeon. Contact lenses may introduce certain operational and medical risks and cannot be worn by everyone all of the time. Some personnel may not be able to meet visual standards with contacts and, therefore, would be required to wear spectacles only. Complications of contact lens wear, which include but are not limited to corneal abrasion, corneal ulceration, infection, and transient or permanent loss of vision, can be detrimental in the aviation environment and permanent suspension. Appropriate contact lens fit and visual acuity correction, at both distance and near, are required for safe flight operations. It is highly recommended that all aeromedical providers review and comply with AR 40-63 in all cases requiring contact lens wear.

WAIVERS:
Pilot Applicants (Class 1A/1W):
N/A. ETP is not required for contact lens wear in applicants meeting all other visual testing standards.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
N/A. Waiver is not required for contact lens wear in aircrew meeting all other visual testing standards.

INFORMATION REQUIRED:

- The initial FDME or the first flight physical listing contact lens wear, must contain the following information must be submitted:
  - Current contact lens parameters: brand, base curve, diameter, and power
  - Visual acuity with lens wear: both distance and near for each eye
  - Slit-lamp examination (noting fit, centration, and movement of contact lenses)
  - Verification of absence of contact lens related complications.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: All aircrew using contact lenses will have a yearly eye exam to ensure adequacy of function and fit, physiological compatibility, and to monitor for complications. The aeromedical provider should comment on continued absence of contact lens related complications and acceptable visual acuity.

DEPLOYMENT REQUIREMENTS: Aircrew must train in the same manner as they fight. Those members subject to deployment are responsible for maintaining the following in their personal equipment bag:

- Two pair of clear and one pair of tinted (“sunglass”) spectacles with current prescription achieving at least 20/20-1 at both distance and near in each eye.

- If aircraft requires the use of an optical device (currently the AH-64 A/D), one (1) pair of spectacles, adequate for accommodating the optical device, should be maintained in lieu of one of the clear pair of spectacles stated above, if a different or special frame is needed.

- If specifically required by the unit mission, the individual should also maintain one (1) pair of KG-5 laser lenses, with the current spectacle prescription achieving visual standards for flight (these are not intended for wear over contact lenses and are only available in the military-issued “Apache frame”).

- Per AR 40-5, Preventive Medicine, contact lens wear is prohibited during gas chamber exercises, field training, and combat. However, contact lens wear may be feasible in deployments to areas other than combat (i.e. Honduras-JTF Bravo, or other deployments where clean facilities are available). The only exception to this policy is Apache pilots. Aircrew members who wear soft contact lenses that are not disposable, should maintain two spare sets of soft contact lenses, sealed in their original containers and clearly labeled for left and right eyes (labeling only necessary if the prescription is not the same in each eye). Aircrew members with disposable soft

contact lenses should keep an additional 12 pair of soft contact lenses, in addition to their normal 24-week supply.

- One spare case for disinfecting soft contact lenses; one spare, sealed case (no vent) for temporary storage and transportation; at least three months and preferably six months current supply of disinfecting solutions. Also, if required per prescribed cleaning regimen, three to six month's current supply of enzymatic solutions, rewetting drops, artificial tears, and/or special cleaners, whichever apply.

TREATMENT: Aircrew members using contact lenses are encouraged to seek medical evaluation for even the most minor eye symptom. Delay may be detrimental—corneal ulceration and scarring may jeopardize visual acuity and flight status.

DISCUSSION: The following points should be considered in selecting aircrew to use routine non-medical contact lenses:

- Not all aircrew can be successfully fitted with contact lenses. Therefore, contact lens use should always be considered optional.

- Individuals must meet all vision standards while wearing contact lenses.

- Contact lens wearers should achieve at least 8 hours per day of comfortable and successful lens wear.

- Individuals must be free from eye disease and infections that contraindicate contact lens use.

- Individuals must be available for follow-up care for a minimum of one month after initial contact lens fit to monitor the personal and operational efficacy of their contact lenses and report complications to the aeromedical provider immediately.

- It is recommended that the unit flight aeromedical provider office maintain records on all of the active aircrew wearing contact lens to include contact lens parameters, related complications, and spectacle back-up prescription data.

- Aircrew should be proficient in removing contact lenses in flight with or without gloves.

- Contact lens wear may be considered for aviation personnel regardless of aircraft type.

With regard to contact lens selection, the following guidelines are provided:

- Darkly tinted contact lenses or lenses to achieve cosmetic alteration of iris colors are not approved, even if the color of the contact is the same natural color of the eye. This can act as a selective waveband filter or a limitation of field of view and can adversely affect color perception or peripheral viewing, respectively. However, a light tint regarded as a "visibility tint" to facilitate location of a dropped contact lens is recommended.

- Monovision fitting with contact lenses is not approved. Such fitting techniques are known to acutely degrade stereopsis, contrast sensitivity, and target acquisition. In non-presbyopes, both eyes must be bilaterally corrected for both distant and near vision at the same time. If reading correction is required this should be provided with a spectacle with the appropriate reading add as a bifocal segment.

- Bifocal and multifocal contact lenses are not approved. Such lenses are difficult to fit, costly, and depend too critically on lens position to achieve optimal visual performance.

With regard to operational Contact lens issues:

- For Apache pilots requiring optical correction, the optometrist should fit a silicone hydrogel, if at all possible. The use of these types of lenses will allow the pilot to safely wear contact lenses for an extended period of time without compromising their ocular health (the use of extended wear may be necessary in a combat environment due to a lack of clean facilities for insertion or removal). Due to material costs, Apache pilots will not be fit with daily disposable contact lenses unless medically necessary. Otherwise, contact lenses should be worn primarily on a daily-wear basis (no more than 16 hours per day). A minimum of six to eight (6-8) hours of time without contacts is recommended between periods of contact lens wear. Wearing a standard contact lens (not a silicone

hydrogel) during sleep is highly discouraged as it can lead to oxygen deprivation of the cornea. If operational conditions preclude removal, remove the contact lenses for cleaning at first opportunity in order to minimize the risk of complications.

- Aircrew must be advised of the need to maintain the highest possible standard of lens hygiene. Smoking cessation is strongly recommended for all contact lens wearers to reduce the incidence of serious complications. The potential hazards of contact lens use should be explained by both the consulting optometrist/ophthalmologist and the aeromedical provider.

- Dislocation or loss of a contact lens while flying is a definite possibility. It is highly advised that aircrew become proficient in removing contact lenses in flight in case one becomes dislodged or the need arises in which contacts must be removed. Should a contact lens dislocate or fall out of the eye, it is usually best to immediately remove the other contact lens and utilize the carried spectacle correction. However, safety and aircrew judgment always take precedence in these situations to maneuver the aircraft in the safest manner possible.

IMPORTANT NOTES: Currently, contact lens wear is only required to operate the Apache helicopter. Apache pilots on Active Duty will procure their occupational contact lenses through their servicing optometry clinic as per the Apache Contact Lens Program. Reserve and National Guard Apache pilots DO NOT qualify for government purchased lenses under the Apache Contact Lens Program; they must obtain their lenses through their unit, as they do with other optically necessary devices such as glasses and protective mask inserts. Reserve and National Guard pilots that are activated for deployment will be treated as Active Duty Apache pilots.

Other aircrew members may be fit with contacts at their local optometry clinic if the clinic provides this service; however, the purchase, examination, follow-up care, and supply costs may all be at the aircrew member's own expense.

All aviation personnel wearing contact lenses must be correctable to a minimum 20/20-1 visual acuity or better, at both distance and near in each eye, during contact lens wear.

The use of contacts while flying does not preclude the requirement, for all aviation personnel required to fly with corrective lenses, to carry one pair of corrective spectacle lenses on their person while performing aviation duties. An additional (second) pair of corrective spectacle lenses must be kept either on their person or in the flight bag accompanying the flight.

It is strongly encouraged that the individual units ensure personnel train in both contact lenses and spectacles to maintain proficiency flying with their spectacle prescription. If a near prescription is required for presbyopia, the aircrew member must utilize the prescription that affords them 20/20-1 vision at both distance and near in each eye while performing aviation duties. It is highly advised that any personnel wearing contacts for the first time wear the contacts successfully for a minimum of one month's time prior to flight operations, flight duties, or air traffic control duties to ensure there are no unforeseen complications, eye health concerns, or safety risks.

COVERGENCE DEFICITS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Most aircrew members with convergence insufficiency are asymptomatic since they are only exophoric at near. Symptomatic aircrew, however, may break down to exotropia with fatigue or stress and complain of asthenopic problems (i.e., tearing, blurring, headache, fatigue, or halo images, etc.) or frank diplopia. Near point of convergence insufficiency greater than 100 mm is considered disqualifying for Class 1 and cause for evaluation for Class 2/3/4.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Ophthalmology/Optometry consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An annual ophthalmology/optometry evaluation is required. More frequent (every 6 month) evaluations may be required if recommended by evaluating specialist or if otherwise clinically indicated.

TREATMENT: Treatment consists of a regular series of orthoptic exercises which can easily taught by the ophthalmologist or optometrist. Treatment usually takes four to eight weeks and follow-up is usually performed bi-weekly and includes the following exercises:

Base Out Prism Exercises
Consists of viewing near objects (i.e., reading) with a base out prism over one eye for 10 minutes then the other eye for 10 minutes. The exercise should be performed twice daily starting with a prism power equal to the patient's near fusional convergence and steadily increase the power of the prisms until 30-50 PD is reached.

Binocular Push-ups
Consists of viewing a visual acuity chart as close to eyes as possible for 10 minutes twice a day. This exercise is useful if the near point of convergence is abnormal, but is usually not effective without concurrent use of the base out prism exercise.

DISCUSSION: Successful treatment is determined by relief of symptoms, improved near point of convergence, or improved fusional convergence, and can be expected in 90% of the cases.

CORNEAL REFRACTIVE SURGERY

INFORMATION ONLY: Yes, if meeting all IO criteria on Corneal Refractive Surgery (CRS) worksheet.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: CRS is indicated for the correction of refractive error (myopia, hyperopia, or astigmatism). Acceptable procedures include LASIK (Laser In-Situ Keratomileusis), LASEK (Laser Subepithelial Keratomileusis), PRK (Photo Refractive Keratectomy), and SMILE (Small Incision Lenticular Extraction). All other procedures are generally not acceptable for flight status but will be reviewed on a case by case basis. The determination of which procedure is most appropriate should come following an informed discussion between the patient and their eye provider/surgeon. The individual should receive optimal care without consideration of gaining or returning to flight status. Even if an aeromedically acceptable procedure is performed, there is no guarantee the member meets all pre-operative and post-operative requirements and thus, no guarantee of attaining or remaining on flight status. Intra-Collamer lenses (ICLs) are disqualifying in all cases. ETP is not recommended. Waiver for ICLs is considered on a case by case basis in Class 2F, 2P, 3, and 4 aircrew members. ETP/waiver OR IO consideration for acceptable procedures may be applied for after 180 days recovery for new military accessions, three months recovery for initial aircrew applicants (all flight classes) already in the military, and six weeks recovery for trained aviation personnel (all flight classes), following the last refractive surgery or augmenting procedure.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for those having undergone an acceptable procedure(s), that have a pre-surgical refractive error between -8 and +4 diopters of spherical equivalent (sphere must be within standards before and after transposition), and that meet all other requirements as defined in AR 40-501, chapter 4-4(b)(6).

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for those having undergone an acceptable procedure(s), that have a pre-surgical refractive error between -8 and +4 diopters of spherical equivalent (sphere must be within standards before and after transposition), and that meet all other requirements as defined in AR 40-501, chapter 4-4(b)(6). Waiver may be considered on case by case basis for select aircrew not meeting requirements in AR 40-501, depending on the specific disqualifying variable/standard and the nature of their specific aviation position.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire clinical presentation, CRS procedure, recovery, and verification of minimum required recovery period as defined above.
- Ophthalmology/Optometry consultation and recommendations.
- Completed CRS worksheet
- Corneal Topography images (not just report of normal/acceptable).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An Ophthalmology/Optometry evaluation is required at every comprehensive flight physical unless more frequent follow up is recommended by treating/evaluating specialist or if otherwise clinically indicated. An aeromedical provider comment of no significant interval change is required on all other flight physicals.

TREATMENT: Treatment will be dictated by the appropriate eye specialist.

DISCUSSION: Since allowing CRS, the trend at USAAMA has been that those personnel with good surgical outcomes and passing all of the above post-operative tests and standards have gone on to receive an ETP/waiver without subsequent aeromedical problems. Those with a less than favorable outcome have not progressed as easily to receiving an ETP/waiver. CRS will optimally result in less optometric support before and during deployment and combat operations. There is a significant medical logistics “footprint” of combat health support activities providing corrective lenses and protective mask inserts that may be lessened. This is especially important in rapid deployment, high ops tempo environments. CRS is an additional benefit in the continuous development of new man-machine interfaced weapons based on routinely updated detailed vision parameters. This is especially important for increasingly complex flight environments where corrective lenses would be a hindrance.

Corneal Refractive Surgery Worksheet

Flight Applicant Identification:

Last Name:_____ First Name:_____ Middle Initial:_____

Procedure History:

1. Procedure Date(s): _____ _____
   Type: ☐ PRK ☐ SMILE ☐ LASIK/LASEK
   Eye: ☐ Both ☐ Right ☐ Left

2. Pre-op Refraction: **Pre-op refraction standard for info only: Sphere -6 to +4 and Cylinder -3 to +3; use sphere equivalent calculation (sphere + ½ cylinder) to determine if meets info only standards. Values outside the above require an AMS.**
OD Sphere_____ Cylinder_____ Axis_____
OS Sphere_____ Cylinder_____ Axis_____
Refraction requiring ETP/Waiver: Sphere -6 to -8

☐ Pre-op refraction not available – **If pre-op refraction is not available a dilated fundus exam with scleral depression is required.**
Dilated fundus exam with scleral depression: ☐ Normal ☐ Abnormal

Current Optometry Exam Date:_____
Optometry Exam: **Minimum of 6 weeks post-op for those already on flight status and 3 months for all applicants.**

3. Refraction Post-operative:
☐ Manifest – Only if eyewear is necessary for 20/20 and no cycloplegic done.
☐ Cycloplegic – Only required for pilot candidates (1A/1W and RO/RW FDMEs);

OD Sphere_____ Cylinder_____ Axis_____
OS Sphere_____ Cylinder_____ Axis_____

STD: Cyclo: Sphere: -1.5 to +3.0
Cylinder: -1 to +1

4. Visual Acuity:
Distant: OD 20/_____ Corrected to 20/_____ OS 20/_____ Corrected to 20/_____
Near: OD 20/_____ Corrected to 20/_____ OS 20/_____ Corrected to 20/_____

5. Intraocular Tensions:

OD_____ OS_____

STD:
1. ≤21 mm Hg. If less than 8 mm Hg requires optometry note stating otherwise normal.
2. Difference of <4 mm Hg between eyes

6. Slit Lamp Exam (SLE for Haze)
OD: Non-pathologic for 1+
OS: Non-pathologic for 1+

STD: Haze = 0 or 1+ (optometry states non-pathologic in each eye)
Haze Scoring: 0 = no haze (passing), 1 = trace haze, 2 = minimal, 3 = moderate, and 4 = iris obscured

7. Corneal Topography (required):
☐ Acceptable
☐ Abnormal
Reason abnormal: _____

8. Low Contrast Sensitivity (LCS):
OD: 20/_____
OS: 20/_____

STD: LCS 20/60 or better each eye or comment as below.

☐ Contrast sensitivity testing not readily available. Applicant denies difficulty with night vision, glares, halos, or visual distortions.
Note: If SLE Haze = 1+ normal low contrast sensitivity testing plus annotation it is non-pathologic is required.

Submitted by:_____ Date:_____

Contact Info:_____

Upload form to AERO or fax or e-mail to USAAMA staff:
Phone 334-255-0749/0750 (DSN 558)
Fax: 334-255-0747
E-mail: usarmy.rucker.medcom-lahc.list.lahc-aero-helpdesk@mail.mil

DECREASED VISUAL ACUITY AND CYCLOPLEGIC REFRACTIVE ERROR

INFORMATION ONLY: Yes, for Class 1 applicants, uncorrected distant visual acuity (DVA) between 20/25 and 20/50 that corrects to 20/20-1 or better can be listed IO. Any uncorrected DVA worse than 20/50 or any uncorrected near visual acuity (NVA) worse than 20/20-1 requires ETP action IAW the below requirements.

Yes, all other flight classes with uncorrected DVA or NVA not exceeding 20/400 that corrects to 20/20-1 or better can be listed IO. Uncorrected DVA or NVA worse than 20/400 requires waiver action IAW the below requirements.

No, for cycloplegic refractive error out of standards. Please see the Cycloplegic Refraction ATB for acceptable standards.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Acceptable visual acuity is an inflexible requirement for nearly all aviation personnel. Decreased visual acuity degrades look-out and target acquisition, two important factors among many in successful outcomes of aviation combat operations. Aviator applicants must be within standards for both distant and near visual acuity AND cycloplegic refraction for favorable ETP consideration.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for uncorrected DVA between 20/50 and 20/70 that corrects to 20/20-1 or better. ETP is not recommended for uncorrected DVA worse than 20/70, regardless of ability to correct to 20/20-1.

ETP is recommended for uncorrected NVA between 20/25 and 20/40 that corrects to 20/20-1 or better. ETP is not recommended for uncorrected NVA worse than 20/40, regardless of ability to correct to 20/20-1.

ETP is recommended for cycloplegic refraction errors for any “B” (borderline) values. ETP is not recommended for any “DQ” (disqualified) values regardless of ability to correct to 20/20-1. Please see Table 15: Cycloplegic Transposition Table for Class 1 FDME in the Cycloplegic Refraction ATB for acceptable values.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for uncorrected DVA or NVA worse than 20/400 in any eye, provided the member corrects to 20/20-1, the central and peripheral retina is normal, no other ocular conditions exist, and all other visual standards are met.

Cycloplegic refraction is only required for Class 1 applicants, thus, there is no standard (and no waiver requirement) for all other flight classes.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Optometry/Ophthalmology consultation and recommendations. Their evaluation should include:
  - Dilated fundus examination for cases of decreased visual acuity not due to simple myopia, hypermetropia (hyperopia), astigmatism, or presbyopia.
  - Retinal evaluation must be obtained refractive errors corrections greater than ±5.5 diopters.
  - Patients with progressive astigmatism should be evaluated to exclude keratoconus.

TREATMENT: Visual correction by spectacles is allowed. For those not meeting ETP/waiver criteria, Corneal Refractive Surgery (CRS) can be an acceptable treatment option. However, CRS cannot guarantee member will be able to attain or return to flight status. Please see Corneal Refractive Surgery APL for more information.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: If Aviation personnel meet 20/20 screening requirements within the MTF/clinic, then there are no further Optometric/Ophthalmologic evaluations.
- Optometric/Ophthalmologic evaluations are required for the following conditions:
  - **Contact lens wearers**: require yearly exams;
  - **Prescription glasses**: full eye exams at least every 2 years;
  - **Surgical refractive corrections**: require annual comment from Local FS to determine additional Optometric/Ophthalmologic evaluation;
  - **Natural uncorrected 20/20 vision**: require every 5 year exams to ensure ocular health.

Depending on the waiver requirements, condition(s) and age (e.g., 40 and older require IOPs; 20 to 50 year olds require visual acuity; phorias; stereopsis/depth perception; color vision; manifest refraction – if uncorrected vision is worse than 20/20(-1) for a comprehensive FDME as per the APL) will also determine further evaluation beyond the annual vision screening follow-up.

DISCUSSION: Myopes (persons with elongated globes) have a risk of further myopic progression, which rises with the degree of myopia regardless of age. High myopes have considerable visual distortion at the periphery of their spectacle lenses. In addition, they may see halos or flares around bright lights at night and are at increased risk of night blindness. Whereas myopes have an increased risk of retinal detachment and lattice degeneration of the retina, exposure to routine G-forces in flying has not been shown to increase these risks. Myopia is usually a progressive condition, stabilizing for individuals around the age of 30. Whenever a prescription is changed, aircrew should be warned about transient visual distortion and counseled on the period of adjustment necessary. Evidence suggests that there is no difference in civil accident rates or in naval carrier landing accidents in pilots who require visual correction. Severe myopia tends to be a problem pertaining to Class 1 personnel since the entry requirements for other aircrew tend to be less stringent.

Hyperopes with +3.0 diopters or more of correction may experience problems with vision after treatment with anticholinergic agents. Hyperopes also have more problems with visual aids such as night vision goggles when they develop presbyopia. The interposition of another layer of transparency (spectacle lenses) between the aircrew and the outside world increases the risk of internal reflections, fogging and reduces the light reaching the retina by about 6%. Finally, spectacle frames interfere with look-out, cause hot spots and create unacceptable interactions with items of aircrew equipment. Decreased visual acuity is often associated with other visual performance degradation such as decreased stereopsis.

DEPTH PERCEPTION FAILURE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Stereopsis is important for the aircrew member to maintain proper visual references. Defective stereopsis may make certain aviation duties such as hover, taxiing, landing, formation flying, aerial refueling, hoist and rescue equipment operations, significantly more difficult.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew where accurate depth perception is not required for safe completion of aviation duties (i.e., stewards, flight medics, En-Route Critical Care Nurses, aeromedical providers, aeromedical psychologists, and certain UAS/ATC positions, etc.).

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Ophthalmology/Optometry consultation and recommendations. The evaluation will be dictated by the evaluating specialist but may include:
  - History of diplopia or previous eye surgery
  - Full ocular muscle balance testing
  - Testing for diplopia in the nine cardinal directions
  - Pupillary exam
  - Cover test (both near and far)
  - Red lens test
  - Maddox Rod test
  - Worth four-dot exam
  - AO vectograph
- Completion of an Ocular Motility worksheet (available under Excessive Phoria APL).

TREATMENT: N/A

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Depending on the findings, annual follow-up requirements may range from annual vision screening with FDHS/FDME to annual optometric/ophthalmologic evaluation.

DISCUSSION: Defective stereopsis can be innate. Several sources of defective stereopsis include defective ocular muscle balance, amblyopia, anisometropia, microtropia, and monofixation syndrome. All of these possible etiologies should be evaluated in the ophthalmology/optometry evaluation. The most common causes of a recent loss of stereopsis are a change in refraction or presbyopia. The visual cues to the perception of depth are both monocular and binocular. The monocular cues are learned and some investigators feel that they can be improved by study and training. Monocular cues are ones that can be the most easily fooled by illusions. Binocular cues (stereopsis) are innate and are not easily fooled by illusion. Stereopsis is not an absolute must in flying an aircraft, and in fact, the FAA does not require this to be tested. Through mathematical derivation, it has been shown that true stereopsis does not exist beyond approximately 200 meters; some believe it does not actually work beyond 20 meters. Numerous civilian individuals and past military aviators who lacked stereopsis have still made good aviators. However, the visually demanding environment of nap of the earth (NOE), pinnacle landings, and other various military operations requires the optimal senses.

DRUSEN OF THE OPTIC DISC / NERVE HEAD

INFORMATION ONLY: Yes, macular drusen is a distinct entity from drusen of the optic disc or optic nerve head and can be filed IO provided all vision testing is normal.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Optic Disc Drusen (ODD), also sometimes referred to as Optic Nerve Head (ONH) Drusen, are disqualifying in all cases. Drusen are calcified proteinaceous bodies located within the optic nerve head that may result in variably progressive visual field defects (VFD). Less commonly, acute/transient disturbances of visual acuity, color vision, and night vision may be observed. ODD is prevalent in ~1% of the population and often found incidentally during routine exam in asymptomatic individuals. Approximately 85% of those with ODD can develop visual field abnormalities. “Buried” ODD are not visible on fundoscopy but still aeromedically significant due to possible mechanical compression of proximate vasculature as well as eventual calcification and axonal degeneration resulting in development of VFD. Macular drusen are a separate and distinct pathology from ODD which can occur idiopathically or as an early pre-cursor to age-related macular degeneration. Since these do not carry a significant risk of vision loss they are not considered disqualifying for aviation personnel provided all vision testing is normal and all standards are met.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is recommended in asymptomatic individuals where ODD is an incidental finding and there is no ODD/ONH pathology, VFD, or comorbid disease.

Initial Applicants (Class 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended in asymptomatic individuals where ODD is an incidental finding and there is no ODD/ONH Pathology, VFD, or comorbid disease.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Optometry (OPT) or Ophthalmology (OPHTH) evaluation including:
  - Refraction to best Snellen visual acuity
  - Computerized Color Vision Testing
  - Automated visual field testing (Humphrey 30-2 preferred, but 24-2 is acceptable).
  - Optical Coherence Tomography (OCT) of the retinal nerve fiber layer (RNFL) is required for baseline and future monitoring.
  - B-Scan ultrasound for diagnostic confirmation of buried drusen. Fundus autofluorecsence or CT scan of the orbit is also acceptable.
- Aeromedical Provider comment on:
  - Pertinent positives/negatives and comorbid medical conditions (i.e., headache, hypertension, diabetes, and family history of drusen, etc.).
  - Presence or absence of visual symptoms and their operational impact (i.e., transient visual obscurations, perceived scotomas, and metamorphopsia, etc.).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- OPT/OPHTH evaluation including results of:
  - Automated visual field testing
  - OCT of optic nerve head/disc
- Aeromedical Provider comment on:
  - Interval history of visual symptoms.
  - Status of any existing or newly developed comorbid conditions (i.e. headache, hypertension, or diabetes, etc.).

TREATMENT: None, there is no FDA approved pharmacotherapy or recommended surgical intervention. There have been largely unsuccessful attempts at treatment using ocular hypotensive agents, neuro-protective agents, anti-inflammatory medications, vasodilators and radial neurotomy surgery. Of note, treatment with argon laser photocoagulation, photodynamic therapy, or sub-macular surgery may be useful in some choroidal neovascular membranes associated with disc drusen.

DISCUSSION: ODD is typically a benign and indolent condition; however, it can produce progressive vision loss, albeit usually slowly over time. As high as 87% of individuals with optic nerve head drusen can expect to have visual field abnormalities. A recent study confirms that the rate of visual field loss for ODD was 1.6% per year over a three-year period raising concern for subtle incapacitation. ODD patients with abnormally elevated IOPs show a higher prevalence of visual field loss and thus, closer monitoring in this situation is recommended. The risk for sudden incapacitation secondary to vision obscuration is low. Ischemia is the source of optic nerve damage and eventual VFD in ODD. In a normal, healthy optic nerve, the vascular redundancy allows aircrew to have adequate blood flow to the optic nerve to withstand hypoxia associated with flight. Aircrew with drusen begin with an already compromised nerve and if regularly exposed to hypoxia, are at an increased risk for further hypoxic nerve injury. It is essential for the aircrew member to be educated and cognizant of the chronic threat to their peripheral vision and potential adverse effects on performance. Self-reporting of any change in visual performance is as important as annual visual field testing to ensure the safety of flight duty and mission readiness.

REFERENCES:

(1). Golnik, KC. Congenital anomalies and acquired abnormalities of the optic nerve. UpToDate. Aug 2019.
(2). Merchant KY, Su D, Park SC, et al. Enhanced depth imaging optical coherence tomography of optic nerve head drusen. Ophthalmology 2013; 120:1409.
(3). Auw-Haedrich C, Staubach F, Witschel H. Optic Disk Drusen. Survey of Ophthalmology, 2002; 47(6): 515-532.

EXCESSIVE PHORIAS / TROPIAS / AMBLYOPIA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Excessive phorias are frequently associated with defective stereopsis and/or diplopia, a devastating state if this occurs during a critical phase of flight or aircraft control. Excessive esophoria/exophoria (>8 prism diopters), hyperphoria (> 1 prism diopters), heterotropia of any degree, or a history of extraocular surgery after age 4 (to include before age 4 if other residual ocular abnormalities exist) are disqualifying for flight duties. ETP/waiver is rarely recommended due to the relative high risk of developing of diplopia during extended operations and night or reduced ambient light flights.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for select aircrew.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, and outcome.
- Ophthalmology/Optometry consultation and recommendations. The evaluation should address any history of amblyopia (lazy eye) or diplopia, any patching of one/both eyes, or previous eye surgery, evaluation for cranial nerve palsies, and include the following tests, as clinically indicated/dictated by the evaluating specialist:
  - Full ocular muscle balance testing,
  - Testing for diplopia in the nine cardinal directions with vision testing apparatus (VTA), or RANDOT depth perception testing
  - Pupillary exam
  - Cover test (both near and far), alternate cover test
  - Near point of conversion (NPC)
  - Red lens test
  - Maddox Rod test
  - Worth four-dot exam
  - AO vectograph.
- The pre-printed Ocular Motility Worksheet shall be completed and sent in along with the waiver request.

TREATMENT: N/A.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Depending on the findings, annual follow-up requirements may range from annual vision screening with FDHS/FDME to annual Optometric/Ophthalmologic evaluation.

DISCUSSION: A phoria is a latent deviation of an eye which is present (at least to a slight degree) in nearly 100% of the population. When the phoria is in excess of the standards in AR 40-501, a large neuromuscular effort would be required to maintain fusion and binocular vision. Such individuals often break fusion during extreme fatigue or when flying at night with loss of external fixation points. Rapid instrument scanning is interfered with and flight students often are not able to overcome this handicap, resulting in elimination from the program. Any added stress might cause a breakdown of fusion, leading to diplopia and loss of stereopsis. Tropias (manifest ocular deviations) are present in approximately 3% of the population and may not be clinically obvious on examination. Subclinical tropia patients may be reluctant to divulge a history of double vision or decreased visual acuity in the affected eye.

Ocular Motility Worksheet

(Exam and the reporting of results must conform with the instructions in the APL)

Pertinent History

Distant Visual Acuity	OD 20/ OS 20/	**Manifest Refraction**	OD OS	Corrected to 20/ Corrected to 20/

Cycloplegic Refraction	OD OS	20/ 20/	**Habitual Rx** OD OS	

Correction used for remainder of examination: Habitual ☐ Manifest ☐ None ☐

Cover Test

Far (all gazes)				Near (all gazes)			

Extraocular Motility	Maddox Rod or Von Graeffe	Stereopsis
Worth 4 Dot	Vectograph (anti-suppression)	Red Lens
4 Base Out (if applicable)	Other test results (if applicable)	

Impression ☐ Qualified ☐ Disqualified

Provider Signature Block

Provider Phone Number:

Date of Exam:

SPECIALTY: LOCATION:

Patient Name		SSN:
Rank	Flight Class (circle one): 1 2 3 4	Unit Address:

INSTRUCTIONS FOR OCULAR MOTILITY WORKSHEET

PERTINENT HISTORY: Explain why the work-up is being done. For example: "scored 7 esophoria on VTA" or "muscle surgery OS at age 6 years."

REFRACTION: All Class 1 flight applicants require a cycloplegic refraction recorded; all others require a manifest refraction. Those applicants with less than 20/20 unaided also require a manifest refraction.

HABITUAL RX: Record the subject's habitual Rx here if different from the manifest. If none is used, or the subject wears contact lenses, please note on the form.

COVER TEST: Report numerical values. Use a prism bar or loose prisms. Do horizontal and/or vertical as applicable to the case. Horizontal limits are approximately 45 degrees to the left and right of center. Vertical limits are approximately 25 degrees above and 35 degrees below center. Limits may need to be modified as dictated by the size of the nose and brow.

EXTRAOCULAR MOTILITY: Give description, such as "smooth and full."

MADDOX ROD/VON GRAEFE: Report numerical values for both horizontal and vertical phorias. Fixation target must be at 20 feet.

STEREOPSIS: RANDOT done at 16 inches in a normally lit room. Neither the device nor the patient should move during the test.

WORTH 4 DOT: Perform at both distance and near. Report "fusion," "diplopia," or "suppression OD/OS."

VECTOGRAPH: Test on the 20/40 (V O C S R K 4) line of the A.O. Vectographic slide. Report any suppression and which eye is suppressing. If there is no suppression, state so.

RED LENS TEST: Test all 9 positions of gaze, just like the cover test. Report any diplopia. If no diplopia is reported, state so.

4$^{\text{ï}}$ BASE OUT TEST: Used to augment the A.O. Vectograph in the diagnosis of microstrabismus. This test is not always applicable and may be left blank if not used.

PROVIDER PHONE NUMBER: Indicate both commercial and DSN.

FLIGHT CLASS:

1 Flight Student Applicant
2 Rated Aviator (Pilot), Aeromedical Provider (FS, APA, AMNP)
3 Crew Chief, Flight Medic, Flight Engineer, Aeromedical Psychologist (Non-Rated Aircrew)
4 Air Traffic Controller, Unmanned Aircraft System Operator

GLAUCOMA AND INTRA-OCULAR HYPERTENSION / HYPOTENSION

INFORMATION ONLY: Yes, mildly low Intra-Ocular Pressure (IOP) following corneal refractive surgery that is determined to be “normal/acceptable” AND not reasonably attributable to any other underlying or contributing pathology by an Ophthalmologist/Optometrist, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Glaucoma (IOP of 30mm Hg or higher) and ocular hypertension (IOP of 22mm Hg or higher), or a persistent difference of 4 or more mm Hg tension between the two eyes when confirmed by applanation tonometry, are disqualifying. Additionally, an optic nerve cup-to-disc ratio > 0.5, or an asymmetrical cup-to-disc ratio between eyes with a difference of > 0.2, requires Ophthalmology/Optometry evaluation and may be disqualifying unless considered to be normal and secondary to anatomic variations. Glaucoma is typically asymptomatic, but early signs may include a slow progressive loss of contrast sensitivity and loss of central or peripheral visual fields. Patients with Acute Angle Closure Glaucoma may present with night vision problems, such as halos and flares around lights or with a sudden painful, red eye with an edematous cornea, fixed, mid-dilated pupil, and markedly decreased visual acuity. Low IOP may be present after some significant pathology such as retinal detachment, chronic uveitis, or status post corneal refractive surgery or glaucoma filtering surgery. Determination of the underlying condition is more critical than the presence of low pressure.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for ocular hypertension between 22 and 30 mm Hg in asymptomatic individuals with zero visual field loss on objective testing. ETP is not recommended for individuals with Glaucoma.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for ocular hypertension between 22.0 and 30 mm Hg in asymptomatic individuals with zero visual field loss on objective testing. Waiver is recommended on a case by case basis in select aircrew for individuals with Glaucoma.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, and outcome.
- Ophthalmology/Optometry consultation and recommendations. Evaluation will be dictated by evaluating/treating specialist and may include:
  - IOPs must be documented from a Goldman's Applanation Tonometer, not from a non-contact tonometer "puff test" or a Tono-pen, and must be obtained in the AM and PM for two days.
  - Dilated fundus examination (DFE), to include comment on the cup-to-disc ratio.
  - Humphrey visual field test battery (30-2 or 24-2).
  - Slit lamp examination
  - Gonioscopy
  - Corneal Pachymetry
  - Bilateral color photographs of the optic disks or drawings of the optic nerve head may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up will be dictated by evaluating/treating specialist and may vary based on diagnosis. The patient may require specialty evaluation every 6 months for those aircrew labeled with ocular hypertension or glaucoma suspect. Aircrew members with proven glaucoma should be evaluated quarterly at least for the first year of treatment unless the consultant ophthalmologist specifies less frequent assessment.

TREATMENT: The decision to treat aircrew members with ocular hypertension with IOPs between 22- 29 mm Hg will be decided on a case-by-case basis after all risk factors are considered by the Ophthalmologist/Optometrist. Those patients with anatomically thick corneas, as measured with corneal pachymetry, with no other risk factors for glaucoma will be classified as ocular hypertensives. Annual requirements for these patients will include Goldmann tonometry and a DFE. Those with ocular hypertension with IOPs greater than or equal to 30 mmHg should be treated regardless of other concomitant risk factors. Aircrew members with definitive glaucomatous optic atrophy and characteristic visual field changes require treatment. For open angle glaucoma and ocular hypertension, the first choice agents are topical beta-adrenergic blockers such as timolol (Timoptic), levobunolol (Betagan), or betaxolol (Betoptic). Other acceptable treatments include brimonidine (Alphagan), latanaprost

(Xalatan), Dipivefrin (Propine) and the carbonic anhydrase inhibitor dorzolamide (Trusopt) provided there are no aeromedically significant side effects. Side effects may be minimized by pinching off the lacrimal duct on administration in order to limit systemic absorption. Other options for treatment include argon laser trabeculoplasty (ALT) or selective laser trabeculoplasty (SLT). Waiver can be considered for successful surgical treatment of closed angle glaucoma. While treatment is medically required in many cases, temporary grounding may be necessary in certain aircrew as miotic drugs cause an inability of the pupil to dilate to admit sufficient light and are therefore incompatible with night operations.

DISCUSSION: As stated above, not all cases of ocular hypertension (IOP of 22 or higher) require treatment. Approximately 4% of the population has IOP greater than 21, yet many of these individuals never develop glaucomatous optic neuropathy with characteristic visual field loss. Conversely, some individuals do indeed develop frank glaucoma despite never having any IOP measurement greater than 21. Thus elevated intraocular pressure is only one, albeit probably the most important, risk factor for the development of glaucoma. Other risk factors for glaucoma include age greater than 40, black race, positive family history of glaucoma, myopia, enlarged cup to disc ratio, and diabetes. The recently released data from the Ocular Hypertension Treatment Study concluded that topical anti- glaucoma medications delay the onset of primary open angle glaucoma (POAG) in those patients with elevated intraocular pressure. But, it was also the conclusion of this study that not all patients with elevated IOP require treatment, and the decision to treat is based on an individual's combined risk factors. Applying evidence-based medicine, The Ocular Hypertension Treatment Study (OHTS), completed in 2002, was designed to determine the effect of IOP reduction in patients not with glaucoma per se, but those with ocular hypertension. Goals of this study were to evaluate the safety of ocular hypertensive medications in delaying or preventing Primary Open Angle Glaucoma (POAG) and to identify baseline factors that predict the development of POAG. A major finding of the OHTS was the increased risk of POAG associated with thinner central corneal measurements. Subjects with the highest IOPs and the thinnest central corneal thicknesses (CCT) were at the highest risk (36%) over 6 years. Given the clear-cut association between CCT and risk that was shown by this study, CCT should be measured in all patients with ocular hypertension or glaucoma. Even in those cases of definite primary open angle glaucoma, the progression of visual field loss can be delayed or halted in most cases with available therapeutic ocular medications. ALT or SLT laser treatment may be an effective option in ocular hypertension/preglaucoma patients and may obviate or delay the need for ocular glaucoma medications for up to a decade or more in some cases. In aircrew members with narrow anterior chamber angles, prophylactic laser peripheral iridotomy may be necessary to decrease the risk of acute angle closure glaucoma.

Relationship Between Ocular Parameters and Progression to POAG in OHTS	High Risk	Moderate Risk	Low Risk
IOP (mm Hg)	>25.75	>23.75 to < 25.75	<23.75
CCT (microns)	<555	>555 to <588	>588
Vertical C/D	>0.5	>0.3 to <0.5	<0.3

KERATOCONUS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Keratoconus (KCN) is a noninflammatory, progressive degeneration of the cornea. It is characterized by thinning, deformation and cone-shaped protrusion with resultant visual impairment. This impairment can include sudden and marked decreased in acuity, blurred vision, diplopia, haze, ghosting of images and decreased contrast sensitivity. Long term risks include corneal scarring and visual acuity unable to be corrected to 20/20 with spectacles or contact lenses. KCN is considered disqualifying for all classes of aviation duty. Due to the progressive nature of this disease, KCN "suspects" not meeting full diagnostic criteria may still be disqualified if they lack minimum stability requirements. Please see Discussion section for criteria used to determine clinical stability versus progression of KCN. Collagen Cross-Linking (CXL) has been established as a safe, effective treatment for accession and retention in Army aviation, including Class 1 Aviator applicants. It should be noted that CXL has demonstrated effectiveness in halting KCN progression and improving visual acuity in several studies but it is not typically expected to reverse corneal changes already present. All applicants and trained aircrew with KCN must meet all other vision standards regardless of prior CXL or other surgical correction.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended with or without history of CXL when stability requirements have been met and individual otherwise meets all vision requirements. KCN severe enough to require corneal transplantation is not recommended for ETP.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended with or without history of CXL when stability requirements have been met and individual otherwise meets all vision requirements. KCN severe enough to require corneal transplantation may be considered for waiver on a case by case basis in select aircrew based on the needs of the Army.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Optometry or Ophthalmology consult
- Slit lamp examination findings
- Corneal Topography
- Pentacam Scan
- Contrast Sensitivity testing
- Aeromedical Provider comment on absence of, or no clinical concern for, connective tissue disorders.
- If CXL has been performed:
  - Operative and post-operative ophthalmology notes
  - Pre-operative corneal pachymetry
  - Cycloplegic refraction and dilated fundus exam.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Optometry or Ophthalmology consult
- Slit lamp examination findings
- Corneal Topography

TREATMENT: Spectacles and/or hard contact lenses may be necessary to restore visual acuity to acceptable standards. It is highly recommended that aviation personnel requiring contact lenses be evaluated and treated by a DoD optometrist to ensure compliance with guidelines for approval, issuance and expense IAW AR 40-63. Although contact lenses are frequently required to optimize vision performance, aircrew must also be adequately corrected with spectacles and have these in their direct possession during any aviation-related duty. An additional key element in correction of KCN is to ensure satisfactory stereopsis with both contact lenses and spectacles. CXL is aeromedically acceptable treatment but necessitates adherence to stability requirements as defined in the Discussion section. Those with KCN severe enough to require corneal transplantation are not recommended for ETP. Waiver is rarely considered and reserved for those with unique, mission critical skills or in non-flying aviation related positions AFTER being found otherwise fit for general military/DAC service retention. Any implantable devices or prosthetics such as corneal inlays or intrastromal corneal rings are not approved for Army aviation with ETP/waiver not recommended. Corneal refractive surgery (CRS) is relatively contraindicated in keratoconics. Combining CXL with CRS in one procedure also lacks FDA approval and is not considered for ETP/waiver.

DISCUSSION: KCN is usually a bilateral disease but may rarely affect one side only. It may also present asymmetrically with one eye becoming symptomatic sooner in the early stages of disease and then affecting the contralateral eye in later years. The symptoms usually start during adolescence. The condition has been reported to be slowly progressive in ~20-25% of cases but stabilization can occur at any time. It is very difficult to diagnose KCN in the early stages unless a corneal topographic mapping apparatus is used. This, along with the ubiquity of CRS, is why corneal topography is required on every class 1W/1A applicant, regardless of whether or not they endorse prior corneal surgery. Trained flight personnel with rapidly increasing myopia or astigmatism may also warrant such testing. Pellucid Marginal Degeneration (PMD) is a similar corneal irregularity on the continuum with KCN, often displaying indicative topography with a “kissing doves” or “crab claw” pattern.

As discussed above, historically, treatment of KCN typically consists of correction of refractive error with spectacle or contacts (soft, rigid, or hybrid) until the patient no longer can be corrected with these modalities; that member may then require penetrating keratoplasty (corneal transplant surgery). A more recent procedure known as Collagen Cross-Linking was developed and FDA approved (2016) which utilizes Riboflavin (Vitamin B2) and ultraviolet light to polymerize stromal collagen and induce corneal stiffening, with the goal to halt progression of KCN. Several studies have shown very promising results with reduction in corneal steepness, improved corrected visual acuity, and halting of progression of KCN.

Due to the progressive yet unpredictable nature of KCN, stability is of the utmost importance when determining eligibility requirements for ETP or waiver. However, even if stability requirements are met, new aviation accessions will not be considered for ETP/waiver if either central corneal thickness is less than 400 micrometers or maximal keratometry (Kmax) is greater than 55 diopters (D). New aviation accessions with KCN and no history of CXL require two years of corneal and visual stability to be considered for ETP/waiver. New aviation accessions with KCN who have had CXL require one year of corneal and visual stability to be considered for ETP/waiver. Trained aviation assets who undergo CXL are eligible for waiver consideration at six months post-op following the procedure. Stability is defined as:

- No increase in Kmax by more than 1 D as determined by "Pentacam."
- No increase in cylinder by more than 1 D (measured by subjective manifest refraction).
- No more than 0.5 D myopic shift (decrease in spherical equivalent as measured by subjective manifest refraction.

REFERENCES:

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(2). Koller T, Mrochen, and Seiler T. Complication and failure rates after corneal crosslinking. J Cataract Refract Surg, 2009; 35: 1358-62.
(3). Raiskup-Wolf F, Hoyer A, Spoerl E, and Pillunat LE. Collagen cross-linking with riboflavin and ultraviolet-A light in keratoconus: Long-term results. J Cataract Refract Surg, 2008; 34(5): 796-801.
(4). Greenstein SA, Fry KL, Bhatt J, and Hersh PS. Natural history of corneal haze after collagen crosslinking for keratoconus and corneal ectasia: Scheimpflug and biomicroscopic analysis. J Cataract Refract Surg, 2010; 36(12): 2105-14.

OCULAR HISTOPLASMOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The maculopathy that occurs in ocular histoplasmosis syndrome can lead to legal blindness. Performing the Valsalva maneuver can cause leakage into the macula. Hemorrhages can occur in the fundus at high altitudes.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for those with normal visual acuity and no macular involvement.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for those with normal visual acuity and no macular involvement. Waiver is recommended on a case by case basis in select aircrew if histoplasmosis spots are present in the macular area. Restriction from unpressurized flight over 8,000 feet may impact waiver recommendations in aircrew with macular involvement.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, and outcome.
- Ophthalmology/Optometry consultation and recommendations. Those with questionable macular findings must be referred to a specialist able to perform fluorescein angiography.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual Ophthalmology/Optometry consultation is required. If histoplasmosis spots are in the vicinity of the disc or macula, reevaluation may be required every six months. Macular histoplasmosis involvement should be followed daily by the individual aircrew member using an Amsler grid. Peripheral manifestations of histoplasmosis are usually asymptomatic and clinically irrelevant, requiring less frequent follow-up.

TREATMENT: Laser photocoagulation to limit exudation and prevent serous retinopathy is compatible with flying status. Patients should not be flying while on steroid therapy and may return to flying duty within 72 hours after completion of treatment if asymptomatic. An eye care provider must perform a thorough evaluation after completion of any therapy to include a slit lamp examination and biomicroscopy. Complications of treatment include recurrence of retinal neovascularization and elevation of IOP.

DISCUSSION: Over 99 percent of histoplasmic infections are benign. Up to 2 percent of adults in the Midwest have histoplasmosis spots disseminated in the fundus. The spots are more frequent in left than right eyes, but they are bilateral in 67 percent of patients. Some studies have reported 60 percent of patients with macular involvement become legally blind. If spots are present in the area of the disc, the risk of a symptomatic attack in the next 3 years is 20 percent; if none are present, the risk declines to 2 percent.

OPTIC NEURITIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Optic neuritis causes a decrease in visual acuity which may progress rapidly over 1-3 days to a level of counting fingers. The symptoms may be worsened on exercise or exposure to high environmental temperatures. In some cases, the condition may be an early indication of multiple sclerosis (MS).

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended provided MS has been definitively excluded AND the patient has recovered, is clinically stable with normal visual acuity, stereopsis, and color vision.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended provided MS has been definitively excluded AND the patient has recovered, is clinically stable with normal visual acuity, stereopsis, and color vision.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, and outcome.
- Ophthalmology/Optometry consultation and recommendations.
- Neurology consultation and recommendations which may include MRI and lumbar puncture to definitively rule out MS.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An annual comprehensive eye examination by a doctorate level eye provider is required, noting specifically visual acuity, stereopsis, and color vision.

TREATMENT: N/A

DISCUSSION: An Air Force study group has shown that over 90% of patients had the condition in only 1 eye. Approximately 17% of the patients had a recurrence. Up to 93% eventually recovered to a visual acuity of 20/40 with 87% achieving 20/20. A total of 30% of patients eventually progressed to MS within a time span of 3 months to 6 years. While this percentage is much less than reported elsewhere, it is worth noting that the females are 3 times as likely as males to develop MS.

RETINAL ARTERY / VEIN OCCLUSION

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Symptoms range from mild peripheral visual blurring to severe visual field loss, all potentially devastating in the aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and will be dependent upon the resultant visual acuity and the absence of any underlying/contributing pathology.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and will be dependent upon the resultant visual acuity and the absence of any underlying/contributing pathology.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, and outcome. The evaluation must specifically address the absence of, or no clinical concern for, neovascular glaucoma, hypertension, diabetes, blood dyscrasias, multiple myeloma, and dysgammaglobulinemia. Definitive objective studies to rule out valvular and carotid disease may be required.
- Ophthalmology/Optometry consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An annual Ophthalmology/Optometry evaluation is required.

TREATMENT: Treatment will be dictated by the evaluating/treating specialist. Photocoagulation is sometimes useful in central retinal vein thrombosis and in longstanding cases of branch retinal vein occlusion.

DISCUSSION: Macular edema occurs in 57% of cases of occlusion of the temporal branch of the retinal vein. Visual acuity improves in 60% of patients with branch retinal vein occlusion and 50% achieve visual acuity of 20/40 or better within 1 year. In central retinal vein occlusion, neovascular glaucoma develops in 15% of cases.

RETINAL CONDITIONS

INFORMATION ONLY: No. Even those conditions discovered incidentally and not currently impacting vision are disqualifying with ETP/waiver action required. Please see AR 40-501, chapter 4-4d for more information.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: This APL covers retinal conditions including but not limited to a history of central serous retinopathy, history of chorioretinitis (including evidence of presumed ocular histoplasmosis syndrome), history of retinal holes, tears, or detachments (or history of surgeries or procedures for the same), peripheral retinal injury, defect, or degeneration that may cause retinal detachment, history of retinal defects or dystrophies, angiomatoses, retinoschisis, retinal cysts, phakomas, and other hereditary conditions that impair visual function or are progressive, and history of degenerative changes of any part of the retina such as lattice degeneration. The severity of these conditions depend on the part of the retina involved and the success of therapy. Nearly all are progressive with the potential to impact vision and thus unnecessarily increasing aeromedical risk.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and will be dependent upon the specific disorder, treatment options and outcome, and specialist evaluation and recommendations.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and will be dependent upon the specific disorder, treatment options and outcome, and specialist evaluation and recommendations.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting entire disease presentation, clinical course, and outcome.
- Ophthalmology/Optometry consultation and recommendations.

TREATMENT: Diathermy, photocoagulation, cryotherapy, scleral buckling, or laser therapy are acceptable treatments for retinal detachment or tears. The duration of central serous retinopathy may be shortened and the incidence of further attacks reduced by laser photocoagulation. Usually no treatment is required for retinoschisis unless rhegmatogenous detachment occurs. Other treatment will be dictated by evaluating/treating specialist with ETP/waiver considered on a case by case basis.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual optometric/ophthalmologist evaluation is required. More frequent evaluations and/or specific testing may be required in some cases but will be dictated by evaluating/treating specialist.

DISCUSSION: A retinal detachment is the separation of the neuro-sensory retina from the underlying retinal pigment epithelium, usually with accumulation of fluid between them. There are three types: (1) rhegmatogenous, (2) exudative, and (3) traction. The incidence is approximately 10 per 100,000. This incidence increases with myopia, diabetes, age, and trauma. Certain vitreoretinal degenerations such as lattice degeneration increase the risks of retinal detachment. With surgical treatment, there will be permanent reattachment in up to 90 percent of uncomplicated cases. If the macula is involved, the resulting vision in that eye is likely to be on the order of 20/200. The risk of the occurrence of a retinal detachment in the other eye is as high as 12 percent and is most likely to occur within 5 years of the initial detachment. Retinoschisis occurs in 3 percent of the population, with increasing frequency from the second decade. The final outcome of central serous retinopathy (choroidopathy) seems unaffected by the duration of the condition, the initial visual acuity or the age of the patient. Recurrences are frequent and approximately 20 percent of patients have the condition for more than 6 months.

UVEITIS / IRIDOCYCLITIS

INFORMATION ONLY: Yes, transient uveitis due specifically to a traumatic event, that has completely resolved with visual acuity that has returned to baseline, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The acute condition can cause distracting pain in the eye, floaters, excessive tearing, photophobia, and blurred vision. Long term sequelae include cataract, glaucoma, retinal damage, corneal band keratopathy, and loss of vision. Uveitis is often associated with other autoimmune and infectious diseases.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and will be dependent upon the outcome of the required evaluation. ETP is rarely recommended for more than one episode of any form of uveitis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and will be dependent upon the outcome of the required evaluation. Waiver is rarely recommended for more than one episode of any form of uveitis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire disease course, evaluation, and outcome. The evaluation should include studies/testing to rule out associated diseases causing uveitis, such as sarcoidosis, ankylosing spondylitis, tuberculosis, syphilis, and toxoplasmosis, and may include:
  - ANA
  - Angiotensin Converting Enzyme
  - HLA B27
  - Lyme serology
  - PPD
  - Syphilis Serology
  - CXR
- Ophthalmology/Optometry consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW UP: Follow up will be dictated by evaluating/treating specialist and will likely include at a minimum an annual comprehensive eye exam by a doctorate level provider.

TREATMENT: Patients should be grounded during the active phase of the disease and during treatment.

DISCUSSION: Uveitis is any condition that involves inflammation of the uveal tract (iris, ciliary body, choroid) or adjacent structures. The key features of the condition are inflammatory cells in the anterior chamber and/or vitreous cavity. Associated features include pain, redness, photophobia, and anterior and posterior synechiae. Following traumatic iridocyclitis, the most common causes of anterior uveitis are idiopathic (38-56%), the seronegative spondyloarthropathies (21-23%), juvenile rheumatoid arthritis (9- 11%), and herpetic keratouveitis (6-10%). The vast majority of cases of intermediate uveitis are idiopathic. Toxoplasmosis is the most common cause of posterior uveitis, and the most common causes of panuveitis are idiopathic (22-45%) and sarcoidosis (14-28%).

ORTHOPEDIC WAIVERS

ABNORMAL SPINAL CURVATURE

INFORMATION ONLY: Yes, for asymptomatic Class 1 applicants requiring no profiles, with stable scoliosis as evidenced by two standing scoliosis x-rays done at least 12 months apart, AND both demonstrate the thoracic and/or lumbar spine is 20 degrees or less by the Cobb method. Any history of surgery to correct spinal curvature is disqualifying regardless of the outcome.

Yes, for asymptomatic Class 2 and 3 individuals requiring no profiles, with one scoliosis x-ray that demonstrates the thoracic and/or lumbar spine is 20 degrees or less by the Cobb method. Any history of surgery to correct spinal curvature is disqualifying regardless of the outcome.

Scoliosis is not disqualifying for Class 4 individuals, including those with a history of surgical correction, unless it is severe enough to negatively impact deployments, assignments, or retention.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Excessive kyphosis, scoliosis, lordosis, or combinations may predispose to spinal instability under aircraft accident or ejection situations. It may predispose to chronic discomfort, producing cockpit distraction and/or lost time.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended for asymptomatic, stable individuals with deviations up to 30 degrees. ETP is recommended on a case by case basis for those with presumed, but unknown or undocumented stability if asymptomatic and without permanent profile.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for asymptomatic, stable individuals with deviations up to 30 degrees and for those with presumed, but unknown or undocumented stability if asymptomatic and without permanent profile. Waiver for deviations > 30 degrees may be considered on a case by case basis in select, asymptomatic aircrew who can safely perform their aviation duty AND when that duty is not expected to worsen or exacerbate their spinal curvature.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome. Aeromedical provider should comment specifically on member's ability to perform all required aviation duty and wear all aviation protective/survival gear without difficulty or pain.
- Orthopedic consultation and recommendations including quantification of spinal curvature measurement by the Cobb method.
- Cardiology consult may be required if curvature is severe enough to cause any ECG abnormalities or cardio-pulmonary symptomatology.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:
- Aeromedical provider comment on absence of any significant interval history.
- Orthopedic follow up would only be required if previously recommended by evaluating/treating specialist or if clinically indicated due to signs/symptoms of progression.

TREATMENT: Surgical treatment, to include recommendation for surgical intervention, or any required use of braces/prosthetics, are disqualifying for all aircrew except Class 4.

DISCUSSION:
Because in the normal individual, the upper torso's center of gravity lies anterior to the spine, applying high vertical G forces from ejections seats, a high-sink rate hard-landing, or a mishap, subjects the spine not only to the expected in-line force load but also a significant non-in-line torque force. This non-in-line torque force is proportionate to the distance between the long axis of the spine and the line of force application along the upper torso's center of gravity. Excessive spinal curvature (scoliosis, kyphosis, or lordosis) serves to further displace this CG in one or more planes increasing the torque forces (linear and/or rotary) acting on the spine. This results in the abnormally spinal curved individual having unacceptably increased potential during an aviation mishap for serious injury, to include spinal fracture(s) or intervertebral disc herniation(s).

AMPUTATIONS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Partial loss of extremities may adversely affect aircrew performance and successful mission completion to include hand-eye coordination, manual dexterity, and physical agility, which includes the ability to survive, evade, resist, and escape.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete aeromedical summary documenting entire clinical presentation, evaluation, treatment(s), and outcome.
- Specific aeromedical provider comment that member meets military service/DAC retention standards.
- MEB recommendations, if MEB was required.
- Orthopedic consultation and recommendations including prior notes, or a current evaluation, documenting end of care and release to full work, duty, and/or physical activity without restrictions.
- Physical and/or Occupational Therapy evaluation may be required.
- An In-Cockpit/Flight Evaluation demonstrating ability to complete essential MOS functions and all emergency procedures by an appropriate unit trainer or supervisor.
- Aeromedical provider may also submit any other assessment of function documentation for questionable cases. This may include but is not limited to recent passing APFT/ACFT scores, a functional movement screen, verification of ALSE utilization, and/or completion of strenuous military training courses, etc.

ANNUAL WAIVER REQUIREMENTS/FOLLOW UP:

- Aeromedical provider comment on absence of aeromedically significant interval history.
- Any required follow up evaluation, testing, and/or imaging, etc., as dictated by evaluating/treating Orthopedic specialist.

TREATMENT: Per specialist(s) recommendations.

DISCUSSION: Successful functional adaptation to loss of an appendage is dependent upon a host of factors, including the following: age at time of loss, R/L dominance, associated neural deficits, loss of motion of adjacent joints, psychological adaptation and most importantly, motivation on the part of the amputee. Traditionally, partial or complete loss of an appendage has been considered disqualifying. Documented cases of successful return to military flight status following severe anatomic loss are on record. The following three criteria shall be met for any aviation personnel status post amputation:

1. Amputee is in excellent general health with a limited, static loss and has completed maximal rehabilitation.
2. Aircrew's ability to perform specific military tasks relating to survival, evasion, resistance, and escape have been demonstrated through retention via MEB/PEB as well as AFPT/ACFT.
3. Performance based evaluation for aviation duties has been completed by an appropriate unit level trainer or supervisor to include standard and emergency procedures.

ANKYLOSING SPONDYLITIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Cramped workplace conditions, vibration, positional immobility (sitting), and wear of heavy equipment for prolonged periods may exacerbate symptoms and adversely affect the eventual disability. Active cases have more missed duty due to flares or medical care. Seen in more advanced cases, spinal rigidity predisposes to increasing vulnerability to spinal injury from otherwise mild trauma, increases risk of spontaneous C1-2 dislocations, limits head rotation necessary to maintain adequate situational awareness, and restricts emergency egress capacity. Extraspinal manifestations may include recurrent iritis (10-25%), pulmonary impairments, cardiac blocks, valvular disease, and renal impairment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for select aircrew with early stage, mild or inactive disease, who have minimal symptoms, require minimal medications for symptom control, have had no recurrent symptoms or extra-spinal manifestations, who continue to have normal spinal mobility, and job environmental safety risk remains acceptable. Waiver is not recommended for individuals whose disease involves extraspinal manifestations, use of Class 4 medications, symptoms or performance issues (i.e., chronic pain, anxiety, frequent work absences, or profiles, etc.), and/or those not meeting retention standards.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Orthopedic and/or Rheumatology consultation and recommendations.
- Imaging of the spine as dictated by evaluating/treating specialist.
- EKG
- Laboratory evaluation including HLA B-27, Arthritis Profile (RA, ANA, ESR), HIV, and Renal Panel.
- Pulmonary function testing
- Physical/Occupational Therapy functional assessment of spinal mobility.
- Optometric/Ophthalmologic evaluation
- MEB recommendations, if MEB was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of interval history and adherence to treatment regimen.
- Musculoskeletal functional assessment by orthopedics/rheumatology, PT/OT, or aeromedical provider.
- Ophthalmology/Optometry evaluation of visual acuity and ocular/retinal health/function.
- Chest Examination for murmur and/or restricted movement patterns.
- EKG
- CBC, Renal Function Panel, and any other required labs as dictated by evaluating/treating specialist or if required for monitoring chronic medication use.

TREATMENT: A regular exercise program, weight control, and a healthy lifestyle with periodic medical and functional reevaluations form the basis for ankylosing spondylitis control. OTCs/NSAIDs are useful for occasional minor flares or ongoing mild symptom control. Use of immunomodulators, either recurrent or chronic, is potentially waiverable but may impart deployment and/or assignment limitations.

DISCUSSION: Sacroiliitis is often the earliest manifestation of ankylosing spondylitis and can be noted on an AP view of the pelvis. No lab test is diagnostic, but the HLA-B27 gene is present in over 90% of Caucasians and 50% of Blacks. The ESR and C-reactive protein are usually elevated. Clinical diagnosis should be suspected with a history of chronic back pain, loss of motion of lumbar spine, limited chest expansion, and radiographic evidence of sacroiliitis. Other possible complications include cardiac conduction defects, aortic incompetence in about 4% of patients who have had the condition for 15 years, uremia arising from amyloidosis in up to 6%, and chest rigidity giving rise to ventilation/perfusion abnormalities. Spinal cord damage can arise from fractures of the rigid cervical spine, and spontaneous subluxation at the atlantoaxial joint with quadriplegia has been described. Thus, this condition has a significant risk of progression and complications that warrant eventual suspension.

BACK / NECK PAIN AND INTERVERTEBRAL DISC DISEASE

INFORMATION ONLY: Yes, history of acute musculoskeletal (MSK) back/neck pain that is fully resolved OR mild, chronic back/neck pain in trained aircrew managed with aeromedically acceptable conservative treatment as defined below. Any chronic back/neck pain must not have frequent or disabling episodes, must not result in significant lost duty/work time, must not be exacerbated by military or aviation-related duty, and must not be specifically caused by/related to herniated nucleus pulposus (HNP) to be listed IO. One level disc replacement or fusion is not disqualifying in Class 4 personnel who are fully recovered with zero residual symptoms.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission. Please contact AAMA for any cases involving disc replacement or spinal fusion > two levels prior to granting temporary FFD clearance.

AEROMEDICAL CONCERNS: This APL combines the now obsolete policy letters for "Backache & Osteoarthritis of the Spine" and "Intervertebral Disc Disease." Additionally, any patients with spinal surgery requiring disc replacement (joint replacement/arthroplasty) or fusion (retained orthopedic hardware) should have waivers/ETPs processed IAW this APL. All other waivers/ETPs for joint replacement and retained orthopedic hardware should be processed IAW the updated "Retained Orthopedic Hardware and Joint Replacement" APL. Abnormal Spinal Curvature, Ankylosing Spondylitis, Spinal Fractures, Spondylolysis, or Spondylolisthesis are also not covered here so please see the appropriate APL in those cases. Any back or neck pain of a rheumatologic, infectious, or metastatic origin should have the underlying caused optimally treated with waiver/ETP ultimately processed IAW the applicable APL.

Low back pain is the number one medical cause of aviation students being unable to complete flight training. Back and neck pain are ubiquitous among trained aircrew and have the potential for both distraction and sudden incapacitation. Short term symptoms of pain, spasms, or numbness may not be specifically disqualifying but should necessitate temporary grounding/DNIF status until full recovery. Chronic or recurrent symptoms can make staying seated for extended periods difficult, degrade overall performance, and adversely impact situational awareness. Chronic vibration, restricted movement, load-bearing, and the potential for excess Gx and Gz forces associated with hard-landings/mishaps, can all contribute to both pain and morbidity. A majority of cases may not have an identifiable cause. The challenge for the local provider will be to isolate acute and/or mild, chronic MSK pain from those patients with contributing or underlying pathology necessitating further workup, specialist consultation, and possible intervention. The ultimate goal being rapid but appropriate return to aviation duty without further harming the individual, without compromising mission completion, and without creating unnecessary risk for the crew and/or commander.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is recommended for mild low back or neck pain that is fully resolved requiring no ongoing medication, treatment, or interventions. Individual must have demonstrated tolerance to unrestricted duty (military applicants) or sustained strenuous physical activity (civilian applicants) without exacerbation to be considered for ETP.

ETP is not recommended for any chronic low back or neck pain, any history of back/neck pain requiring excessive conservative interventions (prolonged physical therapy [PT] or chiropractic care, chronic use of muscle relaxers or controlled medications, multiple epidural/facet injections, etc.), any pain related to objective findings (osteoarthritis [OA], disc degeneration/HNP, spinal nerve root compression, etc.), or any history of disc replacement or fusion.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended for mild, low back or neck pain (i.e., lumbago, OA/spondylosis, or somatic dysfunction, etc.) that is managed with aeromedically appropriate treatment. Please see "Treatment" section for details.

Waiver is recommended for degenerative/intervertebral disc disease and/or HNP whether treated conservatively or surgically, provided member is asymptomatic and able to perform all aviation duty without restrictions.

Waiver is recommended for disc replacement/arthroplasty of two or less non-consecutive levels. Waiver is recommended for fusion of two or less levels. Waiver for disc replacement or fusion outside these limits will be on a case by case basis, will require AAMA specific aeromedical orthopedic consultation, and will likely be limited to fixed wing and Class 4 personnel.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Thorough aeromedical provider discussion on:
  - Injury/disease presentation, evaluation completed including all results, and course of recovery.
  - All conservative treatment modalities attempted and their efficacy including requirement for ongoing treatments, interventions, and/or medications.
  - Current musculoskeletal and neurologic examination (range of motion, mobility, pain, sensory and reflex findings). Any chronic pain must be mild and not functionally limiting.
- Results of specialty consultation if required (Orthopedics, sports medicine, PT, chiropractic, and/or pain management) including:
  - Results of any further specialist testing, imaging and/or interventions.
  - End of care notes with release to fully duty/work/physical activity without restrictions. If restrictions are required, they must be preventive and/or not impact safe completion of aviation duty.

Additional Requirements Following any Surgical Intervention:

- Results/notes from treating specialist(s).
- Specialist comment on return to duty/work/physical activity with no restrictions. If restrictions are required, they must be preventive and/or not impact safe completion of aviation duty.
- Disc fusion, disc replacement, or any other instrumentation/hardware, requires post op imaging with specific comment on healing and stability in flexion and extension views.

* NOTE – The AMS should only be submitted after full diagnostic evaluation is complete, member has been released by specialty care if it was required, and stability has been reached on current treatment regimen.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of any significant interval history, no significant change on physical examination, and adherence/tolerance to any required treatments.
- Specialty follow up and/or any serial radiologic studies would only be required if previously recommended by evaluating/treating consultant or if clinically indicated due to disease progression/exacerbation.

TREATMENT: Treatment will be guided by the underlying etiology. For most MSK or discogenic pain, conservative therapy should be maximized. This includes but is not limited to activity modification, heat and cold therapy, PT, chiropractic care, acupuncture, and short-term medication use. OTC or prescribed acetaminophen and NSAIDs are acceptable and may or may not require grounding/DNIF during treatment. Short-term use of muscle relaxers, benzodiazepines/anxiolytics, and/or controlled pain medications are also acceptable and do not typically require a waiver, however, will require temporary grounding/DNIF. It is generally advised to give a set number of pills and/or avoid giving refills on medications with associated grounding periods. In cases where this is unavoidable, the aircrew member should be counseled on their requirement to self-ground IAW ARs 95-1, 40-8, 600-105, and 600-106 when using medications that are temporarily disqualifying. One time or a limited series of interventions (epidural/intradiscal steroid injections, facet injections, nerve blocks, etc.) that completely resolve back/neck pain can likely be listed IO if all other IO criteria are met. Ongoing PT, chiropractic care, or acupuncture for purposes of health maintenance/optimization, after member has reached clinical stability, is acceptable and may only require temporary grounding/DNIF IAW AR 40-8 after an intervention. The use of transcutaneous electrical nerve stimulation (TENS) is acceptable, though not authorized during actual flight or any control of aircraft (thus limited to home/billet usage). Additionally, the use of a daily, aeromedically acceptable medication does not require waiver action provided the individual doesn't have associated multiple or prolonged profiles or significant lost duty time.

Those who have failed conservative therapy or have typical "Red Flag" symptoms (radiculopathy, weakness, bowel/bladder dysfunction, or associated constitutional symptoms, etc.), should receive urgent/emergent specialty consultation and will likely need waiver action. Any surgical intervention whatsoever is considered disqualifying with waiver recommended IAW the above criteria. Chronic or daily medication use of anything beyond acetaminophen and NSAIDs is rarely recommended for waiver. Any implantable nerve stimulator devices are not authorized for flight and should likely involve an overall retention evaluation.

DISCUSSION: Aside from the frank disqualifying criteria listed in AR 40-501, there is a medical "gray area" where back/neck pain either can be listed IO or requires a waiver. Factors favorable to IO consideration are those episodes of atraumatic, non-progressive pain that respond well to conservative therapy, are unlikely to be aggravated by continued aviation duty, and carry minimal/no risk for underlying or contributing etiologies. Completely asymptomatic patients discovered to have OA or mild disc pathology (not including frank HNP)

incidentally on imaging for an unrelated purpose, can have this history listed IO. Further, any non-specific "radiculopathy" that can be reasonably attributed to peripheral nerve compression (i.e. trapezius strain with "pinched" nerve and resultant neurologic findings) that is fully resolved, can be listed IO. Undesirable factors for aeromedical clearance involve chronic or recurrent disabling episodes of pain, pain requiring frequent lost duty time and/or excessive restrictions, pain that is only responsive to continuous treatment that may not be available in a deployed setting (traction, dry needling, trigger point injections, etc.), or pain requiring aeromedically unacceptable medications. Not only would pain with any of these features require waiver action, but may also require permanent aeromedical suspension.

In either IO or waiver cases, evidence of return to baseline function is very useful for a positive AAMA disposition. This can include recent APFT/ACFT results, completion of Air Assault School or similar strenuous military schooling, or involvement in civilian races or sporting competitions. A complete absence of pain may be an unreasonable expectation and is not an explicit requirement for a trained aircrew member to continue/return to flight duty. An appropriate, protective permanent L2 or U2 profile is not specifically disqualifying if preventive in nature and member otherwise does not meet the threshold of disqualification IAW AR 40-501. Permanent profiling can be a powerful tool for an aeromedical provider to simultaneously practice insightful preventive medicine while helping maintain a highly-trained, technical expert as part of the unit. However, profile limitations must not adversely impact mission capacity and the ability to perform all emergency and egress procedures in all possible mission profiles.

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KNEES

INFORMATION ONLY: Yes, please see below.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Knee instability is a safety risk factor in the aviation environment during foot pedal operations of the aircraft, climbing ladders/preflight, emergency egress/rescue, or water and land survival. In most cases, knees can be operatively or non-operatively rehabilitated, returning the aircrew member to normal duty with no or few limitations.

Conditions with or without surgical repair:

- Medial or lateral meniscal derangement
- Anterior or posterior cruciate ligament derangement
- Medial or lateral collateral ligament tear
- Chondromalacia of the patella
- Patellofemoral syndrome
- Chronic knee pain
- Other knee conditions not otherwise covered in another APL

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended IAW Table 1.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended IAW Table 1.

Table 1: Waivers/ETPs/Information Only/DQ (All Classes to include applicants):

Condition/Treatment	Class 1	Classes 2 and 3	Class 4
Distracting pain during the performance of flight, ATC or UAS operator duties	ETP not recommended	Waiver not recommended	Waiver not recommended
Knee Instability	ETP not recommended	Waiver not recommended	Information Only
Knee stable, but symptomatic or with functional deficits	ETP required	Waiver required	Waiver required if impacts the safe performance of duties. Information Only if no impact on the safe performance of duties.
Knee stable and asymptomatic with or without surgical repair	Information Only	Information Only	Information Only

INFORMATION ONLY REQUIREMENTS:
Asymptomatic when surgically repaired or non-operatively healed knee lesions and:

- Repair is successful and activity generally unlimited as per Orthopedic consult.
- Stable, functional joint, well healed, fully mobile, and without pain, effusion, or deficit.
- Sharp/well-defined end point on anterior/posterior drawer or Lachman's test, McMurray's test and medial and lateral stability testing.
- Able to perform all flight duties for position with no limitations and safely egress or evade.
- Permanent profile is acceptable only for minimal protective limitations, such as but not limited to "run own pace and distance" and "APFT/ACFT alternative event(s)". These limitations may not include activities likely to be required during survival and evasion such as walking and running on uneven ground or required for flight duties such as climbing or kneeling.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Orthopedic consultation and recommendations including prior notes, or a current evaluation, documenting end of care and release to full work, duty, and/or physical activity without restrictions.
- Documentation of symptom-free, full ROM, adequate strength, medication requirements limited to OTCs or NSAIDs, and no metal-containing brace or support use required other than as a protective measure while doing sporting activities.
- Most recent APFT/ACFT scores.
- Flight surgeon description of patient's level of physical activity and limitations. The individual's case is strengthened by successful participation in challenging physical activities such as completing a marathon or triathlon or successful completion of physically strenuous military courses such as Ranger, Airborne, or Air Assault schools.

ANNUAL WAIVER REQUIREMENTS/FOLLOW UP: No follow up is normally required other than an annual aeromedical provider comment on continued stability of the knee and any current limitations. If the individual has a permanent 2 profile or higher, the aeromedical provider will comment on current exam of knee with specific comment about the individual's ability to perform all required aviation duties such as emergency egress, pre-flight, foot pedal operations, etc.

TREATMENT: With Orthopedic and Physical Therapy management, most knee injuries are successfully managed with full return to function without limitations. While in therapy or rehabilitating, personnel should be temporarily grounded with simulator duties allowable until cleared by orthopedics to return to full flight duties. Aircrew to include ATC and UAS operators receiving lubricant injections will be locally grounded for 24 hours following each injection or until the member has regained pain free full range of motion. NSAIDs and glucosamine are authorized for use under the supervision of the flight surgeon. Retained hardware and/or knee arthroplasty are acceptable as long as they do not limit motion or cause pain. Please see the Retained Orthopedic Hardware and Joint Replacement APL for more information.

DISCUSSION: Injuries producing tears to the cruciate ligaments are commonly of the force/direction to have potential for injury to other knee internal structures. For example, anterior cruciate ligament tears are usually accompanied by associated damage to the medial and often the lateral complexes as well. These result from forced flexion or hyperextension injuries. A positive "anterior drawer sign" is evident on physical exam, usually with findings of medial ligamentous instability as well. Avulsion fracture of the anterior tibial spine may also be noted on x-ray. Prior to and following surgical repair, intensive quadriceps building is required to assist recovery and prevent recurrent injury. By contrast meniscal injuries may be isolated, but due to the poor blood flow in the menisci are still likely to require surgical correction, though recovery from meniscectomy is often remarkably fast.

RAYNAUD'S SYNDROME

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The primary concern is that the symptom complex (i.e., numbness, tingling, and/or a burning sensation along with the tissue color changes within the fingers, etc.) could interfere with successful operation of cockpit buttons, switches, and controls. Raynaud Syndrome has also been linked with the development of connective tissue disorder. Please see Systemic Rheumatologic Diseases APL as applicable.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis when symptoms are manageable, not expected to impact safe aviation operations, and underlying pathology has been excluded. ETP will not be favorably considered in those with assignment or deployment limitations to cold environments.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended when symptoms are manageable, not expected to impact safe aviation operations, and underlying pathology has been excluded. Waiver will not be favorably considered in those with assignment or deployment limitations to cold environments.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Complete hand radiography and thoracic outlet radiography to exclude cervical rib and thoracic outlet syndrome are required.
- Blood tests including anti-DNA and anticentromere (ANA) antibodies.
- Nerve conduction studies to exclude nerve entrapment syndrome should be considered.
- MEB recommendations, if MEB was required.
- An In-Cockpit/Flight Evaluation with cold exposure may be recommended by USAAMA.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Yearly complete history with specific attention to functional limitations and progression of symptom complex. Worsening symptom complex or limitations may warrant permanent aeromedical suspension.

TREATMENT: Behavioral adaptations such as avoidance of cold conditions, tobacco cessation, wearing layered clothing, and keeping the hands warm are acceptable preventive measures. Drug therapy (i.e., Persantine, Amyl Nitrite, etc.) are not compatible with ETP/waiver because of the side effects of the drugs in common use. Thoracic sympathectomy is also not compatible with flight status.

DISCUSSION: Females constitute 60-90% of the patients presenting with Raynaud Syndrome. Males present when older and are more likely to have arteriosclerosis. Up to 50% of patients with Raynaud Syndrome develop a connective tissue disorder (frequently scleroderma) within 10 years. There is a strong relationship between presence of ANA and the later onset of scleroderma. Between 70-80% of scleroderma patients and 8-10% of systemic lupus erythematosis patients present with Raynaud Syndrome. Migraine development was reported in 61% of one series of patients. There was a positive association with self-reported use of alcohol. Vasospasm is also reported to occur in the lungs resulting in a decrease in gaseous diffusion capacity.

RETAINED ORTHOPEDIC HARDWARE AND JOINT REPLACEMENT

INFORMATION ONLY: No, for joint replacement. Yes, for retained hardware if all IO criteria are met.

IO criteria includes:

- Individual is fully healed (fracture healed/ligament stable), asymptomatic, and released from specialty care and rehabilitation.
- Hardware is not located in the spine.
- Hardware does not constitute partial or total arthroplasty/joint replacement.
- Hardware does not interfere with proper wear of military equipment or uniforms, limit ROM, or interfere with performance of aviation duties.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: This APL combines the now obsolete policy letters for "Orthopedic Hardware – Retained" and "Joint Replacement." Any retained orthopedic hardware outside of the spine OR any partial or total arthroplasty of an upper or lower extremity joint is covered here. Any waivers for hardware within or about the spine (fusion) or that involve joint arthroplasty in the spine (disc replacement), should be processed IAW the updated "Back / Neck Pain and Intervertebral Disc Disease" APL.

The main aeromedical concerns for retained orthopedic hardware are treatment of the underlying trauma or damage, healing of the associated tissues, and restoration of optimal function. Any retained screws, pins, staples, plates, wires, anchors, or rods, etc., can loosen, migrate, or fail over time, cause nearby tissue irritation/damage, limit normal range of motion and/or function, and increase the risk of infection. Following partial or total joint replacement, there is risk for joint dislocation, fracture, leg length discrepancy, osteomyelitis, nerve damage, and thromboembolism. Exposure to the flight environment, including chronic vibration, wear of survival gear and/or body armor, prolonged immobility, awkward postures, and purposeful dehydration, can precipitate or aggravate many of these issues.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP for retained orthopedic hardware is rarely required as a majority of applicants will meet IO criteria. ETP is not recommended for those not meeting IO criteria as they are either currently symptomatic or are status post spinal surgery or joint replacement.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver for retained orthopedic hardware is rarely required but generally recommended in those with minor discomfort/deficits. Waiver is generally recommended for joint replacement surgery if below criteria are met.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider discussion on initial presentation/injury/trauma, surgery, recovery, cessation of any disqualifying medications, and current status.
- Results of Orthopedics consultation including end of care notes with release to fully duty/work/physical activity without restrictions. If restrictions are required, they must be preventive and/or not impact safe completion of aviation duty.
- Requirement for In-Cockpit/In-Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of any significant interval history.
- Orthopedic follow up is only required if symptoms recur/worsen or if otherwise recommended by specialist (i.e., annual imaging and metal ion labs for metal-on-metal joint resurfacing).

TREATMENT: No treatment is typically required but will be based upon specialist recommendations. Removal of any hardware isn't mandatory for aviation duty though it may be required if exacerbated by vibration, compression of nearby anatomic structures, or temperature extremes. Subcutaneous hardware (i.e., screws in the medial malleolus, olecranon process of the elbow, or with clavicular repairs, etc.) may cause pain and/or chronic inflammation with military footwear, restraining harnesses, or components of body armor. What is considered an "elective" removal in an ordinary civilian patient, may be medically necessary in specific military occupations.

Removal of deeper hardware such as intramedullary rods in long bones is not usually medically advised. If removal of any hardware is medically not advised but negatively impacting aviation duty, aeromedical suspension may be justified. Antibiotic prophylaxis may be recommended prior, during, and directly after prosthetic joint placement. However, the general use of antibiotic prophylaxis for dental, urologic or gastrointestinal procedures is typically no longer recommended in healthy aircrew. Use of anything beyond acetaminophen and/or NSAIDs (i.e., controlled pain medications, muscle relaxers, anticoagulation, gabapentin, etc.) will not be favorably considered for waiver.

DISCUSSION: Retained hardware devices consist primarily of screws, plates, wires, anchors, nails, and intramedullary rods. Please note, intramedullary rods in long bones and/or hardware that crosses a joint (excluding spinal hardware and arthroplasty) are no longer specifically disqualifying. Both can be listed IO unless they are symptomatic, interfere with proper wearing of equipment or military uniform, limit ROM, or interfere with the performance of aviation duties. Remote hardware placement or insertion prior to military/DAC service will also usually meet IO criteria, but depending on the specific hardware or prosthetic in question, a current orthopedic consult may be necessary to document stability and/or to receive clearance for unrestricted activity.

For arthroplasty, there are a variety of implant types and materials. These customarily consist of femoral, tibial, and patella components in a total knee replacement and femoral, acetabular, and bearing surface components in a total hip replacement/resurfacing. The choice of hardware or implant type/material, as well as which procedure/approach is performed by the Orthopedist, should be driven by the most up to date clinical practice guidelines and specialty society recommendations. The recovery and return to full unrestricted duty, as opposed to the specific implant used or surgical approach employed, is the key to a positive waiver disposition.

For hardware secondary to trauma, these components are placed for stabilization and to allow for adequate healing. Healing times can vary greatly from several weeks to > 6 months and are affected by multiple factors. The nature of the injury/trauma and any associated soft tissue/nerve damage from the injury itself or from the resulting repair, will significantly impact the decision to return an aircrew member to FFD. This decision should be made conservatively to ensure adequate healing has occurred. Those with joint replacement hardware are given very specific ROM limitations (i.e., hip and knee precautions) and in these cases, clearance to return to FFD should be delayed until member meets all requirements under the “INFORMATION REQUIRED FOR INITIAL WAIVER/ETP” section. While most cases involving retained hardware are typically not conditions appearing in Table 11 of the ATBs, premature return to flight can result in disastrous consequences for the patient and significantly increase aeromedical risk.

Due to updated surgical techniques and advanced wear properties in newer prosthetic materials, a large majority of implants and joint replacements will easily outlast a typical career. As such, appropriate preventive-oriented profiles are encouraged. Patients who are younger, heavier, and wish to continue intense physical activity, should be given discerning profiles that encourage strenuous training/activity but that also do not cause excessive impact to a post-arthroplasty joint. Fracture, loosening, heterotopic ossification, and the need for earlier than expected revision, are significant and enduring risks in this population.

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SHOULDER DISLOCATION

INFORMATION ONLY: Yes, please see below.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Chronically dislocating is defined as more than one dislocation of the same shoulder at any point in time. A chronically dislocating shoulder history carries with it an unacceptable risk to aircraft safety and mission performance due to the risk of unexpected dislocation and its concomitant pain, limited range of motion, apprehension, and/or paresthesias. An initial shoulder dislocation under age 20 carries a 50-90% probability of recurrence and dislocations that occur over age 40, a 5-15% probability, either of which is a substantial risk in the aviation environment and must be watched closely. A single reoccurrence increases the risk of subsequent reoccurrence.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended IAW Table 1.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended IAW Table 1.

Table 1: Waivers/ETPs/Information Only (All Classes to include applicants):

Condition/Treatment	Class 1	Class 2 and 3	Class 4
Distracting Pain during the performance of flight duties	Exception to policy not recommended	Waiver not recommended	Waiver not recommended
Single dislocation with no residual pain or limitations which impact aviation duties.	Information only No exception to policy recommended if has residual pain or any limitations that impact the performance of aviation duties.	Information only Waiver required if does not meet these criteria.	Information only Waiver required if does not meet these criteria and if could impact the performance of UAS or ATC duties.
More than one dislocation of the same shoulder – Unrepaired, residual pain controlled with medications or limitations that could impact aviation duties after recovery from surgery.	Exception to policy not recommended	Waiver required	Information only Waiver required if there is residual pain or limitations that could impact the performance of UAS operator or ATC duties.
More than one dislocation of the same shoulder – Repaired with no residual pain and no limitations that impact aviation duties.	Information only	Information only	Information only

INFORMATION ONLY REQUIREMENTS:
- Classes 1, 2 and 3 to include applicants: A single episode of shoulder dislocation is disqualifying until completely healed with full range of motion, strength, and released by Orthopedics back to full duty with no limitations. May not have any joint instability, pain, or unrepaired shoulder internal derangement. Well healed, repaired shoulders after a single dislocation or multiple dislocations will be listed IO. Consideration for an IO disposition is strengthened in those who have demonstrated satisfactory post-repair performance under rigorous training or deployment conditions (i.e., Ranger, SF, Parachute, deployment, or West Point, etc.).

- Class 4 to include applicants: Single or recurrent dislocations are considered IO with or without surgical correction provided there is no residual pain or any limitations that would impact the performance of ATC or UAS operator duties.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Orthopedic consultation and recommendations including prior notes, or a current evaluation, documenting end of care and release to full work, duty, and/or physical activity without restrictions.
- Requirement for In-Cockpit/Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission.

ANNUAL WAIVER REQUIREMENTS/FOLLOW UP: Follow up beyond annual aeromedical provider evaluation is not normally required. Recurrences require immediate grounding, reevaluation, and reporting of above information.

TREATMENT: Surgical correction and rehabilitation.

DISCUSSION: Potential post-operative complications include: recurrence of dislocation, bone resorption, chronic pain, or functional limitations. Surgical failure and surgical complication rates are low with current operative techniques, particularly with modified Bristow procedures. With the extraordinarily high reoccurrence rate of shoulder dislocations especially in the younger population, great caution must be exercised in allowing aviation duties in unrepaired individuals.

SPINAL FRACTURES

INFORMATION ONLY: No, for any degree of compression fracture of cervical vertebrae, the twelfth thoracic vertebra, the first lumbar vertebrae, or any spinal fracture requiring surgery or insertion of orthopedic hardware.

Yes, for a conservatively managed compression fracture involving less than 25 percent of any other vertebra if the injury occurred more than 12 months ago and is asymptomatic.

Yes, for a conservatively managed fracture of the transverse or spinous process at any level if asymptomatic.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission. See Discussion section for recommended grounding/DNIF periods.

AEROMEDICAL CONCERNS: Spinal fractures that do not heal or result in significant vertebral height loss are more readily destabilized under physical stress such as ejections, hard-landings, or crashes to increase the risk of sudden spinal cord injury. This increased spinal vulnerability to trauma has been associated with severe injury to the spinal cord, nerve root, and plexus complexes. Significant forces are often involved to obtain vertebral bony injury with neurologic and ligamentous sequelae as well that often need to be assessed and addressed.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and dependent upon a full recovery with no duty/activity limitations.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended and dependent upon a full recovery with no duty/activity limitations.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Orthopedic and/or Neurosurgical consultation and recommendations.
- Results of required imaging as dictated by evaluating/treating specialist.
- MEB recommendations, if MEB was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up is directed per specialist recommendations. At a minimum, annually requires a comment on the FDME or FDHS regarding symptoms, profiling, performance, medication use, and any aeromedical concerns.

TREATMENT: Stable fractures without neurologic injury respond well to conservative management. Those spinal fractures requiring surgical decompression and/or stabilization imply in flight crew personnel a significant risk of either permanent disabilities incompatible with return to aviation duties or unacceptably increased risk in aviation environments.

DISCUSSION:
Cervical: 3 month grounding is required for patients with small anterior chip fracture or less than 25% compression. At 3 months, a patient that is asymptomatic (pain-free, has full ROM, no instability on lateral views, and has no radicular symptoms) may be returned for trial of duty. By 12 months, if still asymptomatic, waiver may be requested. On a case by case basis, cervical spine fractures with more than 25% compression, evidence of instability on lateral views, or radicular symptoms will rarely be considered for waiver.

Thoracic: Except for the 12th thoracic vertebra, thoracic vertebral compression fractures less than 25% once healed, 12 months old and asymptomatic is not disqualifying and Information Only. For all thoracic compression fractures, 3 month grounding is required for healing. For those with a single fracture with less than 50% compression or wedge, no scoliosis on AP views, pain-free, and no instability, may be returned for trial of duty. By 12 months, if still asymptomatic, waiver may be requested. Thoracic spine fractures with more than 50% compression, evidence of scoliosis, or involving more than one vertebra may be rarely considered for waiver on a case by case basis. All 12th thoracic vertebra fractures require waiver.

Lumbar: For all lumbar compression fractures, 3 month grounding is required for healing. For those with a single fracture with less than 50% compression or wedge, no scoliosis on AP views, pain-free, no spondylolysis/spondylolisthesis, no radicular pain, and no instability, may be returned for trial of duty. By 12

months, if still asymptomatic, waiver may be requested. Lumbar spine fractures with more than 50% compression, instability on x-ray, radicular symptoms/deficits, or associated HNP, a waiver can be considered only on a case by case basis.

In C-spine injuries, the key question in returning to flight status is stability of the spine. Often, bony injuries heal with no residual instability. Ligamentous injuries, in contrast, may heal with various degrees of instability. Early on, instability may be detectable by obtaining lateral views in flexion and extension of the C-spine. Chronic instability results in degenerative changes such as disc space narrowing and asymmetry. Osteophytic changes and foraminal narrowing may be seen in the oblique views. The common wedge or chip fracture often seen at the C4-6 level, with no instability noted, has an excellent prognosis.

Lumbar compression/wedge fractures generally heal with no instability. Those less than 50% have a similar excellent prognosis and are rarely associated with any resultant instability. Purely ligamentous injuries of the L spine are uncommon. However, there is potential for degenerative disc disease, which could lead to herniation. Although not specifically relevant to Army aviation, spinal compression fractures are a common ejection injury (20 - 30% of ejections) with most fractures occurring between T9 and L1. For this reason, all survivors of ejections should undergo complete spine x-rays. Finding a compression fracture on x-ray often raises the question of age of the fracture. Widening of the paraspinous line on x- ray and symptoms appropriate to the location of the identified fracture are indicative of an acute injury. A radioisotope bone scan may remain "hot" for up to two years post-compression fracture. Once healed, the damaged area does not appear to be unduly susceptible to repeat fracture.

SPONDYLOLISTHESIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Spondylolisthesis is unlikely to cause incapacitation in flight but, if symptomatic, will cause considerable distraction. Theoretically, spondylolisthesis could cause severe problems on ejection or with mishap impact forces.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis only for asymptomatic cases with no history of surgical intervention.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for asymptomatic cases with or without prior surgical intervention. Cases of Grade II or higher spondylolisthesis or symptomatic Grade 1 cases are recommended for waiver on a case by case basis in select aircrew.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Neurosurgical and/or Orthopedic consultation and recommendations.
- Some case may require Physical Medicine and Rehabilitation and/or Rheumatology consultation.
- Required imaging as dictated by evaluating/treating specialist but chosen modality must demonstrate spinal stability.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Specialist follow-up will be dictated by evaluating/treating specialist and only required if previously recommended or if clinically indicated due to signs/symptoms of progression or impact to military/aviation duty.
- Aeromedical provider comment on continued absence significant interval history and adherence to treatment regimen.

TREATMENT: Education in proper body mechanics and use of the back. A program of daily back exercises. Spinal fusion may be appropriate in certain cases. Please see Back - Neck Pain and Intervertebral Disc Disease APL as applicable.

DISCUSSION: Aircrew with frequent symptoms should not continue to fly. Further slipping of the vertebra (usually L5) can occur with exposure to excessive gravitational forces, ejection or even during normal activities on the ground. Further exposure to vibration, vertical and lateral forces, awkward postures and prolonged sitting can both aggravate symptoms and accelerate the development of chronic degenerative disease. Risk of vertebral displacement slipping of the vertebra (usually L5) is increased with exposure to excessive gravitational forces, ejection or even during certain normal ground activities.

SPONDYLOLYSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: This condition usually is a cause of low back pain but may also cause radiculopathy secondary to accumulation of fibrocartilage at the site of defect in pars interarticularis. Distracting pain and nerve root impairment are incompatible with safe flight operations.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis only for asymptomatic cases.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis only for asymptomatic cases.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Neurosurgical and/or Orthopedic consultation and recommendations.
- Some case may require Physical Medicine and Rehabilitation and/or Rheumatology consultation.
- Required imaging as dictated by evaluating/treating specialist but chosen modality must demonstrate spinal stability.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Specialist follow-up will be dictated by evaluating/treating specialist and only required if previously recommended or if clinically indicated due to signs/symptoms of progression or impact to military/aviation duty.
- Aeromedical provider comment on continued absence significant interval history and adherence to treatment regimen.

TREATMENT: Conservative treatment may achieve temporary relief of symptoms; however, upon resumption of vigorous physical activities, symptoms usually return. Eventually fusion and nerve root decompression may be required. Please see Back - Neck Pain and Intervertebral Disc Disease APL as applicable.

DISCUSSION: The defect in the pars interarticularis (neck of the "Scotty dog") may be acquired from acute trauma, or more commonly, may result from chronic stress (stress fracture). Rarely is it of congenital origin. These occur primarily at L5-S1 and somewhat less at L4-L5. There is an inherited proclivity for the condition (dominant transmission) with an incidence that increases with age up to the end of the fourth decade. It exists in about 5% of the general population but is much higher in certain races (Japanese, Eskimo) where it may be as high as 45%. Instability of the posterior spinal elements is associated with the development of spondylolisthesis which is frequently progressive. This condition is likely to be accelerated by the physiological stresses of military flight activities.

SYSTEMIC RHEUMATOLOGIC DISEASES

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Systemic diseases, often autoimmune, are fraught with complications and aeromedical concern. Pain, joint swelling, and stiffness can be distracting for flight, but also the underlying disease process may cause further concern with increased fatigue and symptoms of depression. Diseases such as Rheumatoid Arthritis (RA), Systemic Lupus Erythematosus (SLE), and Fibromyalgia, often have systemic involvement and/or wide spread complications that are limiting to safe performance and duty. With RA and SLE, patients tend to "gel" from the stiffness when in one position for a long time, and this could impair emergency egress on the ground. Cervical spine involvement with RA at the atlanto-axial junction could lead to quadriplegia after violent movements of the neck, exposure to high Gz, hard landings, or ejection. The requirement for maintenance therapy and specialist review may make worldwide deployment difficult and the underlying condition may not be suitable for continued military service.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended but may be considered on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for asymptomatic individuals with normal function who are able to safely perform all aviation position requirements, have no assignment or deployment limitations, require no aeromedically unacceptable medications, and have no extra-articular symptoms.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Specialty evaluation varies dependent on diagnosis but may include consultation and recommendations from Rheumatology, Orthopedics, Physical Medicine and Rehabilitation, Physical Therapy, Ophthalmology, Cardiology, Neurology, Pulmonary, Gastroenterology, and/or Psychology/Psychiatry.
- Imaging Studies as appropriate, for RA must include cervical x-rays in full extension/flexion to exclude cervical spine subluxation.
- Laboratory evaluation, as appropriate, including documenting stability of basic laboratory screening elements (i.e., CBC, BUN, Cr, etc.) to include indicators of disease control (ESR) and any medication monitoring requirements.
- Neuropsychological testing as applicable or required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: As per the underlying condition and involved specialist(s) recommendations. Annual reporting on FDME or FDHS needs to include review of overall health state, function, profiles, medications used, and ability to perform safely. Significant changes may require USAAMA review/consultation and additional AMS submission.

TREATMENT: Treatment with first line drugs such as salicylates/NSAIDs and second line drugs such as chloroquine may rarely be considered for waiver provided there are no side effects. Patients who have a good result from synovectomy and those requiring joint replacement may be considered on an individual basis. Gold therapy has been waived once the course of therapy has been completed. Prednisone, injectable monoclonal antibody therapies, and methylcholine are not usually waiverable. These medications imply that the disease process is beyond what might be considered waiverable for continuation of military duties and deployment. In these case, MEB is warranted prior to waiver consideration.

DISCUSSION: This APL is meant to provide the broad overview for the evaluation of a number of systemic conditions, most of which fall into the rheumatologic spectrum of care that are not addressed elsewhere in the APL guide. These conditions often involve multiple systems, which require multiple evaluations and input. Because of the nature, course, prognosis, unpredictability, and treatment options, a number of individuals will not be recommended for a waiver. Most will require a MEB/PEB at some point. Those that receive a waiver will require ongoing evaluation and may subsequently require grounding if the underlying disease or condition deteriorates to the point of jeopardizing crew health, safety, mission, deployment, and retention. Medication adjustments may be the reason for aeromedical suspension. A subsequent AMS will be required and most likely a MEB/PEB, if not previously done.

RA occurs in 1% to 3% of white adults. The peak incidence is 35-55 for females and 40- 60 for males. There is sudden onset with anorexia, weight loss, fever, fatigue, and malaise in 10-20% and insidious onset in the remainder. There is involvement of the cervical spine in 80% of cases, often asymptomatic, with about 25% having atlanto-axial joint subluxation and up to 86% having radiological evidence of instability of the cervical spine. Up to half will have no symptoms referable to their necks. Sudden onset of quadriplegia and death has been reported although both are rare. In addition to the dangers of flying at high Gz and of ejection, patients with RA must have their neck x- rayed at full flexion and extension to identify any instability before any general anesthetic. Rheumatoid nodules are present in 20% of cases, mainly on the elbow or extensor aspect of the forearm. There is pericardial effusion in 55% of patients with nodular disease (and 15% of those without). A nonspecific (usually aortic) valvulitis has been reported in up to 30% of cases at postmortem. Anemia is common although the most common cause is drug toxicity. Of all cases, 30% will progress to severe disability, 10% will have no disability and the remainder will usually progress on a spectrum between the two extremes on a course of remissions and exacerbations. Between 10-15% will progress relentlessly, but 10% of cases will have only one attack of the disease. Poor prognosis is related to insidious onset, early involvement of large joint, early extra-articular manifestations of the disease and persisting active disease without remission for more than 1 year. The measurement of conserved sequence in the third allelic hypervariable region of the major histocompatibility complex class II beta chain (DR4/Dw4, DR4/Dw14, and DR1/Dw1), defective sulfoxidation capacity in combination with rheumatoid factor may be of assistance in determining which patients will develop bone erosion. In one study, 92% of patients with early symmetrical RA who had all 3 of these factors, developed erosive bone lesions within 4 years compared to 62% of those patients with 2 risk factors and 7% of those with only one risk factor.

UNSPECIFIED ORTHOPEDIC PERMANENT PROFILES AND PULHES

INFORMATION ONLY: Yes, but dependent on the individual condition. Please see below for guidance.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Physical profiling is a useful medical tool to allow continuation of service while limiting certain activities to prevent further injury or disability. Chapter 3 outlines those conditions warranting evaluation with MEB and PEB. A number of the APLs covered in this guide address common underlying conditions that warrant a permanent profile, but the guide does not address all of them. This APL provides aeromedical guidance for review of ANY condition requiring a permanent profile, even if just a Permanent 2 profile, to ensure appropriate reporting of the profile and review of underlying condition for its potential impact on aeromedical safety. Permanent profiling in itself is not a disqualifying condition; however, the underlying condition may be if it is to the level of warranting such a restriction in activity. The clinic or hospital manages permanent profiles, sometimes omitting review for continuation of aviation duties. Annotate PULHES on every FDME, FDHS, and AMS.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

GENERAL GUIDANCE: Unless an underlying disqualifying condition exists, annotate permanent profiles in the "Remarks" section of the FDME or FDHS, with clear delineation of reason why. This should be coded as IO. When the permanent profile is for a previously waived or IO disqualifying condition, state so in the Remarks section. If the permanent profile is for an "unreported condition" after review of the HISTORY SUMMARY in AERO, submit enough detail and information to document aeromedical safety review to warrant IO status or prepare an AMS requesting waiver for the underlying condition.

PERMANENT 2 PROFILES: A permanent 2 (P2) profile may or may not be for a disqualifying condition. Most P2 conditions that are for disqualifying conditions will receive a waiver or exception to policy, provided it does not impact flight performance, duties, or emergency egress. Often P2 profiles restrict a single AFPT/ACFT event to reduce the risk of injury. Combinations of P2 conditions resulting in restriction of all anaerobic PT events (push-ups and sit-ups) or not allowing run at own pace and distance should raise concern for improper profiling (this should be a permanent 3 or 4) and aeromedical issues affecting performance.

PERMANENT 3 PROFILES: Most permanent 3 (P3) profiles are associated with disqualifying conditions, and often these warrant a MAR2 or MEB IAW Chapter 3 of AR 40-501. Waivers are granted on a case by case basis for H3 hearing and all other P3 conditions. Exception to policy is not recommended for any P3 profiles including H3 hearing.

PERMANENT 4 PROFILES: All permanent 4 (P4) profile conditions reflect disqualifying conditions warranting MAR2/MEB, most of which after careful case by case review are not favorably considered for waiver or exception to policy.

OTHER CONCERNING PROFILES: Any permanent profile shall raise concern if it limits the wear of the protective mask and all chemical defense equipment, Kevlar wear, duty, deployment, or more. Senior officers and NCOs have seen all kinds of profiles. The wording and condition may be suspect or truly valid, but it is the underlying condition and its potential impact on aviation duties that requires aeromedical attention and review.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Sufficient information regarding the profile and underlying condition. Contact USAAMA if questions or concerns. If underlying condition is disqualifying, follow the APL guidance for submission Effect of profile on ability to perform aviation duties, and if required, command input

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Per applicable APL(s).

TREATMENT: Per the underlying condition.

DISCUSSION: Permanent profiles infrequently exist without aeromedical knowledge or review in terms of flight safety and performance of duty. They may affect readiness and deployability. AERO works with MEDPROS and will soon be interfacing with HRC in terms of readiness and personnel. Without knowledge and monitoring those with permanent profiles, concerns for the aeromedical community include: prevention of future progression of the underlying condition, effect of the limitation on the normal aviation duty, effect limitations on function in unanticipated high-demand situations as in deployments or accidents, and effect of continued aviation duty on the condition's progression or on its level of symptoms.

OTORHINOLARYNGOLOGY WAIVERS

ACOUSTIC NEUROMA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Progressive hearing loss, tinnitus, trigeminal hypoesthesia, imbalance, and occasionally true vertigo have all been attributed to acoustic neuromas. However, the onset is not normally acute. Following surgery, total hearing loss, labyrinthine dysfunction, and facial nerve weakness or paralysis can be present on the side of surgery.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and may be submitted 6 months following successful surgical removal and hearing/any sequelae are within acceptable limits. Specifically, the tumor must have been 2.5 cm diameter or less; unilateral, postoperative vertigo must have completely resolved; and any damage to cranial nerves should allow full eye movement without strabismus or tracing deficit and acceptable mask sealing.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and may be submitted 6 months following successful surgical removal and hearing/any sequelae are within acceptable limits. Specifically, the tumor must have been 2.5 cm diameter or less; unilateral, postoperative vertigo must have completely resolved; and any damage to cranial nerves should allow full eye movement without strabismus or tracing deficit and acceptable mask sealing.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- ENT consultation and recommendations including prior notes if historical, or a current evaluation, documenting end of care and release to full work, duty, and/or physical activity without restrictions.
- Audiology consultation and recommendations.
- Requirement for In-Cockpit/Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission.
- Neurology and Neurosurgery evaluations may also be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual ENT evaluation is required.

TREATMENT: Surgical excision is compatible with waiver in selected cases.

DISCUSSION: Acoustic neuromas have a peak incidence between 40 and 50 years. The majority are schwannomas arising from the superior vestibular division of the eighth nerve, usually extending from the internal auditory canal into the cerebellopontine angle as they enlarge. In patients with neurofibromatosis, neuromas can occasionally be bilateral. Acoustic neuromas are virtually always benign. Operative morbidity is related to the size of the tumor, and hearing is often affected. Up to 50% of patients will have no useful hearing in the involved ear after surgery. Other cranial nerves also may be damaged during surgery (i.e., trigeminal and facial). Facial paralysis may make wearing of an oxygen mask difficult, may result in speech problems, and can cause eye symptoms due to inability to close the eyelids.

ALLERGIC / NONALLERGIC RHINITIS

INFORMATION ONLY: Yes, minor/mild cases not interfering with fit and wear of military or aviation safety/survival gear managed with aeromedically acceptable medications can be listed IO. The requirement for immunotherapy necessitates ETP/waiver action.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Allergic rhinitis is a common upper respiratory condition with a potential for causing significant medical incapacitation in flight personnel. Rhinitis is not usually disabling but is a distraction possibly causing significant periods of down time and, thus, reduced operational effectiveness. The reduced sense of smell could be hazardous in the cockpit. Congestion and swelling of the nasal passages could interfere with the movement of air and result in airway compromise, discomfort, the use of medications with unacceptable side effects, and barotrauma with the potential for in-flight incapacitation.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely required and reserved for those applicants with a history of, or chronic requirement for, systemic steroids, immunotherapy, or any history of sinus surgery. ETP will generally be recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is rarely required and reserved for those individuals with a history of, or chronic requirement for, systemic steroids, immunotherapy, or any history of sinus surgery. Waiver will generally be recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- ENT and /or Allergy consultation and recommendations if clinically indicated based on disease frequency/severity.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: None required unless symptoms worsen with significantly impact aircrew readiness.

TREATMENT:
Antihistamines – Fexofenadine (Allegra), and Loratadine (Claritin), (all other antihistamines are disqualifying Class 4 medications, including Cetirizine (Zyrtec)). This is the recommended first line treatment for mild disease.
Leukotriene Modifiers – Montelukast (Singulair)
Intranasal Steroids – Dexamethasone (Dexacort), Flunisolide (Nasarel or Nasalide), Beclomethasone (Beconase, Beconase AQ, Vancenase, Vancenase AQ DS), Budesonide (Rhinocort), and Triamcinolone (Nasacort or Nasacort AQ), Fluticasone (Flonase), and Mometasone (Nasonex). This is the recommended first line treatment for moderate disease.
Short Acting Decongestants – use as needed.
Intranasal Cromolyn Sodium (Nasalcrom) – This is effective, but requires frequent (qid) dosing.
Intranasal Anticholinergics – Ipatropium bromide (Atrovent) 0.03% nasal spray is effective when rhinorrhea is the predominant symptom. It is not very helpful for relieving congestion, itchy watery eyes or sneezing.
Immunotherapy – May be used while the aviator remains on flight status provided member remains relatively asymptomatic without the use of antihistamines. Occasional sudafed or use of an intranasal steroid is permitted. Aviation personnel should be grounded 12 hours following immunotherapy injection or for the duration of local or systemic reaction IAW AR 40-8, Temporary Flying Restrictions due to Exogenous Factors. The accelerated method of reaching maintenance immunotherapy (Rush technique) can be used and should be considered to minimize grounding time.
Allergy Testing – Consider allergy testing if no response to therapeutic course of antihistamines/intranasal steroids after 30-90 days of treatment or for patient education for control of trigger exposure.

DISCUSSION: Rhinitis is an inflammation of the nasal passages which can be subdivided into two major categories: Allergic and Nonallergic. Allergic rhinitis can be either seasonal or year round and can be characterized by any or all of the following symptoms: rhinorrhea, nasal congestion, sneezing, nasal or ocular pruritus and lacrimation. Seasonal allergic rhinitis is caused by an IgE medicated reaction to seasonal aeroallergens, typically tree, grass and /or weed pollens as well as molds. Perennial allergic rhinitis is a year round condition also due to an IgE mediated reaction to aeroallergens which primarily include dust mites, animal allergens, and molds. Intranasal steroids and cromolyn have minimal side effects and are approved for use in

aviation personnel. Nonallergic rhinitis may consist of nasal congestion, sneezing, and rhinorrhea. The congestion is often seen as alternating, with sometimes severe nasal obstruction. Inciting factors include temperature and humidity changes, odors, irritants, recumbency, and emotion. Treatment of nonallergic rhinitis with inhaled nasal steroids can be effective; and if symptoms are not disabling, no waiver is required. Daily antihistamine use is not recommended for treatment of nonallergic rhinitis.

The diagnosis rests primarily on history (i.e., time of day, seasonal variation of symptoms, frequency and duration of episodes, environmental factors such as home or work exposures, whether symptoms improve with altitude or humidity and if there are any triggers such as MSG, pollen, smoke, cold weather, physical exertion, etc.). Further evaluation is indicated if symptoms are severe and do not respond to medical therapy. Sinus CT scans or rhinoscopy would be part of a more in-depth evaluation. Allergy skin prick testing is the most sensitive test for identifying specific allergies. It is simple and inexpensive. RAST testing is a good screening test to help with identifying suspected triggers. Total IgE or eosinophil counts are not good screening tests and therefore are not recommended.

CHOLESTEATOMA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Hearing loss and risk of recurrence, with the possibility of labyrinthine involvement, and even intracranial extension, in the more advanced cases.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis following surgical removal and recovery.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis following surgical removal and recovery.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Current ENT and Audiology consultation and recommendations, even for remote/historical cholesteatomas, including end of care notes/reports.
  - Specific comment on absence of any impact to hearing, balance, and facial nerve function is required.
- Post-op hearing that is below standards will also require ETP/waiver. Please see Hearing Loss APL as applicable.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An ENT evaluation is required annually. An audiology evaluation may be required if hearing is below standards.

TREATMENT: Surgical removal.

DISCUSSION: Given the relatively high recurrence rate, it is important that every attempt is made to assure that there is no residual disease. Recurrent or continuous drainage following surgery may indicate the presence of cholesteatoma residue, and is not waiverable. Occasionally, the surgeon will plan (or advise) a re-exploration of the ear at a specific time in the future, usually 12-18 months. Every attempt should be made to have this done as the chance of residual disease is significant.

DISORDERS OF THE SALIVARY GLANDS

INFORMATION ONLY: Yes, non-recurrent calculi of any salivary gland or duct can be listed IO. The requirement for any ongoing treatment indicates recurrent calculi, and therefore necessitates ETP/waiver action.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Pain or discomfort often result from retained salivary stones, especially after eating or drinking. Tumors may interfere with oxygen mask fit. Following successful treatment of salivary stones or tumors, a waiver may be granted provided there is no facial deformity or nerve damage that would interfere with flight duties.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and dependent on diagnosis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and dependent on diagnosis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Consultation and recommendations from evaluating/treating specialist.
- Required imaging as dictated by evaluating/treating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Annual follow up with specialist is only required if previously recommended or if clinically indicated due to disease progression or reoccurrence.

TREATMENT: Stone or gland excision (partial or total) is compatible with waiver, as are most cases of benign tumor removal; extensive surgery for malignancy may not be waiverable, so each case of malignancy will be considered in detail by USAAMA before a recommendation can be made. Please also see the Head and Neck Tumors APL as applicable.

DISCUSSION: Mixed tumors (pleomorphic adenomas) comprise 65% of all salivary gland tumors; only a small number of these (5-6%) are malignant. The great majority of salivary tumors (85%) occur in the parotid gland, and 60% of these are the benign mixed type. Another benign tumor, the Warthin's tumor, accounts for 7% of parotid neoplasms, while malignant tumors (in descending order of frequency: mucoepidermoid carcinoma, malignant mixed tumor, acinous cell, adenoid cystic, and squamous cell carcinomas) and other rare lesions account for the remaining 33%. Benign mixed tumors have a recurrence rate of approximately 2%, usually due to incomplete removal or seeding at the time of removal. Malignant tumors have a much higher rate of recurrence. With adenoid cystic carcinoma, 40% have metastasized by the time of diagnosis; 5- year survival is 45-82%, depending on the study, falling to as low as 13% at 20 years. The corresponding figure for adenocarcinoma is 49-75% at 5 years, with a drop to 41-60% at 10 years. The 20-year survival figures are not readily available.

HEARING LOSS

INFORMATION ONLY: Yes, if hearing loss is limited to 6000 hertz in one or both ears, there is no underlying or contributing pathology beyond noise exposure, and individual can reasonably be expected to safely perform all essential MOS and aviation functions without unacceptable risk to self, crew, and/or mission completion.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Adequate hearing is essential for communication in flight or during aircraft/UAS control as well as for rapid and accurate assessment of warning tones in the cockpit/aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis in applicants whose PULHES documents H2 or better hearing. ETP is not recommended for those with H3 or higher PULHES due to unacceptable risk of further noise exposure and disease progression/exacerbation in the flight environment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended for those where PULHES documents H2 or better hearing. Waiver is recommended on a case by case basis in select aircrew for those with H3 PULHES who can safely perform all essential MOS and aviation functions and whose aviation duty is unlikely to significantly worsen their hearing loss. Waiver is not recommended for those with H4 hearing.

HEARING STANDARDS

Acceptable audiometric hearing levels for Army aircrew members and ATC

Class	500 Hz	1000 Hz	2000 Hz	3000 Hz	4000 Hz	6000 Hz *
1	25	25	25	35	45	45
2/3/4	25	25	25	35	55	65

* Isolated hearing loss at 6000 Hz will not require full audiology work-up unless recommended by the local aeromedical provider or audiologist (i.e., new onset, etc.) and is not considered disqualifying; however, 6000 Hz hearing measurements will be reported on all annual flight physicals so data can be entered into the AEDR database for research and academic interest.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
  - Aeromedical provider must also reset the individual's audiometric baseline by entering confirmatory Audiogram results, and all required testing, in blocks 71b/71c (DD 2808) or 23b/23c (DD 4497). AMSs and associated physicals without an appropriately reset baseline will be returned DISQUALIFIED-INCOMPLETE.
- Complete Audiological evaluation indicating no underlying pathology and including:
  - Pure-tone air conduction testing (and bone conduction if clinically indicated).
  - Tympanometry
  - Acoustic reflex threshold testing
  - Speech reception threshold (SRT) testing.
  - Speech/word recognition testing (aka speech/word discrimination testing) in quiet under earphones with scores of 84% or higher in both ears. See Discussion section for more information.
- ENT consultation if recommended by Audiologist or if otherwise clinically indicated.
- Requirement for In-Cockpit/Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission. This evaluation is generally only required when speech/word recognition testing falls below 84%.

*NOTE – The Speech Recognition in Noise Test (SPRINT) is designed to be utilized for PULHES profiling determinations and MAR2 recommendations and is NOT APPLICABLE for assessing functional hearing loss in the aviation environment or for ETP/waiver consideration.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: An annual manual or microprocessor pure-tone evaluation at 500 Hz, 1000 Hz, 2000 Hz, 3000 Hz, 4000 Hz, and 6000 Hz in each ear is required. A shift of 20 decibels (dB) or greater in EITHER ear (from the baseline established with the current waiver) at 1000 Hz, 2000 Hz, 3000 Hz, and 4000 Hz will require a submitting a current audiometric assessment to USAAMA, including tympanometry, SRT, and speech/word recognition testing. A new AMS does NOT need to be submitted, however, the local aeromedical provider must update the audiometric baseline by inputting the new audiometric data, including confirmatory audiogram results, SRT, and speech/word recognition testing scores blocks 71b/71c (DD 2808) or 23b/23c (DD 4497). Physicals without an appropriately reset baseline will be returned DISQUALIFIED-INCOMPLETE.

NOTE: The current DoD Hearing Conservation Program requires a follow up hearing test or audiology work up for a shift of greater than 10 dB for the pure-tone average of 2000, 3000, 4000 Hz OR a worsening of 15dB or more at 1000, 2000, 3000, or 4000 Hz, in either ear. While local aeromedical providers should continue to adhere to this DoD policy, submission of the complete audiometric assessment is only required for a 20dB shift in either ear or inability to hear adequately in the aviation environment.

TREATMENT: Prevention of exposure to noise is the most effective way to slow/halt further hearing loss. Compliance with the Army Hearing Conservation Program screening as well as proper use and fitting of ear protection is essential in the occupational, recreational, and home settings. Patients with conductive hearing loss may be helped by the use of hearing aids for ground duties in nonhazardous noise. The use of a hearing aid in flight is considered aeromedically acceptable.

DISCUSSION: Speech recognition testing will be conducted both monaurally and binaurally utilizing the North Western University (NU6) word list material (or other validated list IAW clinical practice guidelines/professional society recommendations). Monaural testing will be conducted at a sensation level (SL) of 40 decibels (dB) above SRT. Binaural recognition testing will be conducted at the patient's most comfortable listening level (MCL). Speech recognition score must be 84% or higher in both ears. Aircrew members with a recognition score of less than 84% may receive a waiver, but these are handled on a case by case basis.

If an In-Cockpit/Flight evaluation is required, it should be conducted by an appropriate unit trainer/supervisor of similar MOS/aviation position. A hearing loss specific evaluation consists of doing a speech audiometry (using common aviation terms) while exposed to normal in-cockpit/flight conditions in the individual's primary aircraft (in rare cases of a solo aircraft aviator, a dual-aircraft with similar noise level should be chosen). An individual with normal hearing should also be tested at the same time to verify the accuracy of testing and all microphones and headsets should be tested prior to testing. Note: A list of common aviation terms is available upon consultation with USAAMA.

Patients with conductive hearing losses often hear better in a noisy background, such as in the air; whereas those with sensorineural hearing loss, tend to perform less accurately in the noisy flight environment. The factors to be taken into account in deciding an aeromedical disposition are the degree and type of loss, the need to hear accurately on the ground and in the air, the possible effects of fatigue, and the rate and degree of hearing loss progression.

MENIERE'S DISEASE / VERTIGO

INFORMATION ONLY: Yes, physiologic vertigo induced by gravity forces, aircraft spins, or Barany chair can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Incapacitating vertigo may occur suddenly in flight, a potentially catastrophic occurrence. Attacks may be precipitated by stress and fatigue. A fluctuating hearing loss usually accompanies the labyrinthine symptoms, and may progress over a period of time to a significant and permanent impairment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and dependent upon the underlying diagnosis and risk of recurrence.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and dependent upon the underlying diagnosis and risk of recurrence.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- ENT consultation and recommendations.
- Audiology and/or Neurology consultation may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Annual follow up will be dependent upon the underlying diagnosis and ultimately dictated by the evaluating/treating specialist.

TREATMENT: Treatment with low sodium diet, HCTZ, stress management, and vestibular sedatives such as diazepam may diminish symptoms but the underlying condition persists, and is very unlikely to be waiverable. Surgery (i.e., labyrinthectomy, endolymphatic sac drainage or decompression, or vestibular nerve section, etc.) is of variable effectiveness. Surgery may diminish or even abolish some of the more severe symptoms, but generally the patient is left with some vestibular dysfunction, so waiver remains highly unlikely.

DISCUSSION: The cause of symptoms in Meniere's Disease is an increase in pressure of the endolymph within the labyrinth. The reason for this increase is not known, although theories abound.
The average age of onset is in the forties, with a range between 20 and 60, which includes virtually all military aviation personnel. The disease is progressive in approximately 10% of patients, with a relentless worsening of the vertigo episodes and hearing loss. Medical treatment is usually of no help, and surgery is often the only option. The other 90% can expect some symptomatic relief from medical therapy and, on occasion may show spontaneous long-term remission, although the underlying pathology is not actually altered by medical therapy. One should therefore be reluctant to say that a case of Meniere's is cured or "burned out", even in the face of a prolonged symptom-free interval. Other vertigo-producing labyrinthine disorders, such as vestibular neuronitis and Benign Paroxysmal Positional Vertigo (BPPV) are not nearly as likely as Meniere's Disease to be recurrent, and recovery is usually complete, so a waiver for these conditions is far more likely. A precise diagnosis is not always possible in cases of vertigo, but if a waiver is sought, the more specific a diagnosis one has, the easier it is to determine waiver eligibility.

NASAL POLYPS

INFORMATION ONLY: Yes, if asymptomatic and discovered incidentally.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Sinus barotrauma with potential for in-flight incapacitation and prolonged periods of grounding.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis if managed with aeromedical acceptable treatment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis if managed with aeromedically acceptable treatment.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- ENT consultation and recommendations.
- Required imaging if recommended by ENT.
- If managed surgically, please submit end of care notes documenting disease resolution and release to unrestricted work/physical activity.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of significant interval history and tolerance/adherence to treatment regimen if medically managed.
- Annual specialty evaluation is only required if previously recommended by evaluating/treating specialist or if clinically indicated due to signs/symptoms of disease progression or recurrence.

TREATMENT: Resection of nasal polyps is advisable in most cases; this is a must if a waiver is to be considered, with one exception: If polyps are very small and in no way blocking the middle meatus according to the ENT consultant, then a waiver may be recommended even without surgery.

DISCUSSION: Nasal polyps have poorly understood etiology and tend to be recurrent and many involve concurrent allergy. Sinus polyps alone are not disqualifying, but the underlying diseases which lead to their formation are invariably disqualifying. Sinus mucus retention cysts are often mistakenly called "polyps", and these cysts are not disqualifying unless they are close to the sinus ostium. X-rays revealing a very large cyst can be sent to AAMA for review by the designated USAAMA ENT consultant for a decision as to the need for drainage or removed.

OTOSCLEROSIS / STAPEDECTOMY

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The inability to clearly hear cockpit radio transmissions and warning tones can have a significant impact on flight safety.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for otosclerosis. ETP is not recommended for applicants with a history of stapedectomy.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for otosclerosis. Waiver will be considered depending on the degree of hearing loss and functional capability. Waivers following surgical treatment of conductive hearing loss may or may not be granted, depending on the final hearing result and the nature of the surgery. However, a stapedectomy done to treat otosclerosis is disqualifying and must be waivered. Aircrew with severe conductive loss attributed solely to otosclerosis, and who elect to have surgery, should have a permanent tissue seal covering the inner ear fenestra inserted before prosthesis placement to prevent perilymph fistula. Full evaluation is required following surgery for otosclerosis and also following spontaneous perilymph fistula, whether surgically repaired or not. Aviators are grounded/DNIF for six months following stapedectomy, then a waiver to dual-pilot status may be considered. Dual-pilot status is recommended for 2.5 years before waivering to unrestricted full flying duties. Bilateral stapedectomy is not waiverable.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- ENT consultation and recommendations.
- Audiology evaluation to include:
  - Speech reception threshold
  - Speech/word recognition (discrimination) scores
- History of stapedectomy requires surgical report and end of care notes.
- Wearers of hearing aids will require an in-cockpit/flight hearing evaluation without the aid to demonstrate the ability of the subject to communicate adequately (testing in a multiplace aircraft will suffice for testing of aviators normally assigned to single seat aircraft, provided ambient noise levels are similar).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of significant interval history.
- The requirement for ENT follow up will be dictated by evaluating/treating specialist.

TREATMENT: Conductive hearing loss may well be improved with amplification (hearing aid) if surgical treatment is not a reasonable alternative; benefits from amplification for neurosensory losses are variable, but often beneficial; the use of hearing aids in flight, however, is not advocated due to possible interference with wearing of the helmet, and the apparent lack of benefit in the noisy cockpit environment. Aircrew with hearing loss will often do well in the cockpit with proper helmet fitting and careful adjustment of radio volumes. Hence, the in-flight hearing test is performed without the hearing aid. As a general rule, the use of hearing aid in-flight is not recommended; the headsets have volume controls.

DISCUSSION: Persons with conductive hearing loss usually hear relatively well in noisy backgrounds, while those with sensorineural loss are more often handicapped when there is significant background noise such as in the cockpit. Therefore, aeromedical decisions should be based on evaluation of hearing on the ground and in the cockpit, especially if the loss is severe enough to warrant use of a hearing aid or aids on the ground. Unilateral hearing losses present few operational problems, but new or progressive unilateral losses can have significant medical implications, and an ENT consultation is necessary to rule out such conditions as acoustic neuroma or atypical Meniere's. Stapedectomies present problems because the operation creates an opening into the labyrinth, and involves the placement of a prosthesis in most cases. There is a risk of postoperative perilymph fistula, as well as subsequent shifting of the prosthesis, both of which can result in sudden attacks of vertigo. The post-op waiting period allows for healing which reduces the chances that barotrauma (or an over enthusiastic Valsalva maneuver) will cause a perilymph leak.

OVAL / ROUND WINDOW FISTULA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: A perilymph fistula can result in either the sudden onset of sensorineural hearing loss, or a rapidly progressive loss, with or without episodic vertigo. It may mimic Meniere's Disease.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for unilateral healed fistula. These require a period of six months grounding/DNIF for observation prior to waiver submission. Bilateral healed fistula, while rare, will require evaluation by the designated Army Aeromedical ENT Consultant.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- ENT consultation and recommendations including notes, tests, operation reports, etc.
- Audiologic and vestibular test results are of particular interest.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of significant interval history.
- The requirement for ENT follow up will be dictated by evaluating/treating specialist.

TREATMENT: Initial treatment is conservative with avoidance of lifting and straining, or exposure to significant barometric pressure changes, especially ones that might require a Valsalva maneuver. If hearing and vestibular symptoms don't improve, and certainly if they worsen, exploratory tympanotomy is indicated. If a fistula is present, it can be surgically sealed.

DISCUSSION: While fistulae may occur spontaneously, most are associated with head injury or barotrauma, especially in the active duty population. They may also occur as a result of Q-tip misadventure, or improper cerumen irrigation technique. As surgery does not always seal the fistula, and recurrence is possible, various waiting periods are prescribed for different classes of personnel. The longest period is for Army aviators, as there is a considerable safety issue should acute vertigo occur during flight.

PSYCHIATRIC WAIVERS

INTRODUCTION

BEHAVIORAL HEALTH EVALUATIONS

Behavioral health evaluations of aircrew are conducted by licensed mental health practitioners in consultation with the aeromedical provider. Command directed mental health evaluations are conducted in accordance with applicable DoD instructions and Army regulations and policies.

A behavioral health evaluation should reflect a detailed history of illness from initiation until the present time. It should cover precipitating events, signs, symptoms, and pertinent family, social, occupational, and medical history. Any other information such as legal history or educational background that may have bearing on the case should be included. Substance and alcohol use history is required in all cases. Physical exam results and any other pertinent studies should also be included in the evaluation.

At initial presentation of the illness, the patient undergoes a mental status examination that should be summarized in the evaluation along with the current status of the patient. The evaluation should also include the results of psychological testing as indicated by the parameters of the case, for example, neuropsychological testing for cognitive deficits.

The behavioral health evaluation should also include a diagnostic impression based on criteria from the current version of the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (DSM-V). Recommendations for clinical follow up/therapy should also be reported. Issues of risk to aviation safety, prognosis, and limitations to deployability must also be addressed.

CONFIDENTIALITY OF MENTAL HEALTH INFORMATION

Although command and medical personnel may need information about an aircrew member's mental health status in order to make decisions about aeromedical disposition, special care is taken to maintain the confidentiality of behavioral health information to the fullest extent possible and to limit the disclosure of such information to the minimum amount necessary and only to persons with an official need to know. Aeromedical providers should become familiar with the HIPAA Military Command Exemption rules and guidelines.

AEROMEDICAL POLICY LETTERS

The following policies outline many chapters of the DSM-V, which should be used as a reference for diagnostic criteria and coding. The policies may provide some practice guidelines and requirements for clinical follow up though aeromedical providers should not use the APLs as a treatment algorithm. The information contained assumes an accurate diagnosis has already been made, medical/psychological care has been optimized, and lays out a course of action for ETP/waiver consideration. ETP/waiver likelihood varies considerably, especially so in the psychological/psychiatric specialties, and therefore, completion of APL requirements should not be taken as a guarantee of a positive ETP/waiver disposition. With sufficient information, the Aeromedical Consultant Advisory Panel (ACAP) can make decisions that preserve resources, maximize safety, and expedite case disposition in the best interest of both the individual and Army aviation.

ADJUSTMENT DISORDER

INFORMATION ONLY: Yes, if mild with complete recovery within 120 days (not requiring chronic medication) and has no comorbid alcohol/substance use, BH conditions, or resulting UCMJ/legal action.

TEMPORARY FLIGHT CLEARANCE: Yes, once fully recovered without the need for chronic medication or therapy and after favorable AMS submission. Recommend clearance be limited to 30 day intervals following consensus between treating behavioral health provider and flight provider.

AEROMEDICAL CONCERNS: Adjustment Disorders are characterized by the development of clinically significant emotional or behavioral symptoms that are out of proportion to the severity or intensity of the identified stressor and may impact safety of flight or aviation duties. Fitness for flight status will be determined by symptom severity, chronicity and treatment required.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is generally recommended for single episodes that are in full remission and are not characterized as either severe, recurrent or chronic. All other cases will be reviewed on a case by case basis, however, ETP recommendation is unlikely.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended for single episodes that are in full remission and are not characterized as either severe, recurrent or chronic. All other cases will be reviewed on a case by case basis.

INFORMATION REQUIRED FOR ETP/WAIVER:

- Recurrent or complex cases will require an assessment completed by, or consultation with, an aeromedically trained psychologist. Evaluation by a non-aeromedically trained, doctorate-level provider is acceptable for all other waiver/ETP requests.
- Documentation must include relevant social history, military history, relevant medical history (including any associated ER visits or hospitalizations), substance use history, psychiatric history, a review of symptoms, and a mental status examination.
- Documentation of all treatment modalities must include date and description of onset of response to stressor, antecedents, and frequency, intensity and duration of symptoms. Information regarding treatment efficacy, resolution of symptoms and coping/protective mechanisms now in-place is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on stability and absence of recurrent symptoms.
- Any recurrence of symptoms that impair social or occupational functioning or otherwise results in limited or protected duty requires evaluation and clearance by an aeromedically trained psychologist prior to waiver continuation.

TREATMENT: Psychotherapy for Adjustment Disorders is recommended, however, ongoing duty-limiting symptomatology is incompatible with flying duty. Psychotherapy/counseling (i.e. health optimization, performance improvement, marriage/relationship counseling or anger management, etc.) after the aircrew member no longer meets the criteria for an adjustment disorder is compatible with flying duty. If counseling extends beyond 120 days but member is fully asymptomatic, this may still be listed as IO provided all other IO criteria are met. Medication used for the treatment of behavioral health related conditions is incompatible with flying duties until reviewed by USAAMA. As such, providers should carefully consider the potential impact that medication choice and associated side effects may have on the safety of flight operations and/or aviation duty. Requirement for chronic or ongoing medication requires waiver/ETP action and most likely precludes the diagnosis of adjustment disorder.

If an experimental treatment has been used, the SM is required to be completely off the treatment, to have completed a period of demonstrated stability, and have a review by USAAMA before a waiver or ETP will be granted. Experimental treatments include but are not limited to the following: stellate ganglion block, hyperbaric oxygen therapy, Alpha Stim, transcranial magnetic stimulation (TMS), Botox injections, off-label use of psychotropic medication(s), or web-based treatment protocols.

DISCUSSION: When considering request for listing an adjustment disorder as Information Only, the submitting aeromedical provider must employ sound ADMP and consider many factors and variables. For IO requests, thorough explanation/justification must be included on the submitted flight physical. This includes but is not limited to dates, timelines and descriptions of inciting event/stressor, symptom onset, severity and duration, level of impairment, efficacy of any attempted treatment modalities, complete resolution of symptoms, presence of coping mechanisms or behavioral health skills/tools now in place and finally, demonstrated period of stability with appropriate response to stressful situations without recurrence of symptoms. Adjustment disorders with factors such as suicidal ideation, intentional self-harm, requirement for chronic medication use, UCMJ/legal action, hospitalization for BH conditions, reliably diagnosed history of comorbid BH conditions, or associated alcohol or substance misuse/abuse will not be given IO consideration and require waiver/ETP.

Adjustment Disorder's essential features are both significant impairment in social or occupational functioning and distress that is out of proportion to the severity or intensity of the stressor. These criteria must therefore be considered in order to reach an appropriate diagnosis. Loss and bereavement may result in an Adjustment Disorder, or their course may be assessed to be within the normal limits of response to adverse life events to include the hardships of combat. Despite its reported frequency in outpatient settings, Adjustment Disorder cannot be considered a benign diagnosis in the context of the aviation environment. Clinically significant symptoms may impact the safety of flight, and must be addressed to ensure mission success. ADMP must also consider characterological concerns in individuals with history of multiple, discrete Adjustment Disorder diagnoses. If characterological issues (and not discrete identifiable stressors) are determined to be clinically significant and predispose the crewmember to future Adjustment Disorder diagnoses/events, then consideration of Aeromedical Adaptability should be addressed in an AMS submission.

REFERENCES:

(1). American Psychiatric Association (2013). Diagnostic and Statistical Manual of Mental Disorders (5th ed.). Washington, DC: American Psychiatric Publishing.

(2). Bachem R, Perkonigg A, Stein DJ, Maercker A. Measuring the ICD-11 Adjustment Disorder concept: validity and sensitivity to change of the Adjustment Disorder – new module questionnaire in a clinical intervention study. *Int J Methods Psychiatr Res.* 2017;26(4):1–9.

AEROMEDICAL ADAPTABIILTY (AA)

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Unsatisfactory AA is not a diagnosis, but is a determination by the FS and aviation commander of suitability or adaptability. Unsatisfactory AA (formerly ARMA) may be a manifestation of underlying psychiatric disease, personality trait(s), or other behavioral factors not considered compatible with aviation duties (see AR 40-501 for more information). Assessment of unsatisfactory AA is made in consultation with an aeromedically trained psychiatrist or psychologist.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis for unclear or questionable cases. ETP is not recommended for those determined to have unsatisfactory AA.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis for unclear or questionable cases. Waiver is not recommended for those determined to have an unsatisfactory AA.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting entire case.
- Aeromedical psychologist consultation and recommendations.
- Psychological testing may be required but is left to the discretion of the evaluating/treating specialist and dependent upon the clinical and behavioral variables.
- Positive recommendation from the aviation unit commander or civilian supervisor is required.
- All legal, administrative, UCMJ, retention, personal, Family Advocacy Program (FAP), and/or any other contributing/associated factors, must be fully resolved before a final aeromedical recommendation will be made.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: N/A

TREATMENT: If an underlying psychiatric disorder exists, treatment would correspond to the particular diagnosis. Treatment does not apply if the underlying reason for the unsatisfactory AA is other than psychiatric.

DISCUSSION: The concept of unsatisfactory AA and application of regulatory and aeromedical standards for something not considered a medical diagnosis, can be challenging for the unit flight provider. Though unsatisfactory AA is not a DSM diagnosis, aeromedical adaptability is vital to aviation safety. Unsatisfactory AA is a consensus of opinion endorsed by the appropriate waiver authority, after thorough investigation involving the unit aeromedical provider, aeromedical psychologist, and the aviation chain of command (military) or civilian supervisory chain, that certain behavior or conduct is not adaptable to or is unsuitable for Army aviation. One method to summarize the concept of unsatisfactory AA is application of the acronym JIMMI. JIMMI stands for Judgment, Intelligence, Motivation, Maturity, and Integrity. While deficiencies in one, some, or all of these factors/qualities, may not meet criteria for a medical diagnosis, it is clear that said deficiencies could be catastrophic in the aviation environment. The safety and success of the entire Army aviation enterprise is dependent upon training and retaining insightful, honest, mature, and selfless aircrew members and aviators, and eliminating unnecessary aeromedical risk through enforcement of these standards.

Trained aircrew with an unsatisfactory AA will be referred to the aviation unit commander or civilian supervisor for administrative evaluation for nonmedical disqualifications and determination of fitness to retain an aeronautical rating and military status (see AR 600-105/600-106). An unsatisfactory AA must not be used if an FEB or other legal, administrative, or medical action is appropriate and sufficient to decide the disposition of the aircrew member. Rated aviators will not normally be considered for waiver of an unsatisfactory AA unless overwhelming evidence and support exist from command as well as the local aeromedical provider. Reversal of this disqualification at a later date is very difficult. However, if the aircrew member demonstrates substantial behavior change over a period of 2-3 years and a level of insight that would support sustained adaptive functioning in the aviation environment, accompanied by strong recommendations from local command and the local flight surgeon, they may be considered for reversal of an unsatisfactory AA.

ALCOHOL USE DISORDERS

INFORMATION ONLY: A single, isolated Alcohol-Related Incident (ARI) can be listed IO if diagnostic criteria for an Alcohol Use Disorder (AUD) are not met AND the behavior/incident does not represent a pattern of maladaptive or unhealthy alcohol use.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: This APL combines the now obsolete policy letters for "Alcohol-Related Disorder, NOS (Alcohol Misuse)" and "Substance-Related Disorders: Alcohol Abuse or Dependence." This change reflects the updated DSM-5 criteria for clinical diagnosis of an AUD. Please see the "Discussion" section for specific AUD diagnostic criteria and severity. Waiver action for a new AUD diagnosis or a historical DSM-III through DSM-IV-TR diagnosis of Alcohol Abuse or Dependence, should now be processed IAW with this policy. Those with an alcohol-related waiver/ETP already granted should now follow the annual waiver requirements listed below. Concurrent behavioral health (BH) conditions discovered during evaluation/treatment of an AUD may require separate waiver action IAW the applicable APL. Waiver/ETP for abuse or dependence of substances other than alcohol should be processed IAW the current "Substance-Related Disorders: Substances Other Than Alcohol" APL.

Aviation duty involves highly demanding mental and physical tasks which are frequently performed in inhospitable or austere conditions. Alcohol is a sedative and hypnotic drug with acute and chronic impact to cognitive and motor function. The acute effects of alcohol intoxication can occur even at low blood alcohol levels (.02mg/dL) or as little as a single standard drink. Acute cognitive effects include memory impairment, degradation of reasoning, disinhibition, poor decision-making, inattentiveness, and disorientation. Acute physical impairments include increased reaction time, increased procedural errors, loss of fine motor control, decreased visual acuity, and vertigo. These effects can last for several hours including long after the blood alcohol level has returned to zero. Post-alcohol impairment ("hangover") causes well known symptoms such as headache, fatigue, nausea, irritability, and diminished higher cognitive function for up to 48 hours. Chronic ingestion is associated with liver disease, cardiomyopathy, arrhythmias, sleep disorders, amnesia, dementia, motor vehicle fatalities, and suicide. Any of these effects, alone or in combination, are unquestionably detrimental to safe aviation operations.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended IAW the below criteria. NOTE – Minimization or frank denial of an AUD OR refusal to abstain from alcohol use, prior to or following waiver approval, are cause for permanent aeromedical suspension.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider discussion including:
  - Detailed review of events preceding and after clinical presentation.
  - Work performance, family and peer relationships, psychosocial stressors, and evaluation of, or no clinical concern for, other associated BH or substance use disorders.
  - Member's potential for sustained recovery and their ability to safely perform aviation duty.
  - Verification of abstinence from alcohol without need for medication.
  - Attestation from member regarding unqualified acknowledgement of presence of an AUD and confirmation of abstinence for a minimum of 90 days.
- Laboratory evaluation including:
  - CBC, LFTS, GGT, Carbohydrate Deficient Transferrin (CDT). Unannounced labs are preferred.
- Current SUDCC evaluation. Non-military evaluations are highly discouraged but may be acceptable for those with limited access to a military SUDCC program AND if said program meets the minimum necessary requirements as defined by AAMA.
- Documentation of completion of the appropriate outpatient or inpatient treatment program.
- Documentation of attendance and active participation in a suitable aftercare program for at least 90 days. Please see Discussion section for satisfactory programs and required attendance frequency.
- Current psychological evaluation for cases with comorbid BH conditions.
- Letters of Recommendation (LORs) from the chain-of-command through the first general officer (Soldiers) or SES equivalent (Army Civilians) confirming knowledge of the circumstances surrounding waiver request AND giving full support for return to unrestricted aviation duty. AAMA does not provide LOR templates.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on any significant interval history.
- Documentation of satisfactory attendance of a suitable aftercare program (for the first 3 years).
- Attestation by member of continued abstinence from alcohol.
- Annual SUDCC/BH evaluation is only required if previously recommended by evaluating specialist, or if otherwise clinically indicated.
- Any relapse requires resubmission of all waiver requirements and waiver is rarely recommended in this scenario.

TREATMENT: Treatment will be based on severity of the AUD and IAW specialist recommendations. The requirement for any medications necessary to maintain sobriety will not be favorably considered for waiver. If medication is required for a concurrent BH condition, waiver is possible and should be processed IAW the most applicable APL. Ongoing behavioral therapy or counseling for purposes of health maintenance following successful completion of an appropriate treatment program is compatible with flight.

DISCUSSION: An individual should receive a current SUDCC evaluation in the event of any ARI, regardless of how minor or mild it appears on the surface. While a single ARI may not be of significant aeromedical concern, it may be the first and only indication of a more severe problem. If it is a one-time only incident and SUDCC evaluation confirms absence of an AUD, flight provider may submit with IO request. This IO request should include documentation of satisfactory completion of any SUDCC required pre-treatment/education programs (I.e. Prime-For-Life). DNIF/grounding during the initial evaluation period is prudent in mild/minor cases or especially in cases where IO vs waiver is unclear. Despite being excellent at compartmentalization, the stress of dealing with multiple legal, professional, and family ramifications of an ARI may exceed this capability and unnecessarily increase aeromedical risk. Grounding allows the aircrew member to apply all of their faculties to cope with these demands and ensures a busy flight schedule does not interfere with optimal care or any administrative requirements. Additionally, if waiver is found to be required, an AUD is a specific condition on Table 11 of the ATBs and thus, clearance is not authorized until a positive disposition has been granted by the waiver authority.

AAMA understands a substance abuse counselor or BH provider may label a patient as having a mild AUD thus making this diagnosis persist as a permanent part of the electronic health record. Aeromedical providers must work closely with SUDCC counselors to ensure AUD criteria were actually met and this label wasn't inappropriately applied due to a lack of other, potentially more accurate, ICD coding options. As with any diagnoses that are generally subjective in nature or rely heavily on patient self-reporting, sound clinical judgment is crucial. If the member meets diagnostic criteria for an AUD, then it does not matter if this is a one-time incident or not. While a one-time incident can be IO, it can also be severe enough to warrant a diagnosis of an AUD and thus require waiver action. Conversely, it is possible, though unlikely, that 2 separate ARIs occurring many years apart can be listed IO if the local aeromedical provider submits strong justification that the member doesn't meet criteria for an AUD. The burden of proof in these scenarios rests squarely on the individual and the aeromedical provider to overwhelmingly convince AAMA of the absence of an AUD or an otherwise maladaptive pattern of alcohol use. Comments on awareness, insight, new skills obtained, coping ability, and how the member has tolerated new stressors/adversity (indications of resilience) are specifically helpful when submitting an IO request.

When an AUD is confirmed to be present, there are multiple considerations for the local aeromedical provider. The absolute minimum time period before AAMA will consider a waiver is 90 days following completion of the member's treatment program (not 90 days from the ARI or diagnosis of AUD). More time is generally preferred to ensure optimizing the patient's long term health, optimizing chances of maintained recovering, and to demonstrate personal, professional, and medical stability. Submitting immediately at the 90 day mark, especially with incomplete waiver requirements, risks sending the clinical impression of "checking the blocks" to get a waiver approved as rapidly as possible, which would reflexively be considered less favorably. All personal, legal, and administrative/retention issues and/or actions must be fully resolved prior to waiver submission, necessitating greater than 90 days in many cases.

During the initial 90 day period, abstinence is a non-flexible requirement. Following waiver approval, abstinence from alcohol is highly encouraged as any alcohol intake following an AUD diagnosis confers a roughly 4-fold increase in likelihood of relapse. Occasional, extremely limited drinking for a rare life event or religious ceremony (i.e., birth, death, wedding, christening, Bar Mitzvah, etc.) will not count as a violation against abstinence AFTER waiver is approved. This is not to be confused with so called "controlled drinking" which is unacceptable for aircrew with an AUD waiver. Any use beyond these rare examples would constitute a violation of abstinence and thus be cause for immediate grounding/DNIF and likely aeromedical suspension.

The member must maintain and document satisfactory participation in an organized recovery program (i.e. Alcoholics Anonymous, Rational Recovery, “Birds of a Feather,” etc.). These mutual support groups must be in the form of “face-to-face meetings. Online or telephone meeting may be appropriate in rare circumstances but will only be acceptable if operational or geographic limitations preclude attendance at face-to-face meetings. The member must attend a minimum of 3 meetings per week for the initial 90 day evaluation period. Thereafter, member must attend a minimum of 1-2 meetings per week for a period of no less than 3 years.

The consumption of alcoholic beverages is widespread in our society. Alcohol use is also, unfortunately, common in both military and aviation culture and is the third leading cause of preventable death in the United States. Most people are capable of responsible, moderate drinking without adverse effects. However, a minority of drinkers may be at risk for, or already suffering from, an AUD. Many individuals engage in unhealthy alcohol use (commonly defined as “risky,” “heavy,” or “binge” drinking) that may not meet diagnostic criteria for an AUD, but that still carries excessive and unacceptable risk to the aviation mission. Military members may also attempt to cope with stressful or traumatic events related to military service or combat situations through excessive alcohol intake. The astute aeromedical provider should be wary of common signs and/or circumstances that portend an underlying alcohol disorder including frequent problems at home, social dysfunction, disciplinary problems at work, repeated minor injuries or falls, and current or historical ARIs (i.e. underage drinking, public intoxication, open container, drunk and disorderly, DUI/DWI, etc.). Additionally, one of the more vital roles of the flight surgeon is involvement in non-clinical unit activities, those where alcohol consumption occurs being particularly germane. If an aircrew member is willing to drink excessively in front of supervisors or commanders, this should raise serious concerns of an undiagnosed AUD.

DSM-5 diagnostic criteria for alcohol use disorder

A problematic pattern of alcohol use leading to clinically significant impairment or distress, as manifested by at least two of the following, occurring within a 12-month period:

1. Alcohol is often taken in larger amounts or over a longer period than was intended.
2. There is a persistent desire or unsuccessful efforts to cut down or control alcohol use.
3. A great deal of time is spent in activities necessary to obtain alcohol, use alcohol, or recover from its effects.
4. Craving, or a strong desire or urge to use alcohol.
5. Recurrent alcohol use resulting in a failure to fulfill major role obligations at work, school, or home.
6. Continued alcohol use despite having persistent or recurrent social or interpersonal problems caused or exacerbated by the effects of alcohol.
7. Important social, occupational, or recreational activities are given up or reduced because of alcohol use.
8. Recurrent alcohol use in situations in which it is physically hazardous.
9. Alcohol use is continued despite knowledge of having a persistent or recurrent physical or psychological problem that is likely to have been caused or exacerbated by alcohol.
10. Tolerance, as defined by either of the following:
    a. A need for markedly increased amounts of alcohol to achieve intoxication or desired effect.
    b. A markedly diminished effect with continued use of the same amount of alcohol.
11. Withdrawal, as manifested by either of the following:
    a. The characteristic withdrawal syndrome for alcohol (refer to Criteria A and B of the criteria set for alcohol withdrawal, pp. 499 to 500).
    b. Alcohol (or a closely related substance, such as a benzodiazepine) is taken to relieve or avoid withdrawal symptoms.

AUD, Mild = Presence of two to three 2-3 symptoms
AUD, Moderate = Presence of four to five symptoms
AUD, Severe = Presence of six or more symptoms

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(3). Vaillant G and Hiller-Sturnhofel S. The Natural History of Alcoholism. Alcohol Health Res World, 1996; 20:152-161.
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ANXIETY, OBSESSIVE-COMPULSIVE, AND TRAUMA / STRESS RELATED DISORDERS

INFORMATION ONLY: Yes, an Acute Stress Disorder that fully resolves within one month (longer would be diagnosed as PTSD where IO is not possible) that requires no chronic medication can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: This APL covers all diagnoses included in the DSM-5 sections labelled "Anxiety Disorders," "Obsessive-Compulsive and Related Disorders," and "Trauma and Stress-Related Disorders." While they have been separated in the DSM-5, they remain closely related and the process for aeromedical evaluation and disposition will be similar. Any future reference in this APL to "Anxiety Disorders" will include ALL diagnoses in the three sections listed above. Additionally, this APL includes information from the now obsolete "Selective Serotonin Or Monoamine Reuptake Inhibitor (SSRI/SMRI)" APL. Any required medications (and associated information pertaining to efficacy, tolerance, adherence, aeromedically significant side effects, etc.) for any diagnoses in the "Psychiatric Waivers" section of the APL guidebook, should be entered in the AMS created IAW the most applicable APL based off the diagnosis the medicine is being used for.

Anxiety Disorders may produce symptoms that are distracting in flight and occasionally result in autonomic symptoms such as hot flashes, sweating, nausea, and vomiting, as well as various mental deficiencies. Panic attacks can occasionally produce sudden incapacitation. Anxiety can be a manifestation of unconscious fear of flying. Current or history of any phobias or severe or prolonged anxiety episodes after age 12, even if they do not meet the diagnostic criteria of the DSM-5, are disqualifying.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Detailed clinical interview by an aeromedically trained clinical Psychologist to include:
  - Target symptoms, medication history, and specific diagnostic conclusions.
  - Specific recommendation concerning return to full, unrestricted aviation duty.
  - Evaluation/interview by anyone other than a doctorate-level behavioral health provider is unacceptable for waiver purposes.
  - Neuropsychological assessment may be required but is left to the discretion of the evaluating/treating specialist.
- Requirement for In-Cockpit/Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of any significant interval history and adherence/tolerance to treatment regimen.
- Specialty follow up is left to the discretion of the evaluating/treating behavioral health provider.

TREATMENT: The requirement for ongoing psychotherapy is incompatible with FFD status and member should be grounded/DNIF during this period. Counseling or therapy for "performance improvement" or "health maintenance/optimization" after member has reached their new, acceptable, clinical baseline is authorized and warrants return to FFD. Management with aeromedically acceptable medications is also authorized. Please note, the "Selective Serotonin Or Monoamine Reuptake Inhibitor (SSRI/SMRI)" APL is now obsolete as stated above.

DISCUSSION: Anxiety disorders are among the most prevalent in the general population, although depression is the most common among clinical populations. Patients with PTSD, Acute Stress Disorder, Panic Disorder, and GAD may complain of palpitations, dizziness, headaches, shortness of breath, tremulousness, and impaired concentration and memory. OCD patients complain of obsessive rumination and/or compulsive rituals that interfere with functioning. Long-term prognosis for Anxiety Disorders is a matter of some debate and varies depending on diagnosis. Panic Disorder has a high rate of recurrence and is frequently associated with Major Depressive Disorder. Acute Stress Disorder that continues beyond one month would be reclassified as PTSD.

ATTENTION DEFICIT HYPERACTIVITY DISORDER (ADHD)

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Following an unfortunate trend over the past several decades, the diagnosis of ADHD was inappropriately applied to a large cohort of individuals. These patients received no or limited objective, diagnostic testing and rather, were diagnosed based off of self-report, questionnaires, interview, and/or other entirely subjective findings. There is also an unfortunate trend where individuals will seek out stimulant medications during periods of academic or occupational rigor or difficulty for the perceived benefits of improved performance, cognition, memory, energy, and endurance.

There is an aeromedical "Gray area" where a local provider may submit ADHD history as either IO or with waiver request. Clearly inappropriately diagnosed ADHD (no history of objective testing) with short term medication use (weeks to months) followed by evidence of normal attention may be listed IO. Those with inappropriately diagnosed ADHD with longer term medication use (>1 year) will require current, objective testing documenting zero attention deficits in order to have this history listed IO. Those with correctly diagnosed ADHD (regardless of how remote or the outcome of a current evaluation) require a waiver in all cases as an inability to sustain or sufficiently divide attention is not compatible with aviation duty. These should be processed IAW the below ETP/waiver criteria. Attempts to circumvent submitting an AMS due to Behavioral Health (BH) provider endorsement of "outgrowing" ADHD or that member no longer meets diagnostic criteria will not be accepted. This evaluation and endorsement should be what makes up the substance of the required AMS in these scenarios.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Detailed interview by a clinical Psychologist/Psychiatrist to include developmental, academic, employment, social, substance use, legal, medication, and concomitant BH history.
- Neuropsychological assessment to include cognitive domains, IQ, and achievement testing is required. If medication(s) is required, this assessment should be conducted both on and off medication.
- Continuous Performance Testing (e.g., Conners, Integrated Visual and Auditory Continuous Performance Test, TOVA) is required.
- An In-Cockpit/Flight Evaluation in either actual aircraft or a simulator is recommended but left to the discretion of the submitting aeromedical provider.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Childhood ADHD requiring no treatment since adolescence, not currently impacting the individual based on testing, will only require aeromedical provider comment on continued absence of symptoms.
- Adult ADHD or those requiring medication for management, will require annual follow up with a treating psychologist or psychiatrist.

TREATMENT: Treatment of ADHD is authorized but limited to non-pharmacologic measures or non-stimulant medications. Behavioral management strategies should be maximized before resorting to the use of medications in aircrew. Non-stimulant medications (typically bupropion or atomoxetine) are authorized and will be recommended for waiver once member has reached new, acceptable clinical baseline on a stable dose (minimum 6 medication half-lives) without aeromedically significant side effects. Indication of mild to moderate ADHD with demonstrably improved performance on objective testing following treatment optimization will be considered more favorably. Waiver for the chronic use of stimulant medication in aircrew will not be recommended.

DISCUSSION: The diagnosis of ADHD in children and adults can be difficult. Some adults may have inappropriately received the diagnosis in childhood or adolescence. In addition, many adults with poor concentration without hyperactivity may have ADHD but were never diagnosed in childhood. Utilizing neuropsychological testing will assist in quantify the extent of the condition as well as favorable response to treatment.

CONDITIONS THAT MAY BE A FOCUS OF CLINICAL ATTENTION (V Codes)

INFORMATION ONLY: N/A.

TEMPORARY CLEARANCE: Possibly, but dependent upon resolution of condition/situation AND absence of any underlying or contributing disorder(s).

AEROMEDICAL CONCERNS: The DSM-5 “V Codes” are broadly divided into the following categories: Relational Problems, Educational and Occupational Problems, Housing and Economic Problems, Other Problems Related to the Social Environment, Problems Related to Crime or Interaction with the Legal System, Other Health Service Encounters for Counseling and Medical Advice, Problems Related to Other Psychosocial, Personal, and Environmental Circumstances, Other Circumstances of Personal History, and Abuse and Neglect. Additionally, the DSM-5 lists several categories of “Z Codes”, however, these are beyond the scope of this APL and generally not germane to military or civilian aircrew population. If required, please see the most up to date DSM for more information concerning “Z codes.”

These Codes represent a psychiatric “Gray area” in aerospace medicine. Many of the everyday problems faced by aircrew members may be described by V Codes which may interfere with safe or effective flying, or they may not. Matters such as adjusting to different cultures, dealing with a recalcitrant child, or trying to save a failing marriage are of obvious aeromedical concern, but whether they are grounds for removal from flying duties, or for establishing a diagnosis, are matters of degree. Most relevant to aeromedical judgments, is the response of the aircrew member to the stressor rather than the severity of the stressor. Numerous "small" stressors can produce fatigue, irritability, early task saturation, distraction, and cognitive inefficiency as much as a single major stressor. Aeromedically dangerous responses include those of anxiety, anger, depression, guilt, somatization, and behavioral acting-out. Other aeromedically relevant sequelae include disturbed patterns of sleep and/or eating, preoccupation, depressed or anxious mood, and especially changes in aviation duty performance as assessed by the aircrew member, peers, and the commander/supervisor.

The aeromedical provider should approach V Code problems in aircrew carefully, using techniques that range from informal discussion to a full Behavioral Health (BH) evaluation. If a diagnosis seems warranted, it should be established in accordance with DSM-5 criteria and treated properly. BH counseling may also be indicated as a way of preventing a V code problem from overtaxing one’s resources even if no diagnosis other than a V code is warranted. NOTE: beware of delaying or withholding diagnosis and proper treatment solely in order to avoid grounding/DNIF. The requirement for waiver can be determined when the member has completed use of any medications and the symptoms are sufficiently relieved so that return to aviation duty is possible. NOTE: an aircrew member may be returned to FFD even though non-medication "talk therapy" is continuing when the symptoms have subsided sufficiently (i.e., marital therapy, anger management, etc.). In some cases, the individual may be able to resolve the issue without being placed in a DNIF status. However, when 1) an aircrew member becomes so disturbed as to be placed DNIF, and 2) if at the end of that period of DNIF the aeromedical provider decides that the situation warrants a formal diagnosis requiring waiver action, then the waiver considerations below apply.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is recommended on a case by case and dependent upon the underlying diagnosis, resolution of symptoms, and resolution of any associated legal, UCMJ, Family Advocacy, and administrative issues.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended on a case by case and dependent upon the underlying diagnosis, resolution of symptoms, and resolution of any associated legal, UCMJ, Family Advocacy, and administrative issues.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up will be dependent upon the specific underlying diagnosis/disorder and is dictated by the evaluating/treating specialist(s).

TREATMENT: As indicated based on specific diagnosis and per specialist recommendations.

DISCUSSION: Most V Code problems resolve satisfactorily and should have no permanent impact on flight status. However, chronicity or need for medication could lead to permanent aeromedical suspension.

DISSOCIATIVE DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: These disorders feature a disruption of integrated functions of consciousness, memory, and identity or perception of the environment. This impairment of cognitive abilities is chronic, unpredictable, difficult to treat, and incompatible with aviation duty. Exception to policy and waiver are not considered.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or psychiatric consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: N/A as ETP and waiver are not recommended.

TREATMENT: As psychiatrically indicated.

DISCUSSION: Treatment is often long-term, and effects of dissociative disorders bar any consideration for flight status.

EATING DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Eating disorders can cause potentially life-threatening metabolic alkalosis, hypochloremia, and hypokalemia, which can have drastic implications for aviation safety. Anxiety and depressive symptoms are common, and suicide is a risk.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis if patient is off of medication, symptom free, fully functional, meets minimum aviation weight standards, and has been found fit for overall service retention.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.
- MEB recommendations, if MEB was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow-up psychiatric care is at the discretion of the treating mental health provider, but should involve at least monthly follow-up during the first year of treatment.

TREATMENT: Treatment is very difficult and involves intensive, long-term therapy, group therapy, and possibly pharmacotherapy, all of which are incompatible with aviation duty.

DISCUSSION: Relapse rate is high. With long-term follow-up treatment of anorexia, 40 percent of patients recover, 30 percent improve, and 30 percent are chronic. Anorexia is potentially fatal in 5-12 percent of cases. Bulimia is often associated with alcohol abuse.

IMPULSE CONTROL DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Stereotyped or impulsive behavior may lead to aviation safety problems. These disorders involve an inability to resist acting on an impulse that can be dangerous to self or others and that is characterized by a sense of pleasure when gratified. These disorders occur very infrequently among military aviators and aircrew. Disorders of impulse control, when present, include features that are incompatible with mission readiness and flight safety. Their presence may also arouse specific perceptions and concerns in other aircrew about leadership, reliability, and trustworthiness.

Persons with Intermittent Explosive Disorder may have a significant history of unstable interpersonal relationships, illegal behavior, and substance abuse, and so would be unlikely to complete a rigorous pilot training program. A troublesome pattern might include isolated outbursts of extreme temper with long periods of reasonably normal functioning, which differs from the more diffuse and continuous impulsivity of a personality disorder.

The features of the other Impulse Disorders may not bear as directly upon cockpit safety. However, such behaviors as compulsive gambling, thievery or fire-setting may disrupt sleep, consume time and mental energy, and cause anxiety or stress-related distractions. Any of these factors can affect primary flying duties. Thus, administrative or legal action may be required even if the primary problem is not medically disqualifying. Also, keep in mind the possibility of a reverse effect: the increased stresses of an aviation career (or, indeed, any increased life stressors) may precipitate increased manifestations of any underlying problem with impulse control.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome. This should include aeromedical provider narrative outlining any social, occupational, administrative, or legal problems of the patient.
- Psychological and/or Psychiatric consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up care is at the discretion of the Behavioral Health provider.

TREATMENT: Behavior therapy and medication management should be optimized though these disease processes are simply incompatible with aviation duty.

DISCUSSION: Differential diagnosis should include substance abuse, temporal lobe epilepsy, head trauma, Bipolar Disorder (Manic Episode), and Personality Disorder (e.g., Antisocial or Borderline). The diagnosis is usually not made if the behavior occurs only in the context of another disorder such as Schizophrenia or Bipolar Disorder, or when it is associated with a personality disorder such as Borderline Personality Disorder. Isolated incidences of poor impulse control that violate policy, regulation, or the UCMJ should be dealt with administratively by the command rather than medically. A repeated pattern of poor impulse control that does not fit one of the specific diagnoses above and is not a manifestation of another mental disorder may be diagnosed as Impulse Control Disorder NOS. If the pattern of impulsive behavior coexists with other character pathology but does not qualify for a Personality Disorder diagnosis, a label of unsatisfactory Aeromedical Adaptability may be considered.

LEARNING DISORDERS OF CHILDHOOD AND ADOLESCENCE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: The majority of these disorders do not apply to the adult aircrew population. However, childhood and adolescent learning disorders and Attention Deficit/Hyperactivity Disorder and disruptive behavior disorders may have adult manifestations that could affect the safety of flight. The label "learning disability," once associated with reading problems, is now a non-specific term for numerous disorders of cognition with childhood onset and varying levels of severity. This variability directly impacts the specific disorder's aeromedical significance, making knowledgeable evaluation of the individual, rather than simple identification of the diagnosis, essential to the final aeromedical disposition.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and favorably considered in those not requiring medications and when behavioral characteristics do not hinder aviation duty performance or safety.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and favorably considered in those not requiring medications and when behavioral characteristics do not hinder aviation duty performance or safety.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:
- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological, Psychiatric, and/or Educational evaluation as indicated.
- An In-Cockpit/Flight Evaluation may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up will be dependent upon the specific diagnosis/disorder and is dictated by the evaluating/treating specialist.

TREATMENT: Many of the conditions are not amenable to treatment and/or require continuous treatment.

DISCUSSION: Childhood Learning Disorders (LD) and Attention-Deficit/Hyperactivity Disorder (ADHD), once thought to "burn themselves out" in adolescence, can persist into adulthood. Both genetic and environmental factors are undoubtedly important in the etiology of these disorders. Physiological as well as anatomic markers are being sought. Still, current practice requires clinical, historical, and often psychometric indicators in order to make these diagnoses. Learning disorders may be associated with underlying abnormalities in cognitive function, including deficits in attention, memory, or linguistic processes. Impaired vision or hearing may affect learning ability and should be investigated through audiometric or visual screening tests. A learning disorder may be diagnosed in the presence of such sensory deficits only if the learning difficulties are in excess of those usually associated with these deficits.

MOOD DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Mood disorders are associated with decreased concentration, inattention, indecisiveness, fatigue, insomnia, agitation and occasionally psychosis, all of which are incompatible with aviation duties. Risk of suicide is 15%, the highest of all Behavioral Health disorders. Dual diagnosis of a Mood Disorder and Alcohol/Substance Use Disorder is common.

Please note, this APL includes information from the now obsolete "Selective Serotonin Or Monoamine Reuptake Inhibitor (SSRI/SMRI)" APL. Any required medications (and associated information pertaining to efficacy, tolerance, adherence, aeromedically significant side effects, etc.) for any diagnoses in the "Psychiatric Waivers" section of the APL guidebook, should be entered in the AMS created IAW the most applicable APL based off the diagnosis the medicine is being used for.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Narrative summary or treatment records, from the psychiatrist or prescribing physician (non-psychiatrist). This must include documentation of uncomplicated illness without evidence of psychosis or suicidal behavior, medications tried, and titration to therapeutic effect. Medication use must be at a stable dose for *at least 4 months* without Aeromedically significant symptoms/side effects before submission.
- Neuropsychological assessment to include cognitive domains and motor skills testing (e.g., CogScreen®) to demonstrate functional ability.
- Operational assessment and command endorsement to demonstrate aeronautical ability after the 3rd month of maintenance therapy. For rated personnel, this must include an in-flight performance evaluation (IFPE), or MOS-equivalent assessment, in either an aircraft (preferred) or a simulator. The IFPE must be the identical to the annual A-Part evaluation and performed by an IP or SIP (preferred is IP/SIP from another unit who is blinded to the reason for the IFPE).
- Aviators who have successfully met the above requirements, with command and local flight surgeon endorsement, may continue on flight duties on temporary upslip up to 90 days at a time while waiver is being processed.
- Detailed clinical interview by an aeromedically trained clinical Psychologist to include:
  - Target symptoms, medication history, and specific diagnostic conclusions.
  - Specific recommendation concerning return to full, unrestricted aviation duty.
  - Evaluation/interview by anyone other than a doctorate-level behavioral health provider is unacceptable for waiver purposes.
- Requirement for In-Cockpit/Flight Evaluation (or workplace/Ground Control Station evaluation for Class 4 aircrew) is left to the discretion of the submitting aeromedical provider based on their knowledge of the aviation duty being performed, airframe, unit, and mission.
- MEB recommendations, if MEB was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Psychiatric follow up is at the discretion of the Behavioral Health provider. Mood Disorder patients are generally seen at least monthly while on limited duty.

TREATMENT: The requirement for ongoing psychotherapy is incompatible with FFD status and member should be grounded/DNIF during this period. Counseling or therapy for "performance improvement" or "health maintenance/optimization" after member has reached their new, acceptable, clinical baseline is authorized and warrants return to FFD. Management with aeromedically acceptable medications is also authorized. The typical medication schedule is as follows: 1) Medication initiation requires 4 to 6 weeks prior to seeing positive changes; 2) Monitor for no improvements at the 6 to 8 weeks following initiation of medication; 3) Titrating a medication may

take an additional 2 to 4 weeks requiring frequent Local FS assessments or consultation for further management. Refer to Class 4: Mandatory Disqualifying Medications and Anti-depressants.

DISCUSSION: 15% of depressed patients eventually commit suicide. 50-75% of affected patients have a recurrent episode, but this may be reduced with treatment. Acute major depression is treatable in 80% of patients. The prevalence of depression in aircrew is estimated to be about 6%, similar to the general population yet the prospect of being grounded for an extended period has led many to forego treatment and suffer in silence, or to "go downtown" or to the Internet and use antidepressant medications without proper psychiatric or aeromedical supervision. This risk to aviation safety must be weighed against the potential use of newer psychotropic medications with well-established records of efficacy and minimal side effect profiles.

PERSONALITY DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Personality Disorders involve an enduring pattern of inner experience and behavior that deviates markedly from expectations of the individual's culture, is pervasive and inflexible, is stable over time, and leads to marked distress or social and/or occupational impairment. These problems lead to difficulty conforming, being a team member, and making rational decisions, all unacceptable in the aviation environment

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.
- Verification that member does not meet criteria for required separation IAW AR 635-200.
- Strong support for continued aviation service from aeromedical provider and military commander/civilian supervisor.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Further evaluations are at the discretion of the treating psychiatric team.

TREATMENT: Treatment is often long-term and involves intensive psychotherapy, which is not available in the military sector of care. Depending on the severity of the Personality Disorder, returning to flying duties is highly improbable.

DISCUSSION: Personality Disorders are disqualifying for flying duties; no waiver is recommended. Exception to policy is not recommended. Reversal of a Personality Disorder disqualification at a later date is very difficult. However, if the individual demonstrates (over a period of 2-3 years) substantial improvement in terms of ability to sustain the stressors of the aviation environment, work in harmony with other members, and stabilize his or her personal life and turmoil, then the individual, with strong support from the chain of command and the aeromedical provider, may be considered for reevaluation by an aeromedically trained psychiatrist or psychologist. Such patients may also be referred to an appropriate USAAMA designated consultant.

Personality disorders and traits may impact performance of military duty, including aviation duty, because of associated social, occupational, administrative, and legal ramifications. As a general rule, successful treatment requires long-term, time intensive psychotherapy that can render the member unavailable for full duty performance for a prolonged period of time. Since personality disorders are considered, by definition, conditions that existed prior to military service, they cannot be addressed by a medical evaluation board and cannot be grounds for medical retirement. Therefore, when a personality disorder diagnosis is confirmed by mental health consultation, administrative separation due to psychological unsuitability for military service is often pursued. This administrative action requires evidence of negative impact on duty performance due to the disorder, in addition to the diagnosis of the disorder itself. Typically, other potentially medically disqualifying disorders are considered and ruled out before taking this action.

Unfortunately, many persons with personality disorders spend a long time between initial referral for evaluation and final diagnosis and disposition decision making. Care is needed to avoid hasty over- diagnosis of personality disorders in personnel with idiosyncratic personality traits presenting for evaluation. Thus, in questions of possible administrative separation action by command, consultation with a Behavioral Health (BH) provider should be considered by the aeromedical provider early on in the process. The aeromedical provider and BH provider may assist the commander in the decision making process through explanation of personality disorder manifestations and discussion of the associated prognosis.

PSYCHIATRIC DISORDERS DUE TO A GENERAL MEDICAL CONDITION NOS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Almost the entire spectrum of psychiatric disorders may be manifestations of primary medical conditions. Disqualification from flying would be due to the underlying medical condition.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and dependent upon the underlying condition including required treatment and residual effects.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and dependent upon the underlying condition including required treatment and residual effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.
- Consultation and recommendations from appropriate specialist based upon underlying disorder.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up will be dependent upon the specific underlying diagnosis/disorder and is dictated by the evaluating/treating specialist(s).

TREATMENT: As medically and psychiatrically indicated.

DISCUSSION: Refer to the APL of the underlying medical condition of concern.

SCHIZOPHRENIA AND OTHER PSYCHOTIC DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Symptoms of aeromedical concern include eccentric behavior, illogical thinking, hallucinations, social withdrawal, and a risk of suicide. Recurrence is abrupt, unpredictable, and incapacitating in aviation. Nearly all cases will require MEB referral for a retention decision. Brief psychotic disorders resulting from substances or from general medical conditions may be considered for ETP/waiver action if member is asymptomatic, there is no requirement for chronic medications, there is a clearly identified and avoidable etiology, and member has no resultant assignment or deployment limitations. Physical illness or other disorders causing persistent delirium necessitate permanent aeromedical suspension and should also be referred to MEB.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Psychiatric follow-up is at the discretion of the treating Behavioral Health provider. The majority of these disorders require PEB/MEB due to their incompatibility with general duty.

TREATMENT: Antipsychotic medications and close psychiatric follow-up care are incompatible with aviation duty.

DISCUSSION: Increased vulnerability to stress is considered lifelong in these disorders. In Schizophrenia, one-third will lead somewhat normal lives; one-third will continue to have significant symptoms; one-third require frequent hospitalization and chronic care. 50% of schizophrenics will attempt suicide; 10% will succeed.

SEXUAL DYSFUNCTIONS AND PARAPHILIC DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: This APL covers diagnoses in the DSM-5 sections labelled “Sexual Dysfunctions” and “Paraphilic Disorders.” These conditions may or may not impact a person's aviation performance. Some sexual dysfunctions may be of only minor concern to an aircrew member whereas other members may be unable to compartmentalize the psychological or relational impact of said disorders. Indeed, the same dysfunction may cause markedly varied reactions across different genders, cultures, and age groups. The social and occupational consequences of some of the paraphilias may also impact aviation performance. Some patients exhibit questionable judgment or engage in risk-taking behavior. Certain legal ramifications may cause the person to be inattentive to detail and thus become a safety risk. Other disorders may represent frank criminal activity and are wholly unacceptable in Army aviation. MEB referral may be necessary though many cases are handled by administrative disposition due to the legal implications and impact on good order and discipline.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.
- Strong support from local aeromedical provider and military commander/civilian supervisor is required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up is at the discretion of the evaluating/treating specialist in those cases in which treatment is deemed necessary.

TREATMENT: The treatment of many sexual dysfunction disorders generally involves behavioral techniques that should not preclude aviation duty. The use of many medications is incompatible with aviation duty, though some medications such as SSRI’s/SNRI’s, testosterone, and sildenafil, etc., can be considered favorably for ETP/waiver action. Treatment of paraphilias is less successful, but the same rules apply.

DISCUSSION: Paraphilic activity often has a compulsive quality. Patients may repeatedly engage in deviant behavior, and this behavior increases when the patient feels stressed, anxious, or depressed. The legal consequences generally preclude treatment within the military.

SLEEP DISORDERS

INFORMATION ONLY: Yes, short term sleep disorders/dysfunctions, not amounting to a disqualifying diagnosis and due to an identifiable and reversible/avoidable cause, can be listed IO.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Problems initiating or maintaining sleep or sleeping excessively can lead to degradation of performance. Daytime drowsiness or somnolence can interfere with psychomotor performance and flying safety. Physical and mental changes are usually insidious, and there is often an association with an underlying psychiatric disorder or other pathology. Complications of sleep disorders include cardiac sequelae, hypertension, poor glucose control, behavior changes, intellectual decline, and lapses of memory. Short term sleep dysfunction due to an identifiable and reversible/avoidable cause (i.e., newborn, circadian dysrhythmia, or shift work, etc.) may require temporary grounding/DNIF status, but typically requires no waiver once resolved. Sleep disorders that cannot be treated by short-term surgical or medical means will not be considered for waivers. Disorders that resolve with treatment could be considered for waivers. A waiver may or may not be required for those transient cases related to life crises, medical conditions, or obesity, but can be considered after full recovery. Patients with Restless Legs Syndrome or any Periodic Limb Movement Disorder are not recommended for ETP/waiver unless a cause has been defined and permanently cured, and the sleep disorder secondary to the syndrome has resolved. Obstructive sleep apnea is not covered in this APL. Please see Obstructive Sleep Apnea APL for ETP/waiver guidance as applicable.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Sleep Medicine consultation and recommendations including polysomnography (PSG). A maintenance of wakefulness test (MWT) may also be indicated and helpful in ETP/waiver determination.
    - Any PSG's must be completed at a military MTF or an accredited sleep lab. Home sleep studies are unacceptable for ETP/waiver purposes.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up treatment is at the discretion of the treating clinician. Waivers are unlikely to be recommended to those that need any significant follow-up other than routine annual flight physical and close questioning of the individual.

TREATMENT: Some sleep disorders can be cured and would allow return to FFD status. Drug therapy for sleep disorders is incompatible with continued aviation service and likely necessitates permanent aeromedical suspension.

DISCUSSION: Sleep Disorders are increasingly recognized and directly impact performance. Diagnosis and treatment are becoming more sophisticated and available. Of those cases referred to a sleep clinic, 51 percent suffered from hypersomnia, of whom 43 percent had Sleep Apnea; 25 percent, Narcolepsy; and 9 percent idiopathic CNS Hypersomnia. There is evidence of autosomal transmission of a recessive trait for Narcolepsy, which increases in prevalence from 6.7 per million to 1 in 10,000. Of all patients with Narcolepsy, 80 percent develop their symptoms by 35 years of age. Cataplexy will ultimately develop in 85 percent of patients with Narcolepsy.

SOMATOFORM AND FACTITIOUS DISORDERS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: These disorders have a chronic course and patients make repeated visits to physicians due to multiple physical or somatic complaints. Patients with factitious disorders may seriously injure themselves (i.e., injecting feces, swallowing ground glass, or injecting insulin, etc.) and are at extreme risk in the aviation environment. In the aviation community, somaticizing may mask an unconscious fear of flying. Nearly all cases such as these necessitate referral to MEB for retention consideration.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is not recommended.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Psychological and/or Psychiatric consultation and recommendations.
- MEB recommendations, if MEB was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up care is at the discretion of the evaluating/treating specialist.

TREATMENT: Treatment offers little hope of return to flight status in Factitious Disorders. These patients are rarely motivated for psychotherapy, and generally change physicians when confronted. The psychotropic medications used in Somatoform Disorders are incompatible with aviation status.

DISCUSSION: 15-30% of patients with hypochondriacal disorders have physical problems. 30% of Conversion Disorders have associate physical illness. Factitious Disorders have a high risk of substance abuse over time. Somatization and Hypochondriasis may be seen as a behavioral manifestation of an unconscious fear of flying.

SUBSTANCE RELATED DISORDERS OTHER THAN ALCOHOL

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Abuse of controlled substances, to include anabolic steroids, marijuana, prescription medications, and other psychoactive substances, is incompatible with aviation service and presents a serious risk to aviation safety. Abuse of controlled substances is disqualifying for all aviation related duties. ETP is not recommended but may be requested for history of experimental (not habitual) use of cannabinoids or other drugs, short of addiction or dependence, if there is evidence of current drug abstinence, no history of drug abuse treatment and the individual is otherwise qualified for aviation service. Trained aircrew will not normally be considered for waiver of substance abuse unless overwhelming evidence and support exist from command as well as the local aeromedical provider, aeromedical Psychologist, and the evaluating SUDCC provider.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rare but recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Aeromedical Psychology consultation and recommendations.
- Current SUDCC evaluation. Non-military evaluations are highly discouraged but may be acceptable for those with limited access to a military SUDCC program AND if said program meets the minimum necessary requirements as defined by AAMA.
- Documentation of completion of an appropriate outpatient or inpatient treatment program, if it was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on any significant interval history.
- Annual SUDCC/Behavioral Health evaluation is only required if previously recommended by evaluating specialist, or if otherwise clinically indicated.
- Any relapse requires resubmission of all waiver requirements and waiver is rarely recommended in this scenario.

TREATMENT: As clinically indicated and dependent on the specific substance in question as well as the level of use, abuse, or addiction.

DISCUSSION: Illicit drug use in America has been increasing. In 2012, an estimated 23.9 million Americans aged 12 or older (or 9.2% of the population) had used an illicit drug or abused a psychotherapeutic medication (i.e., pain reliever, stimulant, or tranquilizer, etc.) in the past month. This is up from 8.3% in 2002. The increase mostly reflects a recent rise in the use of marijuana, the most commonly used illicit drug. The legalization of “medicinal” marijuana has complicated this topic however, because interestingly, more than half of new illicit drug users begin with marijuana. Army aircrew and aeromedical providers should be aware that state-level legalization of marijuana DOES NOT MATTER for Soldiers, DA Civilians, and other federal employees. Its use remains in direct violation of DoD and Army policy/regulations. Additionally, the use of any type or variety of any “CBD” or “THC” products through any route of inhalation, ingestion, or absorption, is unauthorized and illegal for Army aircrew.

The next most commonly used illicit drugs are prescription pain relievers, followed by inhalants (which is most common among younger teens). Most people use drugs for the first time when they are teenagers. There were just over 2.8 million new users (initiates) of illicit drugs in 2012, or about 7,898 new users per day. Half (52%) were under 18. Drug use is highest among people in their late teens and twenties which is of specific concern to a large population of US service members. In 2012, 23.9% of 18-20 year olds reported using an illicit drug in the past month. Drug use is increasing among people in their fifties. This is, at least in part, due to the aging of the baby boomers, whose rates of illicit drug use have historically been higher than those of previous cohorts.

Relapse rates for cocaine and opioids are higher than those for alcohol in the first year of sobriety in many studies (although studies of opioid dependence usually focus on heroin addicts rather than prescription drug abusers). However, the prognosis is much better for professionals (i.e., pilots, physicians, and lawyers, etc.) than for the general population, with even higher success rates for the treatment of cocaine and opioid dependence than for alcohol, probably related to the potential loss of professional status. This finding is true in rural populations as well, probably due to issues of availability and social acceptance which are also operative in the military.

Applicants to Army aviation that have used controlled substances experimentally may be found unfit for flying duties. Given the prevalence in current society of young individuals that have experimented with controlled substances on a limited basis, short of addiction, exception to policy may be considered on a case by case basis. However, Army aircrew that misuse or abuse controlled substances are without exception medically unfit for flying duties secondary to the serious cognitive, psychomotor, and other physical impairments caused by these substances. These individuals may also be subject to disciplinary and administrative action by the aviation command.

SUICIDAL BEHAVIOR

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: There is a risk that a person with suicidal ideation may attempt suicide in an aircraft and even jeopardize the safety of others. Aircraft have occasionally been the selected means of suicide in civil aviation, but there are no known Army aviation accidents where suicide was confirmed. According to AR 40-501, current or history of suicide attempt or suicidal gestures at any time is disqualifying. Aeromedical providers should ensure a judicious period of time has elapsed following any suicidal thoughts or behavior prior to waiver submission to document clinical stability and overwhelmingly convince AAMA and the waiver authority of acceptable aeromedical risk.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Current Psychological/Psychiatric consultation and recommendations.
- Psychological testing requirement is at the discretion of the evaluating/treating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Follow up Psychological/Psychiatric care is at the discretion of the treating mental health provider, and the frequency should be clearly stated in the psychiatric evaluation or hospital discharge summary.

TREATMENT: Treatment is based on the individual's psychiatric diagnosis. However, primary emphasis should be on the assessment of dangerousness and ensuring the safety of the patient. Inpatient hospitalization may be indicated.

DISCUSSION: Aeromedical providers should base waiver suitability on reliably diagnosed disorders as opposed to specific behavior. Waivers are based in part on the psychiatric diagnosis of which the suicidal behavior is a manifestation. Additionally, waivers are based upon (1) the effectiveness of the remediation of the precipitating causes for the attempt, (2) the quality and duration of emotional and behavioral stability, and (3) reports from supervisors, the local aeromedical provider, and mental health provider. Recurrent suicidal ideation, gestures, or attempts are the basis for permanent aeromedical suspension. Exception to policy for history of suicide attempt is not recommended but may be considered using the guidelines above.

Of those who make a suicidal gesture, 66 percent are involved in acute personal crisis and many will have ingested alcohol within 6 hours of the attempt. Within one year, 20-25 percent will repeat the attempt and 2 percent will be successful. There is an underlying personality disorder in 20-25 percent of cases. In those who go on to successful suicide, 70 percent confide their intentions to someone before doing so. Risk factors include prior suicide attempt, living alone, recent stress or loss, being male (especially over 45 years of age), heavy drinking, and a family history of alcohol dependence, mental illness, or suicide.

PULMONARY DISEASE WAIVERS

ASTHMA

INFORMATION ONLY: Yes, any airway hyper-responsiveness (i.e., asthma, reactive airway disease, exercise-induced bronchospasm [EIB], asthmatic bronchitis, etc.) occurring prior to the 13th birthday AND that is currently asymptomatic (requires no medications or inhalers), can be listed IO.

Also, any unreliably diagnosed airway hyper-responsiveness after the 13th birthday that is later disproven via current objective pulmonary function testing (PFTs) AND where member is currently asymptomatic (requires no medications or inhalers), can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Airway obstruction symptoms can rapidly progress from minimal to totally disabling at any time. Exacerbations and asthmatic symptoms may pose a threat to aviation safety by interfering with cockpit tasks and duties as well as general mission completion.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and favorably considered in those meeting retention standards (no P3 profile specifically for airway hyper-responsiveness) and with no activity restrictions, no history of hospitalizations or intubations for exacerbations, and no current or historical requirement for oral steroids.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended and more favorably considered in those meeting retention standards (no P3 profile specifically for airway hyper-responsiveness) and with no activity restrictions, no history of hospitalizations or intubations for exacerbations, and no current or historical requirement for oral steroids.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Internal Medicine or Pulmonologist consultation and recommendations to include:
  - PFTs
  - Any other bronchodilator and/or provocation testing as indicated.
  - Imaging as recommended by evaluating/treating specialist.
- Allergy/Immunology consultation may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of interval history specifically commenting on degree of symptom control, history of any exacerbations, tolerance/adherence to current medication regimen.
- PFTs are required to be submitted with every flight physical.
- Specialty follow up is only required if previously recommended by evaluating/treating specialist, of or clinically indicated due to signs/symptoms or progression or poor disease control.

TREATMENT: Short-acting beta agonist rescue inhalers, low-dose inhaled corticosteroids, and leukotriene modifiers, cromolyn sodium, and nedocromil sodium inhalers are authorized. Smoking cessation, if applicable, is also an essential component of the treatment regimen to prevent worsening of symptoms and exacerbations. Applicants for waiver who continue to smoke should be counseled on cessation and offered assistance. (See Smoking/Tobacco Cessation APL). Immunotherapy is authorized where indicated and patients will be considered for waiver 30 days following completion of therapy provided relief of symptoms and above criteria are met.

DISCUSSION: Reliable diagnostic criteria for asthma should consist of any of the following: Substantial history of cough, wheeze, and/or dyspnea that persists or recurs over a prolonged period of time, generally more than 6 months. If the diagnosis is in doubt, a test for reversible airflow obstruction (greater than a 15% increase in FEV1 following administration of an inhaled bronchodilator OR airway hyperactivity (as demonstrated by exaggerated decrease in airflow induced by bronchoprovocation challenge such as methacholine inhalation or a demonstration of exercise induced bronchospasm). Chronic asthma that results in a P3 or P4 profile and MEB/PEB referral as outlined in AR 40-501, chapter 3, will not be considered for ETP or waiver.

Asthma currently affects 5-10% of the U.S. population. Asthma is a chronic inflammatory disorder of the airways in which many cells and cellular elements play a role, in particular, mast cells, eosinophils, T lymphocytes,

macrophages, neutrophils, and epithelial cells. In susceptible individuals this inflammation causes recurrent episodes of wheezing, breathlessness, chest tightness, and coughing, particularly at night or in the early morning. These episodes are usually associated with widespread but variable airflow obstruction that is often reversible either spontaneously or with treatment. The inflammation also causes an associated increase in the existing bronchial hyper-responsiveness to a variety of stimuli and pharmacologic therapy is directed at suppressing airway inflammation. Asthma may have an allergic basis, be it associated with allergic rhinitis, occur secondary to gastroesophageal reflux, or occur subsequent to upper respiratory infection. Attacks can be precipitated or exacerbated by breathing dry, cold air, exercise, or exposure to a known allergen.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Chronic obstructive pulmonary disease (COPD) results in reduction in maximum oxygen uptake and exercise tolerance. Cerebral hypoxia can adversely affect psychomotor skills, memory, judgment, and cognition. Decrements in judgment and the ability to perform complex tasks are also caused by carbon dioxide retention which can occur in COPD. Sudden incapacitation, even death as a result of pneumothorax and fatal air embolism, can occur if bullae rupture.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew with no cardiovascular decompensation, normal exercise tolerance, no requirement for medications, and with no evident bullae.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Internal Medicine or Pulmonologist consultation and recommendations.
- Chest x-ray and CT to exclude bullae and any other imaging as recommended by evaluating/treating specialist.
- Complete PFT including bronchodilator challenge
- Cardiology consultation may be required if there is any evidence of cardiac chamber enlargement.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Internal Medicine or Pulmonologist evaluation with continued recommendations for no work or exercise restrictions.
- PFTs
- Any other testing and/or imaging as recommended by the above specialist.

TREATMENT: The use of steroid inhalers either alone or in concert with beta agonists or cholinergic antagonists is considered disqualifying and waiver is rarely granted. Treatment of reversible airway obstruction by immunotherapy is considered waiverable. The expense and questionable effectiveness of immunotherapy for COPD, however, makes this option less attractive. Use of cromolyn sodium is not normally waiverable in this condition. Annual influenza immunization, pneumovax, and treatment aimed at smoking cessation and weight loss (if overweight) are encouraged.

DISCUSSION: The lower limit of oxygenation needed to permit adequate cerebral oxygenation is PaO2>65 mm Hg at sea level. With extreme COPD, obesity or tight-fitting clothing can reduce lung volumes leading to hypoventilation and ventilation/perfusion imbalance. Patients with COPD are also at increased risk of acute chest infections, complicating care in the operational setting. Symptoms will be expected when the forced expiratory volume at 1 second (FEV1) reaches 50% of that predicted by sex and age. While the normal FEV1 declines at about 30 ml/year, the reduction in smokers can reach 90 ml/year. Of all COPD patients, up to 50% will have persistent, productive cough; up to 25% will be moderately disabled with recurrent chest infections and increasing absences from work; and up to 25% will be severely disabled within 10 years.

OBSTRUCTIVE SLEEP APNEA

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: Yes, once favorable Aeromedical Summary (AMS) is submitted with supporting documentation (listed below) and individual is free of aeromedically significant symptoms.

AEROMEDICAL CONCERNS: Obstructive Sleep Apnea (OSA) is a condition diagnosed by a certified sleep lab (AHI ≥ 5 and associated symptoms). It is associated with disrupted sleep and excessive daytime sleepiness resulting in deficits in both cognitive and psychomotor performance. If a Polysomnogram (PSG) reveals a concomitant sleep disorder (i.e., Restless Leg Syndrome [RLS], Periodic Limb Movement Disorder [PLMD], etc.) then the aeromedical provider must refer to the Sleep Disorders APL before submission of ETP/waiver. OSA is associated with a 2.5x increase in occupational accidents in transportation operators and the rate is 5x higher in patients who are inadequately treated for OSA.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely recommended but will be considered on a case by case basis in otherwise healthy applicants who do not require any Positive Airway Pressure (PAP) devices AND have no comorbid conditions.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waivers is recommended once the individual demonstrates compliance on prescribed therapy (as outlined below) and is free of aeromedically significant symptomology.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- All individuals, regardless of treatment modality, require a Sleep/Pulmonary Medicine Consult and PSG at a Military Treatment Facility or American Academy of Sleep Medicine (AASM) accredited sleep lab.

Additional Requirements If Managed By:

- PAP Device Therapy: Compliance Data (**30** day report): Must be used at least 90% of nights for at least 5 hours per night and with an AHI < 5. If AHI is between 5-10 the aeromedical provider must comment on absence of any related symptoms. Reports documenting < 90% of nights used will not be sufficient for waiver consideration even if “Average Use” duration in PAP summary statistics exceeds 5 hours.
- Oral Appliance (OA) Therapy: Oral Surgeon/Dentist report documenting appropriate fit without discomfort or side effect AND post-treatment PSG w AHI < 5 following final adjustment of device. When possible, it is recommended that a monitored device be used IOT obtain compliance data as above.
- Surgical: ENT or Oral Surgeon consult. Post-procedure PSG done no earlier than 3 months post-op and healing is complete. Document weight of the individual at time of PSG.
- Weight Loss: ~10% weight loss, PSG with AHI < 5 and no requirement for positional therapy.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical Provider comment on continued compliance with therapy and stability of symptoms. Pulmonary or Sleep Medicine consult is only required for a significant change in symptomatology or comorbid disease, if either exceeds the treating aeromedical provider’s capability.

Additional Requirements If Managed By:

- PAP Device Therapy: Compliance Data (**90** day report): MUST be uploaded to AERO Documents. PAP compliance data must demonstrate usage of at least 90% of nights for at least 5 hours per night and an AHI < 5. If AHI is between 5-10, provide attestation of no symptoms. For periods where 90% of nights used is not attained, provide attestation by aircrew member that no aviation duty was performed during periods of non-compliance. If two PAP devices are used, local flight provider must reconcile this data and still demonstrate minimum compliance.
- OA Therapy/Surgical: Repeat PSG or Out-of-Center Sleep Testing (OCST) with every comprehensive FDME. Aircrew age > 50 years old will require PSG or OCST every 5 years.
- Weight Loss: Repeat PSG if >10% weight gain and/or any endorsement of aeromedically significant symptoms.

TREATMENT: PAP devices: With an appropriate fit and titration, PAP creates a pneumatic “splint” keeping the airway open. APAP, BiPAP and CPAP are all acceptable forms of therapy.

OA: Should only be used in patients following specialty recommendation. Oral appliances modify the position of the tongue or jaw and can treat both snoring and OSA. In an austere environment, OAs are ideal due to their lack of a requirement for electricity. OAs with an implanted chip that monitor compliance are recommended for aviation personnel.

Surgery: Surgery is often performed in a phased manner (increasingly aggressive interventions) and requires a prolonged recovery period. The most effective is mandibular and maxillary advancement (MMA). Surgery may be a primary option in those whose roles might require extended isolation without access to electrical power (typically SOCOM aviators) or patients who fail PAP and OA therapy. There is a 7.5% chance of recurring OSA in the long term, primarily associated with weight gain.

Weight Loss: Weight loss is an acceptable treatment and a loss of 10% body weight can result in symptom and disease resolution. However, per American College of Physicians and AASM recommendations weight loss should be pursued as an adjunct due to proven efficacy of PAP in initial management. A repeat PSG can be performed in aircrew with at least a 10% weight loss in order to determine if the weight loss contributes to an improvement in their sleep disordered breathing.

Positional Therapy: NOT authorized as standalone treatment in US Army aircrew as there is no ability to monitor adherence/efficacy of this therapy. Positional devices are ONLY authorized as adjunct therapy.

Implantable Hypoglossal Nerve Stimulators: NOT authorized as standalone treatment.

Medication(s): All medications promoting wakefulness are Class 4 (i.e., dextroamphetamine, modafinil, armodafinil, or Ritalin, etc.) and are not recommended for ETP/waiver.

DISCUSSION: Obstructive Sleep Apnea is a condition resulting in disrupted sleep and excessive daytime sleepiness resulting in deficits in cognitive and psychomotor performance. These deficits may cause significant lapses in attention, concentration and executive decision making. The condition is also linked to such incapacitating conditions as cardiac arrhythmias, myocardial infarction, and stroke. Aviation is a high risk profession which requires a high level of continuous neurocognitive function with sustained attention and vigilance. Undiagnosed and/or inadequately treated OSA poses an unacceptable, but yet modifiable risk.

REFERENCES:
(1). AASM Guidelines: https://aasm.org/clinical-resources/practice-standards/practice-guidelines/

PNEUMOTHORAX

INFORMATION ONLY: No, for any history of spontaneous pneumothorax in Class 1, 2, or 3 applicants.

Yes, for a single spontaneous pneumothorax in trained Class 2 or 3 aircrew following complete recovery, normal imaging, and normal objective pulmonary function.

Yes, for traumatic pneumothorax in any class following complete recovery, normal imaging, and normal objective pulmonary function.

Yes, for completely resolved single or recurrent pneumothorax of any type with zero sequelae in Class 4 applicants and trained aircrew.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Pneumothorax may cause acute chest pain and shortness of breath in flight, worsening as ambient pressure falls. Tension pneumothorax may cause hypoxia arising from ventilation/perfusion imbalance and mediastinal shift may cause cardiovascular embarrassment. Spontaneous pneumothorax is the result of some underlying pulmonary disorder (i.e., COPD, bullae, bronchiolitis, emphysema, asthma, sarcoidosis, or histoplasmosis, etc.) which places an individual at higher risk of morbidity as well as recurrence of pneumothorax.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and favorably considered in those with non-recurrent disease following full recovery and no evidence of underlying or contributing pathology. ETP is rarely recommended for recurrent disease.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is generally recommended and favorably considered in those with non-recurrent disease following full recovery and no evidence of underlying or contributing pathology. Waiver is recommended on a case by case basis for recurrent disease but only considered following full recovery from pleuridesis and/or pleurectomy.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- If surgically corrected, end of care notes including release to unrestricted work/activity.
- Imaging as dictated by evaluating/treating specialist.
- Pulmonary Function Testing and/or any other assessment of function documentation for questionable/complex cases (i.e., recent passing APFT/ACFT scores, completion of strenuous military training courses, etc.).

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Recurrence of pneumothorax requires resubmission for waiver and an evaluation as above.

TREATMENT: All recognized forms of surgical treatment are compatible with waiver. There is a substantial failure rate after chemical pleurodesis so this should be avoided in aircrew unless specifically recommended by treating specialist.

DISCUSSION: Over 90% of patients presenting with spontaneous pneumothorax are under 40 years old with 75% being less than 25. In women, there is sometimes a relationship to menstruation. Onset of spontaneous pneumothorax is accompanied by chest pain in 90% of cases and by dyspnea in 89%. Tension pneumothorax develops in 5% and hemopneumothorax in 2.5%. Recurrence rates in patients who have not had definitive treatment has been reported from 5- 60% with most in the first year. In one series of patients followed for 10 years without surgery, ipsilateral recurrence followed in 50% of which 62% happened in the first 2 years. Another study reported recurrence of 30% after a first spontaneous pneumothorax, 50% after a second episode and 80% after a third. The contralateral risk was reported as 10%. The recurrence rates after surgery depend on the procedure used. After thorascopic pleurodesis, it can be as high as 16% while fibrin pleurodesis has been reported to have a recurrence rate of 4%. Surgical pleurodesis/pleurectomy has a 1% recurrence. A recent USAF review of patients exposed to chamber flight before return to flying duties revealed that none was eliminated, and there was no prediction of later recurrence, so this test has been discontinued as an ETP/ waiver requirement.

SARCOIDOSIS

INFORMATION ONLY: No.

TEMPORARY CLEARANCE: No.

AEROMEDICAL CONCERNS: Sarcoidosis is a multi-organ system granulomatous disorder of unclear etiology. Sarcoidosis can affect any organ system. The most common is the lung followed by the skin, lymph nodes, eye, and liver. Cardiac sarcoidosis, with an incidence of between 5-20%, is associated with restrictive cardiomyopathy, ECG abnormalities such as ectopy and atrioventricular blocks, and sudden death from arrhythmias. Pulmonary involvement is progressive in 15-20% with both restrictive and obstructive impairments. Uveitis can cause permanent visual damage. Neurologic involvement can produce many symptoms to include fluctuating hearing loss, cranial nerve palsies, and seizures. Hypercalcemia can predispose the aircrew member to renal stones.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is not recommended.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis in select aircrew after a 1 year minimum period of remission, no need for chronic medication, and with a completely normal work up defined below.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Pulmonology consultation and recommendations.
- Imaging and laboratory workup will be dictated by evaluating/treating specialist.
- Ophthalmology/Optometry consultation and recommendations.
- Cardiologist consultation and recommendations for any cases with cardiac involvement including:
  - 24 hour holter monitor
  - Treadmill stress test plus imaging (echocardiogram or cardiac MRI) OR stress imaging (Nuclear stress testing, stress echocardiogram, or stress cardiac MRI).
- Further specialist consultation and recommendations dependent upon organ/system involvement.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of interval history and continued tolerance/adherence to treatment regimen.
- Internal Medicine or Pulmonologist evaluation with continued recommendations for no work or exercise restrictions.
- Any other testing and/or imaging as recommended by the above specialist.
- Reactivation of the disease will require a complete work up as above and resubmission for waiver.

TREATMENT: 75% of patients with asymptomatic sarcoidosis will spontaneously remit without treatment. Use of corticosteroids is not indicated in the absence of progressive end organ damage. The most common indication to begin corticosteroids is progression of disease in any organ system. Active treatment of sarcoidosis with any medication is NOT compatible with flying duties.

DISCUSSION: The incidence of sarcoidosis is highest in the 20-29 age group and is 3-4 times more common in African Americans. The majority of patients diagnosed with sarcoidosis present with abnormal radiographic findings (usually bilateral enlargement of hilar nodes) or nonspecific respiratory symptoms. Lung involvement occurs in over 90% of sarcoid patients. The pulmonary classification of sarcoidosis is based on radiographic findings and can be divided into Stages 0-IV. Stage 0 indicates no radiographic involvement. Stage I is identified by the presence of bilateral hilar adenopathy. Stage II includes bilateral hilar adenopathy and interstitial infiltrates. Stage III is demonstrated by reticulonodular infiltrates without hilar adenopathy. Stage IV shows advanced pulmonary fibrosis without adenopathy. Other presenting signs/symptoms include erythema nodosum (10-50% with females predominating), uveitis (15-25%) and enlargement of superficial nodes (30% of Europeans and up to 80% of African-Americans). Up to 30% of cases with acute sarcoidosis will have abnormal thallium scans suggesting myocardial involvement and liver biopsy will show sarcoid granulomas in 70% of cases without evidence of altered liver function. Nervous system involvement is demonstrable in 10%, but may be subclinical in many more. Osteolytic or osteosclerotic bone lesions are also present in 10% of cases. Healed myocardial granulomas may lead to arrhythmias, and patients in remission who have had myocardial involvement remain at risk for sudden death.

UROLOGY WAIVERS

CYSTIC AND CONGENITAL ABNORMALITIES OF THE KIDNEY

INFORMATION ONLY: Yes, asymptomatic cystic disease requiring no medications can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Polycystic disease may be associated with hypertension, Berry aneurysms, renal stones, infection, hematuria, GI symptoms, and mitral valve prolapse. Simple retention cysts in the renal cortex may be susceptible to trauma. Medullary sponge kidneys can be associated with hematuria and formation of calculi. Large polycystic kidneys are not compatible with high performance flying because “G” forces cause the kidney to pull on the pedicle, which may result in bleeding.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended in asymptomatic applicants with normal renal function and no underlying/associated comorbidities.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended in asymptomatic individuals with normal renal function and no underlying/associated comorbidities.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Nephrology consultation and recommendations.
- Imaging and laboratory work-up as dictated by evaluating/treating specialist.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP: Annual nephrology or urology consultation to ensure stable disease. Periodic CT of the kidney may be required to confirm lack of progression of the disease.

TREATMENT: Will vary depending on the patient's present condition and diagnosis.

DISCUSSION: The majority of patients with polycystic disease present with evidence of impaired renal function between the ages of 30 and 50. Approximately 10-40% of these patients will have Berry aneurysms, and 9% will die of intracranial hemorrhage. More than 60% of patients with PKD will have hypertension. Upper urinary tract infections are common, especially in women. Unilateral renal agenesis with a normal functioning kidney is waiverable. Medullary sponge kidney and hereditary megacalycosis are also waiverable.

ERECTILE DYSFUNCTION

INFORMATION ONLY: Yes, unless caused by a separate disqualifying condition, if medication use is accompanied by any aeromedically unacceptable side effects, and/or if the condition negatively impacts safe completion of aviation duties. Aircrew must still adhere to the mandatory 12 hour grounding/DNIF period following each dose.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Male erectile dysfunction (ED) is a common medical disorder that affects 10 to 30 million men in the United States. Hormonal, diabetes mellitus, vascular insufficiency, and neurologic abnormalities may predispose men to ED. Psychogenic causes include inability to trust, feelings of inadequacy, or difficulties with one's partner. Potential implications of coronary artery disease (CAD) should be considered in individuals that plan to resume sexual activity because of the high incidence of overt and covert CAD in patients with ED. The condition itself is likely not disqualifying, however the cause or sequelae of ED or its treatment may lead to incompatible duty in the aviation environment.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is rarely required and reserved for those cases with underlying pathology and/or medication side effects.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is rarely required and reserved for those cases with underlying pathology and/or medication side effects.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Specialty consultation and recommendations as required in cases with underlying/contributing pathology.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of interval history and verification of aircrew member's continued understanding and compliance with mandatory grounding period if medication is used.

TREATMENT: After a thorough workup that rules out underlying pathology, and after an initial trial period with appropriate grounding to assess for aeromedically unacceptable side effects (~24 hours), aircrew members may use ED meds within the following parameters: Viagra (sildenafil) and Levitra (vardenafil) are authorized and can be listed IO, no AMS/waiver required. Aircrew members must be grounded for a period of 12 hours following Viagra use and 24 hours following Levitra use. The longer grounding period of Levitra is due to its acceptable but more variable half-life. Therefore, its use should likely be avoided or at least limited to weekends, periods of leave, or periods served in non-aviation billets. Viagra has been studied the most and has longest safety record of this medication class. Cialis (tadalafil) is a Class 4, mandatorily disqualifying medication, and its use is not authorized in aircrew members. If local flight providers have previously prescribed Cialis or otherwise discover Cialis use in their aircrew, please discontinue and provide an attestation that you and the SM are aware it is DQ for aviation duty. Stendra (avanafil) is an acceptable treatment choice but is usually cost prohibitive and likely not found on DoD formularies. Injectable or intra-urethral treatments such as Alprostadil, can also be listed IO and will require a 12 hour grounding period following use. As always, any supplement or herbal preparations used to treat or diagnose a medical problem are not authorized for use by aircrew members. Unless something is specifically listed as authorized in the Supplements and Herbals APL, it is DQ for flight IAW AR 40-8. Any penile implants or surgical procedures such as revascularization are DQ for flight with full AMS/waiver required.

DISCUSSION: Phosphodiesterase (PDE) inhibitors indirectly cause an erection by acting as a selective inhibitor of cyclic GMP-specific phosphodiesterase type 5 (PDE5), resulting in smooth muscle relaxation and vasodilatation in the corpus cavernosum. Cyclic GMP also acts as a second messenger of nitric oxide (NO), which acts as an arterial dilator and smooth muscle relaxant. Relatively high levels of PDE5 are found in the human corpus cavernosum. Peak concentrations occur within 30 to 120 minutes after administration. Sildenafil is primarily metabolized by the cytochrome p450 hepatic microsomal enzymes to an active N-desmethyl metabolite with 50% of the parent drug's potency for PDE5 inhibition. Both the parent compound and its active metabolite are highly bound to plasma proteins with a terminal half-life of about 3-4 hours. Plasma levels are increased in patients over 65 (40% increase) and in patients with hepatic impairment (80% increase), severe renal impairment (creatinine clearance < 30mL/min; 100% increase), and concomitant use of potent cytochrome p450 3A4 inhibitors (i.e.,

macrolide antibiotics [200% increase], cimetidine, and antifungal agents). The pharmacodynamic effects of sildenafil reflect the distribution of PDE5 in different tissues and the favorable selectivity of this isozyme. Of primary concern to the aircrew member are cardiovascular and visual side effects. Single oral doses of sildenafil (100mg) administered to healthy volunteers produced decreases in supine blood pressure (mean maximum decrease of 8.4/5.5 mmHg). Peak effects coincide with peak plasma concentrations at one to two hours after the dose and returning to baseline at 4 hours. This effect was not different than placebo at 8 hours. Significant effects have not been observed on the heart rate or no changes seen on electrocardiogram. Hypotensive effects are neither age dependent nor dose-related (range 25 to 100mg). Orthostatic effects have been rarely reported (< 2%) and occur at a similar rate in sildenafil and placebo- treated patients. Transient disturbances of visual function have also observed (3%), especially at doses > 100mg. These effects include “blue-green” color-tinged vision, increased perception of light, and blurred vision. The effects on visual function appear to be related to weaker inhibitory effect of sildenafil on PDE6, which regulates signal transduction pathways in the retinal photoreceptors. Sildenafil exhibits a 10-fold selectivity for PDE5 over PDE6. Patients with inherited disorders of the retina are at particular risk for visual side effects. Vasodilatory effects of sildenafil can result in headache (16%), facial flushing (10%), and rhinitis (4%). The gastrointestinal effects of dyspepsia and reflux are seen secondary to relaxation of the lower esophageal sphincter (7%). Musculoskeletal effects of myalgia have also been observed although no treatment-related changes in serum creatine kinase or electromyogram have been recorded.

HEMATURIA

INFORMATION ONLY: Yes, completely resolved, non-persistent hematuria not due to an underlying disqualifying cause, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Hematuria is present when a urinalysis (UA) demonstrates three or greater red blood cells per high powered field (≥3 RBCs/HPF). Hematuria is often asymptomatic, transient, and of benign origin, but may also indicate the presence of an underlying disqualifying condition such as a renal stones or a renal tract malignancy. All UAs should be performed after 24-48 hours of no exercise and benign causes of hematuria, including urinary tract infections (UTI) have been resolved. Significant renal function impairment, significant polycystic kidney disease, or anemia secondary to hematuria is generally not considered for waiver. Underlying conditions must be addressed in accordance with the applicable APLs.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Urologist and/or Nephrologist consultation and recommendations dependent upon etiology.
- Diagnostic testing, imaging, and laboratory evaluation as dictated by the evaluating/treating specialist.
- Results of any renal biopsy, if biopsy was required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on continued absence of symptoms.
- Specialty evaluation if previously recommended or if clinically indicated due to progression or reoccurrence of signs/symptoms.

TREATMENT: Dependent upon the underlying medical condition.

DISCUSSION: The prevalence of hematuria, in general, has been estimated at 1-20% in the general population. The prevalence of clinically significant hematuria in Army aviation personnel is largely unknown. However, it is likely to be on the lower side of the previously stated prevalence range owing to the selective nature of military service for healthy individuals and that studies suggest that aviation duty does not increase the likelihood of hematuria. Results of UAs must be interpreted wisely in order to avoid subjecting the aviation crew member to unnecessary tests. Patients who are most likely to derive benefit from urological workups are those with a high risk for malignancy and other serious pathology. These individuals have the following risk factors: male gender, >35 years of age, history of cigarette smoking, pelvic radiation, and chemical exposures (i.e., cyclophosphamide, aromatic compounds, etc.), irritative voiding symptoms, and prior urologic disease or treatment. The American Urologic Association (AUA) defines microhematuria as the presence of three or more RBCs/HPF but is only a recommended practice at the expert opinion level of evidence. Cytology is not recommended for routine screening and will only be required for those who have elevated risk factors, as discussed above. It is recommended that a hematuria workup should be performed only when there is no evidence of infection. The combination of microscopic urinalysis and dipstick should be performed to exclude abnormalities such as pyuria, bacteriuria, and contaminants. In addition, benign causes, such as menstruation, sexual intercourse, vigorous exercise, viral illness, superficial trauma, and analgesic use should also be evaluated and excluded before referral. Hematuria due to renal stones or malignancy should be addressed IAW applicable APLs.

REFERENCES:
(1). National Practice Recommendations for Hematuria: How to Evaluate in the Absence of Strong Evidence? Perm J. 2009 Winter; 13(1): 37-46. http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3034463/ .

(2). Diagnosis, evaluation and follow-up of asymptomatic microhematuria (AMH) in adults: AUA guideline. http://www.auanet.org/ education/asymptomatic-microhematuria.cfm Published: May 2012.

PROSTATITIS

INFORMATION ONLY: Yes, prostatitis that is non-recurrent and completely resolved can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: The symptoms of acute prostatitis, which include severe perineal discomfort, backache, urgency, and frequency of micturition can be extremely distracting in the aviation environment. Similarly, the backache from chronic prostatitis can be an irritant during flight or aircraft control. The side effects of some forms of medication are not compatible with aviation duty.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Urologist consultation may be required.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on continued absence of symptoms and adherence/tolerance to treatment regimen.
- Annual urology consultation is only required if previously recommended by evaluating/treating specialist or if clinically indicated due to disease recurrence, poor control, or progression.

TREATMENT: Waivers may be granted for patients on doxycycline, trimethoprim/sulphamethoxazole, carbenicillin, and ciprofloxin, among other medications. NSAIDs for symptom control are acceptable. Recurrent short courses or chronic use of medications is acceptable but require an initial grounding period of 6 medication half-lives to document the absence of aeromedically significant side effects.

DISCUSSION: Some patients with prostatitis are very sensitive to the effects of alcohol although the mechanism for this is unclear. Personnel on medication should be warned to restrict their alcohol intake while on treatment. They should also avoid spicy foods. Patients with chronic prostatitis, with symptoms of pain and discomfort, often respond to short courses of anti-inflammatory agents (i.e., ibuprofen, naproxen, diclofenac, etc.). The side effects of nitrofurantoin relevant to aviation include an acute pulmonary reaction with cough, dyspnea and chest pain, a chronic reaction with similar symptoms but with a more insidious onset, and occasionally, nystagmus, vertigo and dizziness. Trimethoprim can rarely cause hallucinations, ataxia, vertigo, apathy or depression. Ciprofloxin can cause tremor, light-headedness, confusion, lethargy, drowsiness, insomnia, blurred vision, changes in color perception and headache. The reported incidence of headaches is 1.2% with other CNS side effects arising in 0.4% of cases. Photosensitivity has also been reported with the use of quinolones.

PROTEINURIA

INFORMATION ONLY: Yes, completely resolved, non-persistent proteinuria not due to an underlying disqualifying cause, can be listed IO.

TEMPORARY CLEARANCE: Yes, following favorable AMS submission.

AEROMEDICAL CONCERNS: Proteinuria is a symptom of potential underlying medical conditions, most of which are considered disqualifying. Significant proteinuria often is associated with immune-mediated glomerular diseases or metabolic disorders with glomerular involvement such as diabetes mellitus. Significant renal disease may lead to chronic fatigue, near syncope, or loss of consciousness. Characteristics of the military and/or aviation environment (i.e., heat, dehydration, prolonged duty, etc.) may exacerbate such conditions. Waiver for these diseases is usually based upon the stability of the disease and the lack of significant symptoms as well as the lack of environmental exacerbation of the condition. Proteinuria can also be an entirely normal physiologic reaction to extreme or prolonged physical exertion thus making a careful history essential to aeromedical decision making.

WAIVERS:
Pilot Applicants (Class 1A/1W):
ETP is recommended on a case by case basis and dependent upon the underlying etiology.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):
Waiver is recommended on a case by case basis and dependent upon the underlying etiology.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Complete AMS documenting clinical presentation, evaluation, treatment(s), and outcome.
- Urologist and/or Nephrologist consultation and recommendations.
- Diagnostic testing, imaging, and laboratory evaluation as dictated by the evaluating/treating specialist.
- Results of any renal biopsy, if biopsy was required

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Dependent upon the underlying medical condition.
- An 24 hour urine protein may be required to monitor progression of disease.
- Nephrology/Urology consult is required if previously recommended by evaluating/treating specialist or if clinical indicated due to disease progression.

TREATMENT: As appropriate for the underlying medical condition and the discretion of the Nephrologist/Urologist.

DISCUSSION: Causes for false positive are concentrate, alkaline (pH > 7.5), mucus, RBC's, WBC's, or semen in the urine. Cause for false negative is dilute urine. Proteinuria should also be interpreted with consideration of the urine specific gravity since a proteinuria of 1+ in diluted urine may indicate a considerable protein loss.

RENAL AND URETERAL STONES (NEPHROLITHIASIS)

INFORMATION ONLY: Yes, a fully resolved, solitary, unilateral stone that passed spontaneously (no manipulation or lithotripsy required) with a normal metabolic workup can be listed IO.

TEMPORARY CLEARANCE: Yes, in asymptomatic individuals following favorable AMS submission.

AEROMEDICAL CONCERNS: Renal and ureteral stones are common in primary care and theoretically more so in aircrew members due to unique occupational aspects and personal behaviors. Stones may shift and migrate resulting in renal colic that can range from distracting to overtly incapacitating. Retained stones can grow and progress resulting in obstruction, recurrent infection including sepsis, and acute kidney injury. Frank, gross hematuria can be alarming even in those aircrew with exceptional ability to compartmentalize. Multiple genetic and lifestyle choices can contribute to stone formation and those calculi due to modifiable risk factors will be more favorably considered for waiver/ETP. The propensity for the formation of, and mitigation against, future stones will be a primary factor for waiver/ETP consideration with prevention the ultimate aeromedical goal.

WAIVERS:

Pilot Applicants (Class 1A/1W):

ETP is recommended for history of two or less life time renal/ureteral stones in those with normal renal function, a normal metabolic workup, clear evidence of risk factor identification and mitigation, AND a minimum of 12 months elapsed time since last stone. ETP is recommended on a case by case basis for retained stones. ETP is not recommended for those with predisposing genetic/metabolic factors unable to be modified or resistant to treatment.

Initial Applicants (Classes 2, 3, 4) and Trained Aviation Personnel (All Classes):

Waiver is recommended for history of no more than three episodes of renal/ureteral stones in any two year period in those with normal renal function, a normal metabolic workup, and clear evidence of risk factor identification and mitigation. Waiver is recommended on a case by case basis for retained stones. Waiver is not recommended for those with predisposing genetic/metabolic factors unable to be modified or resistant to treatment.

INFORMATION REQUIRED FOR INITIAL WAIVER/ETP:

- Aeromedical provider discussion on presentation, course, and treatment of calculi.
  - Dose, adherence and tolerance of medication if pharmacotherapy is required/indicated.
  - Discussion on dietary and risk factor mitigation strategies.
- Laboratory evaluation including:
  - Basic metabolic panel
  - Urinalysis and urine culture
  - 24 hour urine chemistries
  - Serum uric acid
  - Serum parathyroid hormone
  - Stone analysis if possible
- Urology consultation if required:
  - Documentation of procedure notes and aftercare for any necessary interventions.
  - Clearance to return to work and/or full unrestricted activity.
- Retained stones will require imaging to detect location, growth, progression, and/or complications.
  - Renal CT (non-contrast, low-dose) is the imaging modality of choice. Radiology may choose standard dose CT due to obesity or other body habitus considerations.

    OR
  - KUB radiograph +/- ultrasonography (US) is sufficient in pregnant patients or when concern for radiation accumulation exists, though this may miss some small/radiolucent stones.

* NOTE - IVP is no longer required unless specifically required by Urology or Nephrology.

ANNUAL WAIVER REQUIREMENTS/FOLLOW-UP:

- Aeromedical provider comment on absence of any stone recurrence, progression of existing calculi, and adherence/tolerance to any required treatments.
- 24 hour urine chemistries if previously abnormal OR if on preventive therapy.
- If prior waiver/ETP for was granted for retained stone(s), yearly imaging is required to assess stone burden, growth, and/or migration. The same criteria for imaging selection above should be applied.
- Urology or Nephrology follow up would only be required if recommended previously by evaluating/treating specialist or otherwise clinically indicated.

TREATMENT: Initial management is focused on pain control and aggressive hydration to encourage natural passage of the stone. Both NSAIDs and opioids are acceptable options and selection should be based upon appropriate clinical variables of the patient in question. Some patients may also require medical expulsive therapy (MET) such as alpha blockers, calcium channel blockers, and anti-spasmodic agents to lessen ureteral smooth muscle tone and facilitate stone passage. Oral or IV hydration, pain control, and medical expulsive therapy all necessitate temporary grounding/DNIF, but are considered components of "spontaneous stone passage" and thus do not require waiver/ETP if all other Information Only criteria are met.

For larger stones, those in complex renal/ureteral locations, or those otherwise refractory to any combination of the above conservative therapy, several procedural and surgical-based options exist. Treatment should conform to clinical practice guidelines and professional society recommendations and be performed by an appropriately trained specialist. These options include stent placement, shock wave lithotripsy (SWL), ureteroscopy (URS) with LASER lithotripsy, percutaneous nephrolithotomy (PNL), and rarely, laparoscopic stone removal. The requirement for any of these procedures, regardless of the results of history, physical, and laboratory/metabolic workup, is disqualifying with waiver/ETP required.

DISCUSSION: The Renal Stone Worksheet is no longer required for either IO or waiver cases. The majority of nephrolithiasis episodes can be listed IO, however, aeromedical providers should ensure all pertinent information is submitted to AAMA via AERO. Factors favorable for IO consideration are a single, solitary stone that has passed spontaneously with no interventions required beyond hydration, pain control and MET, no retained stones, and no metabolic abnormalities that would predispose to future stones. Bilateral stones are by definition not a single/solitary stone and thus require waiver/ETP. Retained stones discovered incidentally are disqualifying as roughly 1/3 will become symptomatic in the future. In the event a waiver/ETP is required, please ensure the AMS is complete with all required labs, results of any necessary imaging, and a thorough discussion on predisposing factors, medications, and any required procedures. A clear, linear story of disease presentation, required treatment, resolution, and a plan to mitigate future recurrence will be necessary for favorable waiver/ETP consideration.

Grounding/DNIF periods will be situationally dependent but an aircrew member should be grounded for no less than two weeks following spontaneous stone passage, no less than four weeks following SWL/stone manipulation, and no less than 12 weeks if laparoscopic/other invasive procedure was required. These are minimum time recommendations and may be adjusted as necessary given the specific clinical picture and current operational environment. When any procedures are necessary and/or it is determined a waiver will be required, local aeromedical provider may return asymptomatic aircrew to temporary FFD status after full resolution from any procedure/intervention AND following favorable AMS submission.

A majority of renal and ureteral stones are calcium-based, mainly calcium oxalate or, less often, calcium phosphate. The other main types include uric acid, struvite (magnesium ammonium phosphate), and cystine stones. A vast majority are amenable to preventive therapy via medication and dietary changes. With the exception of cystine stones, which are unlikely to be recommended for waiver/ETP, stone composition is not the sole factor in determining waiver suitability, but rather, guides treatment choices. Aeromedical providers should be aware of risk factors for stone formation and educate their aircrew at every possible opportunity. This includes counseling them on avoidance of excessive use of caffeine/diuretics, making appropriate dietary choices, and informing their flight provider if using any supplements, vitamins, herbals, etc. Dehydration is a major risk factor and of specific concern in cockpits or ground controls stations due to extreme temperatures, austere locations, and a potential lack of potable water. Purposeful dehydration is a common practice among aircrew secondary to the inconvenience/embarrassment of urinating in flight and should also be specifically dissuaded.

REFERENCES:
(1). Pearl MS, Goldfarb DS, et al. Medical Management of Kidney Stones: American Urologic Association Guideline. *Journal of Urology*. 2014; 192(2):316-324. Last accessed April 2021: https://www.auanet.org/guidelines/kidney-stones-medical-mangement-guideline.

(2). Qaseem A, et al. "Dietary and Pharmacologic Management to Prevent Recurrent Nephrolithiasis in Adults: A Clinical Practice Guideline From the American College of Physicians." Annals of Internal Medicine. 2014; 161(9):659-667. Last accessed April 2021: https://annals.org/aim/fullarticle/1920506/dietary-pharmacologic-management-prevent-recurrent-nephrolithiasis-adults-clinical-practice-guideline.

AEROMEDICAL PROVIDER ADMINISTRATIVE GUIDE

&

AEROMEDICAL TECHNICAL BULLETINS

Administrative Guide Statement of Purpose

This guide is intended to provide aeromedical providers (flight surgeons, aeromedical physician assistants, aviation medicine nurse practitioners, and aeromedical examiners) and the office staff all the tools necessary for accurately completing flying duty medical exams (FDME), flying duty health screens (FDHS), and aeromedical summaries (AMS). The required Aeromedical Policy Letters and Aeromedical Technical Bulletins (ATB) are available as detailed in the external links and purpose, authority and points of contact sections of this document.

Additionally, there are convenient flow sheets and tables designed to ensure that flight physicals (referred to simply as “physicals” in the remainder of this chapter) are performed correctly and completely, thereby minimizing returns for errors.

In addition to guaranteeing a complete physical, the flow sheets and tables will ensure:

1. Other regulatory and preventive health requirements are adhered to (i.e., pap smears, mammogram, retirement physical requirements, etc.).

2. Important readiness issues are addressed (i.e., HIV, dental, eyeglass prescriptions, etc.).

Summary sheets of aeromedical standards are provided. These tables (2 through 7) should be utilized whenever personnel are reviewing physicals prior to electronically submitting or mailing them to Fort Rucker. These sheets along with electronic standards checking within the Aeromedical Electronic Resource Office (AERO) will help ensure that all required entries are made and to standard.

There are “special tests” that most probably never heard of or were not aware of in such detail prior to becoming an aeromedical provider, and that are often performed poorly in the field. These are the reading aloud test, anthropometrics, cycloplegic refraction, and stereopsis among others. Each test is addressed in detail in an aeromedical technical bulletin (ATB).

In order to help all complete high quality Aeromedical Summaries (AMSs), there is a section covering the waiver process. A suggest formatting template is included. Please note, all ETP and waiver requests should follow the same general format as USAAMA has eliminated the term “abbreviated” aeromedical summary. The length, detail, and complexity of the submitted AMS will be dictated by the specific type as well as the number of diagnoses/conditions that waiver is being requested for. AERO has greatly eased the creation and submission of AMSs and is the primary method for managing these. This information is followed by a brief discussion of the Aeromedical Consultation Service and the waiver authorities. This will help explain the disposition of AMSs and waiver, exception to policy, and suspension requests.

Please address any comments or questions about this guide or USAAMA policy via the helpdesk. Links to the helpdesk can be found on the AERO website or the Purpose Authority and Points of Contact section of this document.

The Army Flight Physical

Definition and Responsibility for Flight Physicals (Flying Duty Medical Examination [FDME] and Flying Duty Health Screen [FDHS])

The FDME is a periodic, comprehensive medical examination performed for occupational and preventive medicine purposes. The FDME is used as a starting point for the careful evaluation and treatment of aircrew members. It includes a review of medical history, which often alerts the flight provider to potentially disqualifying conditions that may require further assessment in the course of completing the examination. It promotes and preserves the fitness, deployability, and safety of aviation personnel. The FDHS is the interim health-screening tool done between comprehensive FDMEs. The aeromedical provider shall review the medical records and AHLTA for disqualifying medical conditions.
The goal is to ensure maintenance of aircrew health, fitness for aviation duty, and to serve as an opportunity for health promotion. With the introduction of the annual DoD PHA, additional screening and counseling requirements are recommended to be completed along with “Part 1” of the annual flight physical, so all annual military needs are met in one setting. To ensure optimal utilization of the annual FDME or FDHS as a health promotion visit, all should be familiar with the United States Preventive Services Task Force (USPSTF) requirements. The USPSTF homepage can be found at http://www.uspreventiveservicestaskforce.org.

The aircrew member is responsible for maintaining a current medical certification—DD Form 2992, Medical Recommendation For Flying or Special Operational Duty. In order to have a current DD Form 2992, the aircrew member must maintain a current and qualified (or disqualified with ETP/waiver granted) FDME/FDHS. The following Army regulations and publications address the importance of the physical and place the responsibility squarely on the aircrew member.

1. AR 600-105 is applicable to rated aircrew (pilots and flight surgeons) and stipulates that Army officers who enter aviation service must continually maintain medical and professional standards. Failure to maintain medical certification is reason to convene a Flying Evaluation Board (FEB). All aviators regardless of component or whether or not assigned to operational flying duties must maintain certification for flying duty through timely completion of the physical.

2. AR 600-106 has similar stipulations and covers non-rated aircrew (flight medics, aeromedical psychologists, aeromedical physician assistants, aviation medicine nurse practitioners, flight engineers, crew chiefs, stewards, and others not covered in AR 600-105).

3. FM 3-04.300 covers flight operations procedures and mandates that individuals who do not have a current flight physical or flight physical extension will be suspended from flying status until medical clearance is given.

Proponent for Aeromedical Policy and Standards

US Army Aeromedical Activity (USAAMA) is located at Fort Rucker. The USAAMA does the following:

1. Writes, implements and interprets aeromedical policy in consultation with and for the Aerospace Medicine Consultant to The Surgeon General.

2. Reviews and dispositions of all class 1, 2, 3 and 4 flight physicals.

3. Provides the final aeromedical recommendation regarding waiver, exception to policy, and suspension recommendations in cases of disqualified aircrew.

4. Maintains the Aviation Epidemiology Data Registry (AEDR).

Types of Physicals—the Basics

There are three broad categories of FDMEs and the FDHS is its own category. They are:

1. Initial FDME—Performed for accession purposes and is comprehensive. This type of physical is valid for up to 18 months regardless of physical class.

2. Comprehensive FDME— Performed on trained rated and non-rated aircrew, air traffic controllers (ATC), and unmanned aerial system (UAS) operators. This is performed every 5 years between the ages 20 and 50 and then annually thereafter. The five year period shall be aligned as practicable with ages ending in “0” or “5” so comprehensives are accomplished at 20, 25, 30, 35, 40, 45, and 50—this makes clinic management and scheduling simpler and easy to remember. It is generally valid for 12 - 14 months based on when it was completed during the birth month window, and it is synchronized to expire the last day of the aircrew member’s birth month. Comprehensives may be done more frequently at the discretion of the flight provider, when requesting a return to aviation service after medical termination, as part of the requirements for aeromedical waiver requests, after Class A or B aircraft mishaps, or for retirement. See AR 40-501 and DA PAM 40-502 for further details.

3. Rucker FDME—Performed only at Lyster Army Health Clinic, Fort Rucker, on Class 1 Flight School students just prior to beginning flight training. This reviews, documents, and verifies medical qualification for flight training as well as addresses any interim aeromedically significant changes since completing the Initial FDME. This is valid for up to 24 months only at Fort Rucker to allow the flight student to complete flight training. Upon completion of flight school and PCS, the graduated flight student will require a FDME/FDHS with birth month realignment upon reporting to their new duty station.

4. FDHS—Performed annually during the interim years between comprehensive FDMEs on rated and non-rated trained aircrew, ATCs, and UAS operators. This is a retention and health promotion type of medical screening. It is generally valid for 12 - 14 months based on when it was completed during the birth month window and it is synchronized to expire the last day of the aircrew member’s birth month.

Aeromedical Standards Class or Physical Class

Flight physicals are typically referred to by the specific class or more accurately, by the aeromedical standards classification that applies to an aircrew member. The type of duties performed by the aircrew member as well as whether he is an applicant or a trained crewmember determines the applicable standards. These aeromedical standards are analogous to the accession and retention standards found in chapters 2 and 4 of AR 40-501, Standards of Medical Fitness, and applicable to all Army soldiers. These standards apply to Department of the Army Civilians and contractors unless otherwise specified in AR 40-501 or the ATBs. Chapter 4 of this regulation addresses aeromedical standards. DA PAM 40-502 addresses the aeromedical administrative of the aviation medicine program. The following is a brief description of the classes of aeromedical standards and examples of aircrew members of that class. See Table 1 below for a summary of the physical codes found in AERO.

1. Class 1 (1W/1A)

   Class 1 comprises the initial entrance (accession) physical examination standards for pilot applicants, to include warrant officer candidates and commissioned officer candidates. Physical examinations performed for this purpose are always initial FDMEs and are valid for up to 18 months from date of examination. If the Class 1 exam expires or is about to expire prior to reporting date, the applicant must repeat, submit, and have on record a qualified Class 1 physical. These are centrally reviewed and given final disposition by USAAMA.

2. Class 2

   a) Class 2 comprises all rated aviators (pilots) as well as flight surgeons (FSs), aeromedical physician assistants (APAs), and aviation medicine nurse practitioners (AMNPs). These are centrally reviewed and given final disposition by USAAMA.

1. Aeromedical examiners (AMEs) and civilian aeromedical providers do not require a Class 2 flight physical.

2. Contract pilots will complete a FAA Class 2 physical unless the contract stipulates an Army Class 2 flight physical must be completed.

b) Class 2 can be further broken down as follows:

1) Initial Class 2: Accession standards for FSs, APAs, and AMNPs. Accession standards for all rated (trained) aviators returning to aviation service with a 1 or more year break in aviation service or a rated aviator from another service trying to transfer to the Army. Valid for up to 18 months.

2) Comprehensive Class 2 (trained personnel): FDME standards applied to rated aviators and FSs. This also applies to APAs and AMNPs (though these are technically "non-rated") and flight students once in flight training (though not yet rated). A flight student's status changes from class 1 to class 2 at the start of the initial flight training course leading to award of an aeronautical rating, per AR 600-105, Aviation Service of Rated Army Officers, and AR 40-501, Standards of Medical Fitness. This realistically is started at taking the aircraft controls. A comprehensive FDME is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window. Exceptions will be discussed in subsequent sections.

3) Interim Class 2: FDHS standards applied to rated aviators, FSs, APAs, and AMNPs. The FDHS is done in the years that a comprehensive FDME is not required. The annual FDHS is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window.

3. Class 3

a) Class 3 encompasses all other non-rated crewmembers and other personnel required by competent authority to fly in Army aircraft. This includes flight medics, aeromedical psychologists, flight engineers, crew chiefs, stewards, door gunners, and any other personnel not covered under Class 2 or 4. These are centrally reviewed and given final disposition by USAAMA.

b) Contract crewmembers will complete a FAA Class 3 physical unless the contract stipulates an Army Class 3 flight physical must be completed.

c) Class 3 can be further broken down as follows:

1) Initial Class 3: Accession standards for non-rated aircrew. Valid for up to 18 months.

2) Comprehensive Class 3: Retention standards for non-rated aircrew. An annual FDME is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window. Exceptions will be discussed in subsequent sections.

3) Interim Class 3: Retention standards for non-rated aircrew. The FDHS is done in the years that a comprehensive FDME is not required. The annual FDHS is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window.

4. Class 4—Military ATC and Military and Civilian UAS Operators

a) These standards are applied to military air traffic controllers (ATC) and unmanned aerial system (UAS) operators. These are centrally reviewed and given final disposition by USAAMA.

b) Contract UAS operators will complete a FAA Class 2 physical unless the contract stipulates an Army Class 4 flight physical must be completed.

c) Class 4 can be broken down further.

1) Initial Class 4: Accession standards for all ATC and UAS operators. Valid for up to 18 months.

2) Annual Class 4: Retention standards for all ATC and UAS operators. A comprehensive FDME is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window. Exceptions will be discussed in subsequent sections.

3) Interim Class 4: Retention standards for all ATC and UAS operators. The FDHS is done in the years that a comprehensive FDME is not required. The annual FDHS is generally valid for a period of 12 - 14 months based on when it is completed within the birth month window.

5. Class 4—Department of the Army Civilian (DAC) and Contract ATC

a) Current Operating Manual for Qualification Standards for General Schedule Positions Office of Personnel Management (OPM) standards address both application and retention for ATCs, found at https://www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/2100/air-traffic-control-series-2152/. While the standards may appear outside the norms of standard care, remember they are occupational standards. Paragraph F, and specifically subparagraph (3), provides the verbiage to raise issue and concern when reviewing or discovering medical issues that are potentially hazardous, warranting waiver consideration. Note: OPM standards do not outline any process for managing standards failure or medical conditions, and thus refer back to AR 40-501 and the Aeromedical Policy Letters for the evaluation, management, and annual requirements of medical conditions for waiver consideration. The APLs and ATBs apply to all DAC or Contract ATC civilians unless otherwise specified in the APLs.

b) The Class 4 FDME requirements, as outlined in paragraph 4-35 of AR 40-501 will be used as the basis for conducting annual FDMEs for DAC and contract ATC personnel. OPM standards apply for these individuals. Refer to the Aeromedical Technical Bulletin below on the conduct of these examinations. DA PAM 40-502, chapter 5-12f addresses MTF responsibility for completion of tests, procedures, and consultations, for all Army aircrew required to maintain a valid flight physical as follows: “MTFs complete additional tests, procedures, and consultations required to complete initial and annual FDMEs or FDHSs, and AMSs for all aircrew classes, to include civilians, active duty, and RC, when possible. MTF commanders or ARNG State Adjutant General’s Office may permit supplementary examinations from civilian medical sources to determine fitness for flying duty. These additional tests and consultations are not for the treatment or correction of disqualifying conditions even if such therapeutic interventions may result in the individual being qualified for flight. Conduct additional testing only to the extent required by annual waiver requirements, Aeromedical Policy Letter, or USAAMA Director to determine aeromedical fitness.”

c) Aeromedical Summaries and waiver requests for those conditions not meeting current OPM application or retention standards for DAC and contract ATCs will be processed per current USAAMA policy and the APLs. Review of cases involving DAC or contract ATCs are generally favorable and will include consideration of safety as well as the likelihood of deployment to austere environments or stationing away from regular medical care.

Table 1: Physical Codes in AERO

Physical Codes in AERO	Description
AS	Aeromedical Summary
Class 1 Physicals	
IA	Commissioned Officer flight school applicant
IW	Warrant Officer flight school applicant
For use at Fort Rucker Only	
RO	Commissioned Officer student aviator
RW	Warrant Officer student aviator
RA	Birth month realignment student aviator
Class 2 Physicals	
AI	Rated aviator initial - used only for aviators with 1 or more years since last flight physical, transferring from another service, or rated international pilot coming to Fort Rucker with no prior US Army flight physicals
AA	Rated aviator comprehensive FDME (long)
AB	Rated aviator FDHS (short)
Class 2F	
FI	Flight surgeon initial FDME
FA	Flight surgeon comprehensive FDME (long)
FB	Flight surgeon FDHS (short)
PI	Physician assistant or nurse practitioner initial FDME
PA	Physician assistant or nurse practitioner comprehensive FDME (long)
PB	Physician assistant or nurse practitioner FDHS (short)
Class 3	
CI	Nonrated aircrew initial FDME
CA	Nonrated aircrew comprehensive FDME (long)
CB	Nonrated aircrew FDHS (short)
Class 4	
TI	Military ATC specialist initial FDME
TC	DAC/CIV ATC specialist initial FDME
TA	Military ATC specialist comprehensive FDME (long)
TD	DAC/CIV ATC specialist comprehensive FDME (long)
TB	Military ATC specialist interim FDHS (short)
UI	UAS operator initial FDME
UA	UAS operator comprehensive FDME (long)
UB	UAS operator FDHS (short)

Birth Month Window

The FDME and FDHS are synchronized with the birth month. Army regulations allow for a generous birth month window that encompasses the three-month period preceding the end of the birth month. It includes the birth month plus the two previous months. All exams taken within this period are considered to have been taken within the birth month and will be good to the last day of the birth month of the following year. When operationally required to complete a FDME or FDHS prior to entering the birth month window, contact USAAMA for guidance and approval.

Example: A soldier born in July may begin his FDME or FDHS 3 months prior to 31 July. That means he/she can start the process on 1 May and must complete it no later than 31 July. By the same token, if he/she completes it in May it will still be valid until the last day of July in the following year. All exams taken within this period comply with meeting the requirement.

Birth Month Realignment

Just as the type of physical (comprehensive [FDME] or interim [FDHS]) is aligned with a crewmember's age, his/her physical is aligned with his/her birth month. The physical is completed in conjunction with the birth month (in the three-month window) and it is valid until the last day of the birth month the following year. Sometimes, a crewmember may get a physical outside of his/her birth month window. The initial FDME is done without regard to the birth month and it is performed when it is needed for application to aviation service. Another example is deployment that can impact and upset the birth month cycle. Other examples include FDMEs performed for permanent aeromedical suspension, FEB, or in conjunction with a mishap investigation. All of these can disrupt the birth month cycle.

In these cases, we strive to realign the crewmember with his/her birth month and avoid performing excessively frequent FDMEs and FDHSs. In these cases, Table 2 may be used. This table provides you with the maximum period of validity (18 months) for a physical in order to realign the crewmember with his/her birth month. To avoid confusion with the flight records section, the aeromedical provider must clearly document the "birth month realignment" in the remarks block of the DD Form 2992. Otherwise, the flight records sections may ask questions as to why the upslip was valid for longer than 12 months.

Example: A crewmember has a July birth month, but he/she just had an FDME post-mishap in February, the flight provider can extend that validity of clearance until July of the following year instead of performing another FDME or FDHS in five months. In this example, the FDME will have a period of validity of 17 months (remember, the maximum allowed is 18 months).

Note this has nothing to do with extensions beyond the end of the birth month. That topic follows next. The FDME or FDHS must be completed prior to the end of the birth month in which it is due.

Table 2: Birth Month Realignment Table (number of months for which a flight physical is valid):

	Month in which the flight physical was completed											
Birth Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Jan	12	11	10	9	8	7	18	17	16	15	14	13
Feb	13	12	11	10	9	8	7	18	17	16	15	14
Mar	14	13	12	11	10	9	8	7	18	17	16	15
Apr	15	14	13	12	11	10	9	8	7	18	17	16
May	16	15	14	13	12	11	10	9	8	7	18	17
Jun	17	16	15	14	13	12	11	10	9	8	7	18
Jul	18	17	16	15	14	13	12	11	10	9	8	7
Aug	7	18	17	16	15	14	13	12	11	10	9	8
Sep	8	7	18	17	16	15	14	13	12	11	10	9
Oct	9	8	7	18	17	16	15	14	13	12	11	10
Nov	10	9	8	7	18	17	16	15	14	13	12	11
Dec	11	10	9	8	7	18	17	16	15	14	13	12

Note: Read down the left column to the examinee's birth month. Read across to month the physical was completed. The intersection number is the maximum validity period.

Extensions

If the FDME or FDHS cannot be performed prior to the end of the birth month, the aviator may request and the flight provider may grant a one calendar month extension (to the last day of the following month). An extension must be requested in the birth month prior to the end of the birth month. Any extensions requested and granted in the month after the birth month are not valid. The effective date of the extension is the day it was requested.

Example: the Soldier born in July fails to complete the FDME/FDHS before 31 July. The Soldier may request an extension in July before the end of July and the flight provider may grant an extension and

upslip to cover him/her through 31 August. Back-to-back extensions or extensions exceeding one calendar month are not authorized. If on 31 August this crewmember still has not completed his FDME or FDHS, he/she must be grounded. The only exception to this policy is per special policy directive from the Surgeon General's office.

TIP: If the aviator completed the FDME/FDHS in time, but more assessment or testing is required (such as failed level 1 or the cardiovascular screening program that requires an AGXT and there is a 30-day or more wait for scheduling), the flight provider may, if aeromedically appropriate, complete the DD Form 2992, checking the "Cleared After Flight Duty Medical Examination" and "Other" blocks, recommending in the remarks section, "Continue FFD for (30, 60, or 90) days until evaluation complete." The medical exam has been accomplished, but is not finished. This keeps the aircrew engaged and tracked to get the FDME/FDHS completed. Avoid giving the blanket full year upslip with the expectation that everything will be completed. Out of sight, out of mind occurs too often and completing the physical is forgotten. Subsequent physicals filed may be returned as disqualified incomplete.

Civilian Aeromedical Providers and AMEs Physicals

While civilian aeromedical providers and AMEs are not required to maintain a current Class 2 flight physical, all are encouraged to do an initial Class 2F/2P flight physical in preparation for attending the US Army Flight Surgeon Primary Course.

Internal Summary—The Army Flight Physical Key Points

1. The period of validity for all physicals is determined by if it is an initial physical or a periodic physical (comprehensive or abbreviated). Regardless of class (1, 2, 3, or 4), all initial FDMEs are valid for up to 18 months, and all periodic physicals are valid for 12 - 14 months based on when it was completed during the birth month window.

2. All FDMEs and FDHSs should be completed within the birth month window.

3. All periodic FDMEs and FDHSs upon completion are valid until the last day of the birth month in the following year.

4. The period of validity of a periodic FDME or FDHS may be extended up to 18 months in order to realign a crewmember with his/her birth month. See the Birth Month Realignment Table above (Table 2).

5. An extension for only one calendar month beyond the birth month is possible. No other extensions beyond this are allowed.

Completing the Flight Physical Paperwork

To ensure a FDME or FDHS is completed properly, use AERO and the checklists during completion of the FDME or FDHS and review it for accuracy prior to submission. The next pages provide checklists for all physicals (tables 3 through 9). Physicals are commonly broken down into two parts—Part 1, the setup, and Part 2, the examination completed by the aeromedical provider. This is an artificial break to allow time for the labs, vision, hearing, and paperwork to be completed and resulted, but not required. It is employed at most Army clinic and some places have the ability to get it all done without delay. The checklists are an aid for the aviation medicine clinic staff in completing Part 1 of the physical. With the few requirements for the FDHS, both parts can easily be completed the same day. Be sensitive to the needs of your crewmembers and if necessary, conduct the entire physical on the same day (Part 1 in the morning, Part 2 in the afternoon).

Part 1

Part 1 of a physical consists of compiling all the information/data required on the DD Form 2807-1 and DD Form 2808 or DA Form 4497-R. It covers:

- Personal information
- Past medical history

- Vital signs/Anthropometrics
- Vision testing
- Audiology
- ECG (Only required on initial FDMEs and then annually starting at age 40 as part of Cardiovascular screening program.)
- Dental
- Pap result (Not required on Initial FDMEs)
- Required Labs
- Review and completion of any annual waiver or information requirements
- Creation and data entry into AERO

Part 2

Part 2 is the aeromedical provider's hands-on part of the physical. Ideally, all the data collected in Part 1 is in AERO and available for review when the patient returns for Part 2. This way, the physical exam may be completed and submitted in AERO. In addition, this is the time to address PHA and preventive health measures and key areas of medical history, such as cardiovascular risk factor reduction, use of dietary and herbal supplements, and/or use of over the counter products. Detailed guidance for the completion of the examination portion of the DD Form 2808 can be found in AR 40-501, and in the applicable ATBs below, which include information for the completion of additional aviation specific tests: vision tests, valsalva, reading aloud test, and anthropometrics.

FDME/FDHS Checklists

Notice that the checklists have several features to ensure accuracy and completeness. There is no requirement to use these checklists—it is furnished as an aid for clinic operations. AERO is in sync with the checklists, except for the OPM standards for the Department of the Army Civilians and contract ATCs. Some issues to consider:

1. Date of birth and age for this exam are noted at the very top. This will help you determine:
    - Does he/she require a comprehensive or interim exam?
    - Is the patient over 40? (triggers over 40 requirements)

Remember that when a crewmember reports for his/her comprehensive FDME, this is usually reporting one or two months prior to the birth month. In determining the type of physical (comprehensive or abbreviated), annotate the age for the upcoming birthday. For example, a crewmember is 38 today but will be 39 next month. Use 39 as the age for this exam.

2. Aviation requirements for HIV testing are required with the comprehensive FDME every five years. Remember that for Army Force Protection requirements, HIV testing is required every two years. This should be done, but it only requires reporting on the comprehensive FDME.

3. Good telephone, address, and email points of contact are noted in order to facilitate contact with the patient.

4. Notice there are only three types of physical exams regardless of the class, except Class 1 that is always an initial physical.
    - Initial
    - Comprehensive
    - Interim (Abbreviated)

The contents for all initial physicals are the same regardless of class, except the Class 1 that requires anthropometric measurements and a cycloplegic refraction. The contents for all comprehensive FDMEs

and the FDHS are the same for Class 2, 3 and 4. The exception is for Class 4 civilian and contractor ATC personnel that have different standard as outlined in the ATB for ATC Medical Standards (Department of the Army Civilians and Contractors). Note that individuals with an existing waiver may have additional requirements based on their annual waiver requirements as specified in the APL for the medical condition or as specified in AERO. Table 4 depicts the differences between physical type and class when they exist. Select the applicable column and ensure all items in the column are completed.

5. There are two additional sections that are age dependent and may be applicable. If they are, ensure they are completed. These sections are listed immediately following the three main columns. They are required for all types of physicals (initial, comprehensive and abbreviated).

- Over 40
- Retirement/Separation

6. The last section allows the administrative staff to note any additional tests or studies that may be required (for information only or waiver requirements). The easiest way to determine this is to check AERO as well as ask the patient. If the aircrew member has a waiver, a copy should be kept in the electronic health record and if not available then in the paper health record (HREC). The History Summary within AERO will mention all waivers in effect and any additional tests or studies required beyond those listed in the annual waiver requirements in the APLs. If any additional tests or studies are required, the clinic staff should order them now to ensure the results are back in time for Part 2. If there are any questions reference additional requirements, the clinic staff shall address them with the aeromedical provider during Part 1. Tables 4 and 5 provide a consolidated list of physical requirements by type.

The Required Forms (available in AERO)

Initial and Comprehensive FDME: Performed on the same DD Form 2807-1 and DD Form 2808 on which other military physicals are performed. When the crewmember shows up for Part 1 of his/her FDME, he/she should fill out all the demographic data either on paper and/or directly to AERO. All entries (dental, optometry, etc.) should be annotated either electronically or manually. Submission to USAAMA when completed should be done via AERO.

Interim FDHS/Flying Duty Health Screen: Performed on DD Form 2807-1 and DA Form 4497-R and entered as detailed in the paragraph above. Submission to USAAMA should be done via AERO.

The DD Form 2807-1 and DD Form 2808 or the DA Form 4497-R, whichever is submitted to meet requirements, must be reviewed. Submission in AERO will put an electronic signature on the forms. All physicals submitted by any method other than AERO requires a manual signature on the physical forms. ECGs with abnormal readings may be requested by USAAMA but remember to code the interpretation on the AERO FDME or FDHS.

Table 3: Summary of Requirements for FDME and FDHS

Home Phone: ( ) Work Phone: ( )	DOB:	Age for this exam:	HIV Required? Yes/No	Date:
Class 1 and all initial Class 2, 3 and 4	Comprehensive FDME: Every 5 years between the age of 20 and 50 (ages ending in 0's and 5's) then annually thereafter		FDHS	
DD Form 2807-1 completion Vital Signs:_____ • Blood pressure, pulse, height, and weight • Waist circumference in cm if BMI exceeds 30 • Anthropometric measurements (Class 1 only) Vision:_____ • Visual acuity (near and distance), phorias by AFVTA, cover-uncover test (tropias), near point of convergence, intraocular pressures, color vision, stereopsis/depth perception, visual fields and night vision by history • Refraction ◷ Cycloplegic (Class 1 only) ◷ Manifest (All classes if uncorrected worse than $20/20^{-1}$) • Corneal topography (Class 1 only) Audiogram:_____ ECG:_____ Dental:_____ Pap results:_____	DD Form 2807-1 completion Vital Signs:_____ • Blood pressure, pulse, height, and weight. • Waist circumference in cm if BMI exceeds 30 Vision:_____ • Visual acuity (near and distance), phorias by AFVTA, stereopsis/depth perception and color vision • Manifest refraction (all classes if uncorrected worse than $20/20^{-1}$) Audiogram:_____ Dental:_____ Pap & Pelvic (Gyn report accepted):_____		DD Form 2807-1 completion Vital Signs:_____ • Blood pressure, pulse, height, and weight. • Waist circumference in cm if BMI exceeds 30 Vision:_____ • Visual acuity (near and distance) and stereopsis/depth perception • Manifest refraction (all classes if uncorrected worse than $20/20^{-1}$) Audiogram:_____ ECG (required if clinically indicated, required for a waiver per the APLs or age 40 or over):_____ Dental (See notes below):_____ Pap & Pelvic see notes below (Gyn report accepted):_____	
Labs • Urinalysis with microscopic • Hematocrit/hemoglobin • HIV • Fasting blood sugar • Sickledex • Lipid panel (Cholesterol, HDL, LDL and Triglycerides) • Pap smear per clinical practice guidelines/society recommendations.	Labs • HIV • Urinalysis with microscopic • Hematocrit/hemoglobin • Fasting blood sugar • Lipid panel (Cholesterol, HDL, LDL and Triglycerides) • Others required for a waiver per the APLs • Pap smear per clinical practice guidelines/society recommendations.		Labs Required for the following: • Waiver requirement • Clinically indicated • Over 40 requirements • Pap smear per clinical practice guidelines/society recommendations.	

Notes	Notes	Notes
• RAT and AA • Valsalva • Refractive surgery (see APL) • Contact lens wear (see APL) • Fecal occult blood or equivalent testing required at age 50 and over • Class 1 and Aviation SERE: DD Form 2808 block 40 annotate: “Not afraid of dark spaces or confined places.”	• See below for 40 and older requirements • Fecal occult blood or equivalent testing required at age 50 and over.	• Health screening and directed physical exam • Dental and Pap/pelvic are recommended for health promotion but are not required FDHS entries • Fecal occult blood or equivalent testing required at age 50 and over.

Age 40 and over for all classes initial, comprehensive FDME and FDHS add:	Retirement (see AR 40-501, Chapter 3 for full list of requirements)
• Fasting blood sugar • Lipids • Cardiac Risk Screening Program (CVSP) – Cardiac risk index calculated by AERO • Fecal occult blood or equivalent testing required at age 50 and over • Mammogram: 40, 42, 44, 46, 48, 50 and they yearly (required for all military females) • Intraocular pressures • ECG	• Perform a comprehensive FDME (FDHS is not authorized for a retirement physical) • CXR if age 40 or over • DD Form 2697 (Report of Medical Assessment) • Counseling on Hepatitis C screening Note: Retirement physicals must be a comprehensive physical using DD Forms 2807-1 and 2808.

Additional Tests, studies and consults for waivers and information only conditions (see APLs):		
Last Name First Name MI Rank	Provider’s Stamp	Status of physical: Status of AMS:

Table 4: Summary of DD Form 2808

Block on DD Form 2808	Class 1 and Class 2/3/4 Initial	Class 2/3/4 Comprehensive
1-16. Admin Data	Y	Y
17 – 44. Clinical Exam Dental Fecal Occult Blood or equivalent Test	Y Y >age 50	Y Y >age 50
45a. Urine Albumin	Y	Y
45b. Urine Glucose	Y	Y
47. Hematocrit and Hemoglobin	Y	Y
49. HIV	Y Annotate date drawn	Y(3)(4), Force protection every 2 years Annotate date drawn
52a. Pap Smear	(3)	(3)
52c. Sickledex	Y	N
53. Height	Y	Y
54. Weight	Y(7)	Y(7)
58a. Blood Pressure – only one reading required	Y	Y
57. Pulse	Y	Y
60. Other vision: Cycloplegic Refraction (annotate procedure in block 73. Notes) Corneal Topography (annotate results in this block or block 73)	 Class 1 only Class 1 only	 N N
61. Distant Vision	Y	Y
62. Manifest Refraction	(5)	(5)
63. Near Vision	Y	Y
64. Heterophorias Cover Test / Cross-cover test Near Point of Convergence	Y Y Y	Y N N
66. Color Vision	Y	Y
67. Depth Perception	Y	Y
68. Field of Vision	Y	N
69. Night Vision History	Y	N
70. Intraocular Pressure	Y	(2)(3)
71a. Audiometer	Y	Y
72a. Reading Aloud test	Y	N
72b. Valsalva (block 22 in AERO)	Y(1)	N
73. Notes (continued) Additional Labs: Urine Micro (WBC and RBC) Total Cholesterol, HDL, LDL, and Triglycerides CAD Risk Index Fasting Glucose EKG Chest X-ray Anthropometrics Aeronautical Adaptability Cycloplegic Protocol Waist Measurement in cm Corneal Topography (annotate results here or block 60)	If needed Y(6) Y (2) Y Y N Class 1 only Y Class 1 only (7)(8) Class 1 only	If needed Y(6) Y (2) (2)(3) (2)(3) (3) N N N (7)(8) N
74a. Qualification	Y	Y
77. Summary of Defects	Y	Y
78. Recommendations	Y	Y
81a – 84b. Examiner Names and Signatures	Y	Y

Notes:
(1) Not required for Class 4 (Air Traffic Control) or UAS operators.
(2) Required age 40 and older.
(3) Required if medically indicated or required by AR 40-501 based on the United States Preventive Health Task Force's recommendations.
(4) HIV testing in civilian aircrew members is voluntary, not required.
(5) Required if unaided near/distant vision is not $20/20^{-1}$.
(6) Urinalysis Dipstick Results of ALL Negative for Blood, Nitrite, and Leukocyte Esterase are acceptable for RBC and
WBC NEG annotations. Microscopic evaluation is not required.
(7) If calculated BMI $\geq$30, waist circumference (in cm) required. Annotate in AERO, page 4 on DD Form 2808, or in remarks section.
(8) Required as per "Cardiovascular Risk Screening Program" APL.

Table 5: Summary of DA Form 4497

Block on 4497	Class 2, 3 and 4 Interim FDHS
1-14b. Admin Data	Y
15. Blood Pressure	Y
16. Pulse	Y
17. Height	Y
18. Weight	Y
Waist Measurement in cm	(6)(7)
20a. Depth Perception 20b. Test Score 20c. Test Result	Y Y Y
21a, Distant Visual Acuity 21b. Near Visual Acuity Manifest refraction	Y Y (5)
22. Intraocular Pressure	Y(2)(3)
23. Audiometry Screening	Y
24. History and Physical	DD 2807-1 and focused physical as required
Fecal Occult Blood or equivalent Testing	Starting at age 50
Pelvic/Pap	(3)
HIV	(1)(3)(4) Force protection=Q2 years Annotate date drawn
Fasting Glucose	(1)(2)(3)(6)
Total Cholesterol, HDL, LDL, and Triglycerides	(1)(2)(3)(6)
CAD Risk Index	(1)(2)(6)
25. ECG	(2)(3)(6)
26. Recommendation	Y
27. APA or Aviation Medicine Nurse Practitioner name and signature	Y
28. Flight surgeon name and signature	Y

Notes:
(1) Not required for Civilian or Contract Class 4 (Air Traffic Control).
(2) Required age 40 and older.
(3) Required if medically indicated or required by AR 40-501 based on the United States Preventive Health Task Force's recommendations.
(4) HIV testing in civilian aircrew members is voluntary, not required.
(5) Required if unaided near/distant vision is not $20/20^{-1}$ or better.
(6) Required as per "Cardiovascular Risk Screening Program" APL.
(7) If calculated BMI $\geq$30, waist circumference (in cm) required. Annotate in AERO DA 4497-R, or remarks section.

***A dental exam is not required on this exam but it is still required for medical force readiness. Don't forget to have all soldiers complete their birth month exam.

Table 6: Summary of Aeromedical Standards – Vision, Hearing, Labs, and Anthropometrics

Aeromedical Vision Standards

Cycloplegic Refraction Standards		Visual Acuity, DQ if worse than:		Phorias, DQ if:		
Class	[**Qualified**]	Distant	Near	Eso	Exo	Hyper
1A/1W	**Sphere**: DQ <-1.50 to +3.00 < DQ **Cylinder**: DQ <-1.00 to +1.00 < DQ	20/50 ETP possible between 20/50 to 20/70	$20/20^{-1}$ ETP possible between $20/20^{-2}$ to 20/40	>8	>8	>1
2/3/4	Not Required	20/400	20/400	>8	>8	>1

Class	Cover-Uncover Test	Cross-Cover Test	NPC DQ If:	Color Vision DQ If:
1A/1W & 2/3/4 Initial	Any detectable movement refer to optometry	Any detectable movement refer to optometry	>100 mm	**PIP**: ≥3 errors out of 14 plates **CCVT:** 1. Rabin CCT **<**55 2. Waggoner CCVT reported as "moderate" or "severe" 3. CAD **>**6
2/3/4 Other	Not Required	Not Required	Not Required	

Aeromedical Vision Standards (All Classes)

Field of Vision, DQ:	If any defects
Depth Perception, DQ:	If >40 seconds of arc at 20 feet • Any error in block B of the AFVT or Optec 2300, or • Any error in lines 1 through 9 for TITMUS II, or • Any error in lines 1 through 7 of the 10 levels in the RANDOT Circle test
IOP, DQ:	• If <8 or >21 mmHg in either eye or >4 mmHg difference between eyes • If <8 due to corneal refractive surgery, so state on FDME or FDHS

Aeromedical Audiology Standards

Qualified if equal or better than:

Class	500 Hz	1000 Hz	2000 Hz	3000 Hz	4000 Hz	6000 Hz
1	25 dB	25 dB	25 dB	35 dB	45 dB	45 dB
2/3/4	25 dB	25 dB	25 dB	35 dB	55 dB	65 dB

Laboratory Normal Values, All Classes

Hct/Hgb: **Male:** 40%-52% / 14-18 g/dL **Female:** 37%-47% / 12-16 g/dL

UA Dipstick: **Glucose** Neg **Protein** Neg | **Micro / Dipstick:** <3 RBC / Neg <5 WBC / Neg

Category	Fasting Blood Sugar	2-Hour Post-Prandial	A1C
Normal	<110	<140	<5.7
Impaired Glucose Tolerance	110-125	140-199	5.7-6.4
Diabetes Mellitus	≥126	≥200	≥6.5
Gestational Diabetes Mellitus	≥105	≥165	≥6.5

Anthropometric Standards Class 1

Total Arm Span (TAS)	Greater than or equal to 164 cm
Crotch Height (CH)	Greater than or equal to 75 cm
Sitting Height (SH)	Less than or equal to 95 cm for TH-67 Less than or equal to 102 cm for all other aircraft

Note: As applicable, reference the OPM requirements for ATC medical standards IAW the appropriate ATB and Tables 12 and 13.

Table 7: Flight Duty Medical Exam and Flight Duty Health Screen Checklist

↗= 50 and over □= 40 and over ■= Required ( ) = Recommended or req by AR 40-501, readiness requirements, or other physicals

*Note: Comprehensive FDME q5 yrs between ages 20-50; then annually

°Note: FDHS requires physical exam only as indicated

Initial	Comp*	FDHS°		Aeromedical Standards	DD2808 Blocks
❒			**Check in & Vital Signs**	**ALL Standards Qualified if:**	
	■	■	4497 DD 2807, DD 2808 (DD 2697 Retirement Physicals)		1-30
	■	■	■ Sitting BP, Pulse, (Temperature)	Pulse ≥50 and ≤100 BP <140/90	56-58
	■	■	■ (Height, Weight)	*See AR 600-9*	53-54
	■	■	■ [Waist circumference (in cm)] Not required if meets standard	If BMI < 30	73
	■		Anthropometrics (1A/1W Only)	Crotch Ht (CH) ≥75cm Total Arm Reach (TAR) ≥164cm Sitting Ht (SH) ≤102cm	73
❒			**Vision**	***Class 1/1A*** / ***Class 2/3/4***	
	■	■	■ Distant Visual Acuity *By projected chart only*	20/50 / 20/400	61
	■	■	■ Near Visual Acuity	20/20 / 20/400	63
	■	■	■ Refraction: Manifest/Subjective (May use lens Rx if corrected to 20/20-1)	Required if not 20/20-1 / Required if not 20/20-1	
	■		Refraction: Cycloplegic (1A/1W only) Annotate cycloplegic protocol *1gtt proparicaine 0.5% 1gtt cyclopentolate 1.0% @1 min and 6min*	-1.50 +3.00 S. Must -1.00 +1.00 Cx. Transpose / Not Required	62
	■	■	■ Stereopsis (Randot, Titmus, or AFVT)	≤40° arc @ 20' (Titmus 0/9, Randot ≤3/10, AFVT:Group B)	67
	■	■	Phorias by AFVTA	≤8 Eso; ≤8 Exo; ≤1 Hyper	64
	■		Cover-uncover test (tropias)	No detectable movement (ORTHO)	64
	■		Near Point Convergence (NPC)	≤100mm	64
	■	□	□ IOPs	≥7 and ≤21mmHg; <4mmHg Δ between eyes	70
	■	■	Color vision (Must use PIP or CCVT)	PIP: ≥12/14 correct or RCCT ≥55 / Waggoner = "Normal or Mild"	66
	■		Visual fields (confrontation)	NTC or FTC OU	68
	■		Night Vision Hx	NIBH	69
	■		Corneal Topography (1A/1W Only)	Normal	73
❒			**Check in & Vital Signs**	***Class 1/1A*** / ***Class 2/3/4***	
	■	■	■ 500 -2000Hz	≤25 dB [no shift > 20 in any freq from baseline (after waiver granted)]	71
	■	■	■ 3000 Hz	≤35 dB	
	■	■	■ 4000 Hz	≤45 dB / ≤55 dB	
	■	■	■ 6000 Hz	≤45 dB / ≤65 dB	
❒			**(Dental) (annual readiness requirement IAW AR 40-3)**	***Class I or II***	
❒			**ECG (Initial, over 40 or required by APL for waiver)**	***See APL (Ensure G-Code is entered in AERO)***	
❒			**Laboratory**	***Male*** / ***Female***	
	■	■	UA w/Micro; Report Glu, Pro, RBC, WBC	Glu Neg ; Pro Neg ; ≤ 2 RBC ;≤ 4 WBC	45,73
	■	■	HCT or Hgb	40-52% (14-18 gm/dl) / 37-47% (12-16gm/dl)	47
	■	■	HIV (annotate date drawn) (optional for DAC)	Performed every 2 yrs	49
	■	□	□ Fasting Glucose	≤109 (see DM APL)	73
	■	■	□ Lipid Panel (chol, HDL, LDL, Trig, Chol:HDL ratio)	*See APL*	73
	■		Sickledex	Negative	73
	□	□	□ Cardiovascular Risk Index (AERO)	<7.5 *(see CV Screening APL)*	73
	↗	↗	↗ Stool Guiac or equivalent (≥50)	Negative	30
			PSA (no longer req'd; age-appropriate counseling)	*See APL*	73
❒			**Radiology**		
			CXR SF, MFF, Dive, Retirement (>40) Physicals only		73
	□	□	□ (Mammogram (Females)) Age 40,42,44,46,48,50, then yearly		73

❒ Flight Surgeon's Evaluation						
		■		Physical Exam		17-44
	■			Reading aloud Test	Satisfactory (Clear, deliberate; without hesitation, error, or stuttering)	72a
	■			Aeronautical Adaptability (AA)	Satisfactory	40
	■			Valsalva (except Class 4)	TM's Mobile	21,72b
	■	■	■	PHA/periodic health assessment (Req DD 2807-1 "Remarks")	Hx + Education for Tobacco/EtoH/Mental Health/TBI + age-spec req's	29/73
	■	■	■	Contact Lens or Refractive surgery history (Comp or FDHS if new history)	See Corresponding APLs	
	■			"Not afraid of dark or confined spaces" (SERE Statement - Class I Only)		73
	■	■	■	PAP Test & pelvic (Chlamydia req for Female <25y/o)	Pap smear per clinical practice guidelines/society recommendations	18,52
				DRE(+Prostate) - Only if clinically indicated or req'd by waiver		30
	(■)			SF, MFF, Dive 💻☮ G6PD, WBC, CXR		73
	(■)			Pre-commissioning/induction 💻☮ Pregnancy Test, Urine Drug/EtOH Screen		46-51
				Retirement 💻☮ Comprehensive exam + CXR (>40), DD FORM 2697, Counseling re: HCV		73

Additional tests, studies and consults needed:

⚷↗**Home:**	**DOB:**	**Today's Date:**
⚷↗**Work:**	**Age:**	**Date of last Comprehensive FDME:**

Name	**Rank**	**Provider's Stamp**	**Status**
SSN	**Unit**		

Table 8: Corneal Refractive Surgery Information Required

Corneal Refractive Surgery Worksheet

Flight Applicant Identification:

Last Name:_____ First Name:_____ Middle Initial:_____

Procedure History:

1. Procedure Date(s): _____ _____
   Type: [ ] PRK [ ] SMILE [ ] LASIK/LASEK
   Eye: [ ] Both [ ] Right [ ] Left

2. Pre-op Refraction: **Pre-op refraction standard for info only: Sphere -6 to +4 and Cylinder -3 to +3; use sphere equivalent calculation (sphere + ½ cylinder) to determine if meets info only standards. Values outside the above require an AMS.**
OD Sphere_____Cylinder_____Axis_____
OS Sphere_____Cylinder_____Axis_____
AMS waiverable pre-op refraction: Sphere -6 to -8

[ ] Pre-op refraction not available – **If pre-op refraction is not available a dilated fundus exam with scleral depression is required.**
Dilated fundus exam with scleral depression: [ ] Normal [ ] Abnormal

Current Optometry Exam Date:_____
Optometry Exam: **Minimum of 6 weeks post-op for those already on flight status and 3 months for all applicants.**

3. Refraction Post-operative:
   [ ] Manifest – Only if eyewear is necessary for 20/20 and no cycloplegic done.
   [ ] Cycloplegic – Only required for pilot candidates (1A/1W and RO/RW FDMEs);

OD Sphere_____ Cylinder_____ Axis_____
OS Sphere_____ Cylinder_____ Axis_____

STD: Cyclo: Sphere: -1.5 to +3.0
Cylinder: -1 to +1

4. Visual Acuity:
Distant: OD 20/_____ Corrected to 20/_____ OS 20/_____Corrected to 20/_____
Near: OD 20/_____Corrected to 20/_____ OS 20/_____Corrected to 20/_____

5. Intraocular Tensions:

OD_____ OS_____

STD:
1. ≤21 mm Hg. If less than 8 mm Hg requires optometry note stating otherwise normal.
2. Difference of <4 mm Hg between eyes

6. Slit Lamp Exam (SLE for Haze)
OD: 0 1 2 3 4 [ ] Non-pathologic for 1+
OS: 0 1 2 3 4 [ ] Non-pathologic for 1+

STD: Haze = 0 or 1+ (optometry states non-pathologic in each eye)
Haze Scoring: 0 = no haze (passing), 1 = trace haze, 2 = minimal, 3 = moderate, and 4 = iris obscured

7. Corneal Topography (required):
[ ] Acceptable
[ ] Abnormal
Reason abnormal: _____

8. Low Contrast Sensitivity (LCS):
OD: 20/_____
OS: 20/_____

STD: LCS 20/60 or better each eye or comment as below.

[ ] Contrast sensitivity testing not readily available. Applicant denies difficulty with night vision, glares, halos, or visual distortions.
Note: If SLE Haze = 1+ normal low contrast sensitivity testing plus annotation it is non-pathologic is required.

Submitted by:_____ Date:_____

Contact Info:_____

Upload form to AERO or fax or e-mail to USAAMA staff:
Phone 334-255-0749/0750 (DSN 558)
Fax: 334-255-0747
E-mail: usarmy.rucker.medcom-lahc.list.lahc-aero-helpdesk@mail.mil

Table 9: Army Anthropometric Standards for Entry Pilot Training

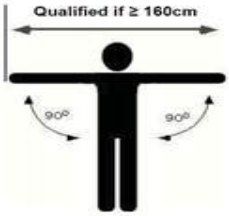
Measurement	Class 1/1A and RW/RO
	Qualified if:
Crotch Height	> 72.0 cm
Total Arm Reach	> 160.0 cm
Sitting Height	< 108.0 cm

Crotch Height (Leg Length) - The subject must stand completely erect against a wall, heels together, weight evenly distributed, and knees locked. The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline.

Total Arm Reach - The subject must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked. The fingertips of one hand must be in contact with the adjacent wall in the corner of the room. The horizontal distance between fingertips is recorded.

Sitting Height - The subject must sit on a hard, flat surface, facing forward, feet flat on the floor, with buttocks, shoulders, and back of head against the wall. Using a right angle on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.

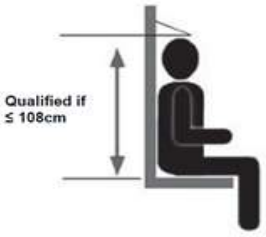
Anthropometric Diagrams



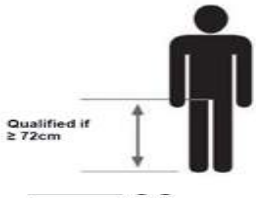
TOTAL ARM REACH (TAR) — The aviator candidate must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked with the fingertips of one hand in contact with the adjacent wall in a corner of that room. The horizontal distance between fingertips is recorded in centimeters.
TAR_____cm (std ≥160 cm)

SITTING HEIGHT (SH) — The aviator candidate must sit on a hard flat surface, facing outward, feet flat on the floor, with the buttocks, shoulders, and back of head against the wall. Using a straight angle ruler on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.

SH_____cm (std ≤ 108.0 cm)



CROTCH HEIGHT (CH) — The aviator candidate must stand completely erect against a wall in bare feet, heels together, weight evenly distributed, and knees locked. The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline. Results are recorded in centimeters.



CH_____cm (std > 72 cm)

x_____
Signature of Examiner / Date

If out of standards, see Anthropometric APL.

Special Tests—Aviation Unique

The flight physical is conducted just like any other physical exam. The procedure is the same. There are a few items that are commonly checked on the flight physical that most physicians are unfamiliar with because they are unique. Some of these items may be performed somewhat differently between the various military services and the FAA. These tests and procedure instructions are written in the form of

Aeromedical Technical Bulletins (ATB). Aeronautical Adaptability is found in the APLs and AR 40-501 and the remaining topics below are in the ATBs.

- The Valsalva Maneuver
- Reading Aloud Test
- Anthropometrics
- Cycloplegic Refraction
- Color Vision Testing
- Binocular Depth Perception
- Aeronautical Adaptability
- Aeromedical Graded Exercise Tolerance (AGXT) Test
- Class 4 Civilian OPM Standards and Requirements

Aeromedical Adaptability (AA)

It is easier to explain what Aeromedical Adaptability is not than it is to explain what it is. An unsatisfactory AA is not a DSM V diagnosis. AA covers sociobehavioral factors considered potentially unsuitable for adapting to military aviation, both medical and non-medical. It is behavior that may be caused by underlying, undiagnosed psychiatric disorder, or traits, that often do not meet full DSM-V criteria, but it is not limited to this. There is no diagnostic test or battery of questions to determine whether the aviator is AA Satisfactory (SAT) or Unsatisfactory (UNSAT). Aeromedical Adaptability is covered in AR 40-501, paragraph 4-33.

UNSAT AA is a consensus of opinion developed after a thorough investigation determines that a certain behavior or conduct is unadaptable or unsuitable for Army aviation. It may be a fear or trust issue, a breakdown in effective crew coordination, or personality traits adversely affecting mission execution and completion. This often will involve the aeromedical provider(s), aviation chain of command (military) or supervisory chain (civilian), and often a psychologist/psychiatrist evaluation. Admittedly, this is not an exact science and often the case should be discussed with USAAMA prior to rendering the final determination. The issue in question may not be a medical issue, but rather, and more often, an administrative, command issue, or a Flying Evaluation Board issue.

Before rendering an UNSAT AA, it is best to step back and review the reasons for making this determination. Was it a “bad” provider-patient interaction? Was it concealment of information (often from encouragement from others) due to fear of not being qualified for flight, but not knowing the policies and that the condition is amenable to an exception to policy or waiver? Is it other observations? USAAMA will often, but not always, request the following:

1. The patient undergo a psychological evaluation and testing to identify or eliminate an underlying psychological diagnosis or traits that may be concerning for aviation service.
2. Interview with another aeromedical provider.
3. Memorandum from command in trained aircrew.

An UNSAT AA in an applicant is an automatic DQ. Fixing this, if in error, requires an aeromedical summary requesting the initial determination be overridden with the “new” information.

An UNSAT AA in a trained aircrew is a permanent suspension and shall have an aeromedical summary submitted for removal from future aviation duties. Again, repairing an incorrect determination requires an aeromedical summary request to override the previous determination with the “new” information.

Aeromedical Disposition

The aeromedical provider first makes the fitness for duty determination after careful examination and thoughtful application of current aeromedical standards and annotating such on the DD Form 2992, Medical Recommendation For Flying or Special Operational Duty (up and downslip). USAAMA reviews all classes of physical and displays its determination in AERO with 2-letter codes (see table 10 below)

Table 10: AERO's USAAMA Aeromedical Disposition Codes

AERO Qualification Status	AERO Code	Notes
Qualified	QU	Qualified with no waivers.
Qualified information only	QI	Medical condition is tracked but does not require a waiver.
Qualified deployed incomplete	QD	Physical done under deployment standards meaning not all physical requirements were completed. Must complete the missing items within 90 days from redeployment.
Disqualified	DQ	Disqualified and waiver is not possible or new disqualified condition found by USAAMA that requires an evaluation.
Disqualified incomplete	DI	Disqualified due to missing information required by USAAMA.
Waiver recommended	WR	USAAMA recommends a waiver to the waiver authority.
Waiver granted	WG	Waiver has been approved by the waiver authority.
Waiver continued	WC	Meets the annual waiver requirement for an existing waiver.
Exception to policy recommended	ER	USAAMA recommends an exception to policy to the waiver authority.
Exception to policy granted	EG	Exception to policy has been approved by the waiver authority.
Exception to policy not recommended	EN	Exception to policy is not recommended to the waiver authority.
Exception to policy or waiver denied	WD	Exception to policy for Class 1 or waiver for Class 2, 3 or 4 initial physicals is not approved by the waiver authority.
Exception to policy continued	EC	Has an existing exception to policy, has not completed training and continues to meet the annual waiver requirements.
Suspension recommended	SR	Suspension recommended by USAAMA to the waiver authority.
Suspension granted	SG	Suspension approved by the waiver authority.
Suspension continued	SC	Has an existing suspension with no change or waiver request to reverse suspension is denied.

1. Medically Qualified [QU, QI (Qualified, Information Only)]: Whenever a crewmember meets the aeromedical standards set forth in AR 40-501 and the Aeromedical Policy Letters (APLs).

2. Medically Disqualified [DQ, DI (Disqualified Incomplete)]: Whenever a crewmember does not meet the medical standards set forth in AR 40-501, chapter 4 and the APLs, or is not able to safely perform the duties required, the crewmember is said to be medically disqualified from aviation service. Incomplete physicals shall be identified for deficiencies and corrected with submission of additional information missing or an aeromedical summary per the APLs. Physicals that are submitted as "disqualified," completed but with an identifiably disqualifying and non-waiverable condition, still require an AMS to terminate AVIP as well as alert HRC of unit manning/assignment issues.

A. Permanent Disqualification
When a medical condition that impairs the safe performance of aircrew duties is expected to last longer than 365 days or is specifically listed in AR 40-501, Chap. 4 or the APLs, it is termed as aeromedically permanently disqualifying. Examples include insulin-requiring diabetes, heart attack, HIV seropositivity, hypothyroidism, malignancies, or hypertension. These conditions are listed in AR 40-501 as being unfit for aviation service and are thereby disqualifying. Some of these conditions (i.e., hypothyroidism and hypertension) when properly treated will not present a danger to aviation safety and these crewmembers may apply to receive a waiver. Other conditions such as a heart attack, severe traumatic brain injury, or stroke will present a persistent danger to aviation safety and the aircrew member will usually not be granted a waiver. Permanent disqualifying conditions require a waiver in order for the aircrew to continue in aviation service. See waiver below.

B. Temporary Disqualification
Imposed for a condition that is not permanently disqualifying per the APLs or AR 40-501. It is expected to last less than 365 days prior to resolution. When the condition resolves, the crewmember is again considered qualified to perform aviation duties. Examples include the common cold, ankle sprain, minor back injuries, simple extremity fracture, and uncomplicated pregnancies. If however, the condition fails to resolve within 365 days and/or it continues to prevent the crewmember from safely performing his duties, the condition will be treated as a permanent disqualification (see above). Temporary disqualifications usually do not require waiver action.

3. Waiver [WR (Waiver recommended), WG (Waiver granted)]: For most aeromedical summaries, USAAMA will recommend a waiver from the waiver authority. A document, waiver letter, from the waiver authority (i.e., HRC, NGB, or DAC/contract officials) grants continued flight status in spite of a disqualifying defect. This document waives the requirement for the aviator to meet a specific medical standard and provides the annual waiver requirements to maintain the waiver specified. Medical to include USAAMA recommends waivers and the waiver authority grants the waiver.

4. Exception to Policy [ER (Exception recommended) and EG (Exception granted)]: A matter of semantics, waivers are not granted for Class 1 applicant standards. If a Class 1 applicant does not meet medical standards, he/she must receive an exception to policy prior to entering aviation service. An exception to policy is scrutinized more carefully though the process is the same as that for a waiver. As above, the waiver authority grants the exception.

More semantics: a Flight Student’s status changes from class 1 to class 2 at the start of the initial flight training course leading to award of an aeronautical rating,. Flight students that are now Class 2 aviators require a waiver and not exception to policy.

5. Aeromedical Summary (AS is the AERO code): In order for an aircrew member to get a waiver or exception to policy, the aeromedical provider performs a thorough medical evaluation of the condition and documents the evaluation in an Aeromedical Summary (AMS) IAW the APLs. Use AERO for AMS submission. The AMS process is detailed below and is similar in structure to a Narrative Summary. The flight surgeon reviews and submits the AMS along with his/her recommended aeromedical disposition (waiver/ETP recommended versus not recommended) to the U.S. Army Aeromedical Activity (USAAMA). Only a flight surgeon or AME (physician) may submit an AMS. APAs and AMNPs may not submit an AMS to USAAMA. If a waiver/ETP recommendation is ultimately approved, the crewmember may continue on flight status or be medically cleared to assess to flight training. If not approved, the crewmember will be removed from flight status or flight training selection.

6. Medical Recommendation: The flight provider is a special staff officer on the commander's staff. Like other staff officers, the flight provider is a subject matter expert who makes recommendations to the commander. The flight provider enjoys a position of special trust with the commander and typically, the commander approves the flight provider's aeromedical recommendations. Technically, until the commander approves the flight provider's recommendations, they are just recommendations and carry little weight.

7. Approval Authority: The commander is the approval authority. The goal is to determine at what level of the command this authority resides. When dealing with DA waiver (or exception to policy) recommendations, this is also known as the DA waiver authority. A list of waiver authorities is listed in Table 12 below.

FDME/FDHS Review and Disposition

Class 1, 2, 3 and 4: All class 1, 2, 3 and 4 FDME/FDHSs are submitted to USAAMA at Ft. Rucker via AERO for final review, and disposition (this includes all initial, comprehensive FDMEs, and interim FDHSs). If not submitted via AERO, USAAMA inputs the submitted paper FDME/FDHS into AERO to ensure the FDME/FDHS is complete and that all parameters are within Army aeromedical standards. If it is complete and within standards, it will be stamped or coded as "Qualified" or "Qualified, Information Only." If mailed to USAAMA, the FDME/FDHS will be returned to the originating clinic for inclusion in the health record. If using AERO, the FDME/FDHS form will be printed and placed in the HREC showing the electronic qualification. If the FDME/FDHS is missing required information or it has any parameters outside Army aeromedical standards it will be stamped or coded as "Disqualified Incomplete" or "Disqualified." If mailed to USAAMA, the FDME/FDHS will be returned to the originating clinic with the AERO cover sheet of deficiencies for review to correct the defects, and then resubmission of the FDME/FDHS. If submitted via AERO, the deficiencies are available online under "Reason Returned.". Incomplete FDME/FDHSs will need to be completed and resubmitted to USAAMA with the requested information. Disqualified FDME/FDHSs are discussed below. See Table 10 above for AAMA disposition codes.

Waiver/Exception to Policy (ETP) Review and Disposition

Waiver (class 2, 3 and 4) and Exception to Policy (class 1) review and disposition is performed centrally at USAAMA in a similar manner to FDMEs/FDHSs. USAAMA performs the central medical review and renders its disposition. If incomplete, the AMS is stamped "Disqualified, Incomplete" and returned to the flight surgeon for remedy. If for information only, USAAMA completes its reviews and dispositions accordingly. Otherwise, USAAMA forwards the medical recommendation to the appropriate central waiver authority (i.e., HRC, NGB, etc.). The waiver/ETP recommendation is approved/disapproved by the centralized waiver authority and centrally managed. If granted, the waiver letter or the AERO Abbreviated Waiver Letter shall be filed in the Individual Flight Record Folder (IFRF) and medical record and follows the crewmember from duty station to duty station. Ensure any waiver letters in the IFRF do not contain any medical information that violates HIPAA.

The Waiver Process

This process will be discussed using the central review process employed for Class 1, 2, 3 and 4. The waiver process has been developed to ensure the consistent and proper management of disqualified aviation personnel. This process has been responsible for the safe return of countless aviators to flying duties once effective treatment has been achieved. It also has been responsible for clearly identifying those individuals with medical conditions incompatible with continued safe flying or their continued good health. It allows for consistent health care management of individuals who routinely receive their health care from many different health care providers. With proper utilization of senior health care consultants, it ensures the highest level of health care and provides quality assurance. Most importantly, it ensures the maintenance of a readily mobile effective fighting force.

The entire waiver process normally starts with the local aeromedical provider's office at the time of the discovery of a disqualifying medical condition. Local evaluations and consultations are performed, and the crewmember's condition is carefully documented in an Aeromedical Summary (AMS) in AERO. The AMS is explained in the following section. In addition to documenting the crewmember's work-up, the aeromedical provider also annotates a local aeromedical disposition in the AMS. The recommendation on the medical disposition, qualified or disqualified, from the local aeromedical provider is critical and must be clearly stated. Aeromedical providers are encouraged and welcomed to contact USAAMA to review complex, interesting, or time-sensitive cases as well as the available results of the evaluation or requirements from the APLs. This serves several purposes that ultimately assist in ensuring the complete and necessary work-up is accomplished in a timely fashion to get towards a final disposition for the air crewmember, ATC, or UAS operator. Once the AMS is submitted to USAAMA, it can take several different routes depending on the nature of the problem.

Most waiver requests are straightforward and routine (i.e., those with clear policy established), requiring little more than review for all the required information elements and endorsement. USAAMA's flight surgeon staff will process the AMS to include the final aeromedical disposition and recommendation along with annual follow-up requirements in the form of an official letter from the Director, USAAMA, to the appropriate waiver authority. The waiver authority will provide the final review and render the final decision, the granting of the recommended action in most cases. Any issues or concerns are brought to the attention of USAAMA for clarification. With AERO, time and delay has been greatly reduced in most cases. Occasionally, the USAAMA flight surgeon staff upon initial review may request further evaluation or additional information. Often, USAAMA will attempt to dialogue with the aeromedical provider via phone, email, or AERO messaging to discuss the case, work-up, questions, concerns, or notes from AHLTA. The AMS may be referred to the appropriate aeromedical consultant for input. Additional evaluations or studies may be requested locally or with the Naval Aerospace Medical Institute (NAMI), Pensacola, FL, or the USAF Aerospace Medicine Consultation Service (AMCS), Wright Patterson AFB, OH. With the rapid advancement in medicine, which may outpace policy changes, the ultimate goal is to develop the best recommendation to conserve the fighting strength while keeping in mind the health/welfare/safety of the air crewmember, ATC, UAS operator, unit, and mission.

Cases that are unusual, potentially precedent setting, have no associated aeromedical policy, or that involve significant flight or other operational limitations, may be presented to the Aeromedical Consultant Advisory Panel (ACAP) (see below). Such an example is a newly diagnosed, asymptomatic aviator with HIV. The ACAP is comprised of senior aviation and aeromedical personnel at Fort Rucker. Cases are presented, aeromedical and aviation-related issues are discussed, and a vote of the panel's recommendation is taken. The recommendation of the ACAP is reviewed and endorsed (approved or disapproved) by the Director, USAAMA and forwarded to the appropriate waiver authority. The waiver authority will then take appropriate action, producing a formal letter of waiver, exception to policy or termination notification (suspension).

Waiver processing may be time consuming. Complicated cases or cases that have no precedent often take additional time due to the need for specialty consultation, literature review, or query of other services management. Most routine waivers may be granted temporary clearance pending waiver, and telephonic approval from USAAMA is available for the uncertain or APL directed cases. For rush cases, the most expeditious method is AMS submission via AERO followed by a phone call or email to alert USAAMA AERO helpdesk staff of the need.

Aeromedical Consultant Advisory Panel (ACAP)

Director, USAAMA, appoints voting members to the ACAP. Generally, all aerospace medicine specialists assigned to the Ft. Rucker area are appointed as voting members. Experienced flight practitioners credentialed at Lyster Army Health Clinic are also appointed. US Army Aviation Center of Excellence (USAACE) senior military and DAC aviation personnel are voting members, bringing in the "line" aspect

on cases. Director of USAAMA chairs the ACAP and reviews the recommendations, forwarding the final recommendation to the appropriate waiver authority. The goal of the ACAP is to establish a consensus opinion of aeromedical and aviation experts for case review/disposition and for policy formulation.

Waiver/ETP Criteria

Factors commonly used in the consideration of granting a waiver include feasibility, in-flight safety, impacts on mission and deployability, progressive nature of the illness, requirement for treatment or medication which will not readily be available during mobilization, and ultimately, the needs of the Army. Just because the APLs say that a waiver may be possible does not mean that it will inevitably be granted. In considering a waiver case, the waiver authorities will take into account the above criteria, the condition or combination of conditions concerned, the treatment given to the patient and other relevant factors. If necessary, they will consult medical specialists and line authorities. A consensus of opinion will be developed and forwarded for approval through Director, USAAMA to the waiver authority. The question, "Can a previously suspended/terminated individual be returned to flight status?" is commonly asked. This is possible, but it is very dependent upon the condition and the current requirements of the Army. Aeromedical providers should brief patients who are facing likely disqualification accordingly.

To be considered waiverable, any disqualifying physical or psychological defect is subjected to the following screening criteria:

1. The disqualifying defect must not pose a risk of sudden incapacitation (i.e., risk to aviation safety).
2. It must not pose any potential risk for subtle incapacitation that might not be detected by the individual and would affect alertness, special senses, or information processing.
3. It must be resolved or stable at time of the waiver request (i.e., non-progressive).
4. It must not be subject to aggravation by military service or continued flying.
5. It must not lead to significant loss of duty such as precludes unsatisfactory completion of training and/or military service.
6. It cannot require the use of uncommonly available tests, regular invasive procedures, or non-routine medication especially during deployment or assignment to austere areas.
7. Medication must not have any aeromedically significant side effects; the medication will not mask symptoms subject to acute incapacitation or complications in the aviation environment; and the individual is complaint with medication use.
8. If the possibility of progression or recurrence exists, the first signs or symptoms must be easily detectable and cannot constitute an undue hazard to the individual or to others.
9. It cannot jeopardize the successful completion of a mission.

Temporary Clearance Pending Waiver

The aeromedical provider may grant temporary clearance for minor disqualifications, when following established policy. For example, an aviator with well-controlled hypertension on a stable dosage of an approved agent is routinely granted waivers barring any other underlying medical conditions. This being the case, it is not necessary to keep the aviator grounded pending receipt of the waiver from the waiver authority. The flight surgeon may grant a temporary clearance pending waiver in the interim, expediting return to full duty without compromising aviation safety and keeping with the spirit of applicable regulations. If unsure about granting a Temporary Clearance Pending Waiver, call/email USAAMA. Exceptions: The following conditions listed in the table 11 below may NOT be granted temporary clearance pending waiver. Any aircrew that was previously medically disqualified and suspended from aviation duties who is seeking a waiver to return to flight duties and “re-qualification” should not be given temporary clearance beyond that needed for in-cockpit assessment.

Exceptions: The following conditions listed in Table 11 below may NOT be granted temporary clearance pending waiver. Any aircrew that was previously medically disqualified and suspended from aviation duties who is seeking a waiver to return to flight duties and “re-qualification” should not be given temporary clearance beyond that needed for in-cockpit assessment.

Table 11: Conditions That May Not be Granted Temporary Clearance

Condition	Qualifier
Alcohol Use Disorders	Requires waiver approval by the waiver authority prior to return to full flight duties (FFD).
Any condition necessitating enrollment into IDES with a verified MRDP.	Requires positive retention decision and waiver approval by waiver authority prior to return to FFD. Contact AAMA when retention is anticipated and the condition is stable and waiverable.
Atherosclerotic vascular disease (See Cardiovascular Risk Screening Program APL).	This does not apply to any aircrew member failing CV Risk screening levels 1-3 that subsequently passes a higher level of screening. Those failing Level 4 screening, or that require any catheter-based intervention, require waiver approval by the waiver authority prior to return to FFD.
Cancer	Except single episode of basal cell carcinoma or squamous cell carcinoma of the skin.
CVA and other significant CNS disorders.	Includes TIA/Stroke and seizure disorders.
Gender dysphoria/Undergoing gender transition and having not met DoD/Army stability requirements.	Requires waiver approval by the waiver authority prior to return to FFD.
Loss of consciousness (LOC)	When unexplained.
Medically suspended/terminated from aviation duty.	Those who have been medically disqualified and suspended from aviation service. (Termination orders from HRC or NGB or a suspension letter from the local waiver authority for DACs and select contractors).
Myocardial infarction	Requires waiver approval by the waiver authority prior to return to FFD.
Any condition which obviously impairs personal safety, safe flight, or mission completion.	Contact AAMA for further guidance.
Significant visual disturbances	Includes visual acuity uncorrectable to 20/20-1 or impaired depth perception.
Skull fracture or other severe head/brain injury.	Contact AAMA for further guidance.
Substance Abuse	Requires waiver approval by the waiver authority prior to return to FFD.

Aeromedical Summary: Guide to Completion

An Aeromedical Summary (AMS) is required for any action that requires waiver/exception to policy, permanent medical disqualification/suspension (i.e., permanent termination from flight including UAS and ATC duties), or reinstatement after permanent suspension/termination from flight including UAS and ATC duties. The AMS is available in AERO. An abbreviated, focused AMS may be used for most common, straightforward conditions such as hearing loss or hypertension. The fairly standard abbreviated AMS consolidates the occupational, aviation, social, family, and past medical history, as well as the chief complaint and physical exam findings.

AERO is the preferred method to prepare and submit an AMS. The AMS should be printed and placed in the HREC and updated with the final disposition. Storage in AERO foregoes the need to maintain a file copy for 2 years in the clinic.

If not done in AERO, it should be typed; handwritten submissions are acceptable but must be legible. This will facilitate the incorporation of the AMS into the electronic health record. For typed summaries, at a minimum, an original and a copy of the AMS and supporting documents must be made. The original is forwarded to USAAMA for processing. A copy of the AMS will be place in the crewmembers electronic health record until the original is returned for filing in the electronic health record. This redundancy helps minimize problems with lost mail or PCSs of either the aircrew member or his/her aeromedical provider.

NOTE: Legibility is key. Altered (i.e., whited out, erased, blocked out, etc.) records are not accepted. Again, use AERO.

The AMS is often submitted with the annual FDME/FDHS, but this is not required. What is required is having a current FDME/FDHS on file within AERO. An AMS concludes with the aeromedical provider's recommendation, a simple declarative statement of what will be best for the individual, flying safety, and the Army. Make concrete and positive recommendations such as recommend waiver, exception to policy, suspension, or information only. The recommendations should focus on whether the individual is medically qualified and safe for aviation duty. The aeromedical provider should state the specific chapter/paragraph regulating the condition and any appropriate APLs. The aeromedical provider must remain strictly objective and not allow personal likes or dislikes, any outside pressure, or personal biases to influence this decision. This recommendation should include any restrictions as well as recommendations for follow-up or need for further consultation, which is appropriate but unavailable at the location. USAAMA can help coordinate further evaluation/consultation as necessary.

Organization of Documents for Hard Copy Submission of the AMS

In order to expedite processing of the aeromedical summary, it is important to place documents neatly labeled, tabulated, and collated preferably in chronological order, earlier dates first. This will allow the reviewer to follow chronologically the development/resolution of the defect or condition. The documents should be assembled in the following order:

- Cover letter (optional)
- Aeromedical Summary

Enclosures:

- Any available supportive consultations
- Reports of all operations
- Lab reports, pathology report, and/or tissue examinations.
- Reports of all studies: x-rays, pictures, films, or procedures (i.e., ECG, AGXT, Holter, ECHO, cardiac scans, catheterization, endoscopic procedures, etc.).
- Hospital summaries and past medical care documentation; reports of any proceedings (i.e., tumor board, MEB, PEB, FEB, etc.).
- Letters of recommendation

NOTE: AMSs for civilian/contract personnel should indicate complete contact information for the waiver authority as well as whether the individual is also in the Reserves or National Guard so that the waiver can be forwarded to all appropriate waiver authorities. Follow the template below and you may combine sections as appropriate.

Aeromedical Summary Template

1. Address (of originating facility):

    a. Facility code:
    b. Originating facility address:
    c. Aeromedical provider's name:
    d. Aeromedical provider's telephone number (DSN and commercial)

2. General Information:

    a. Name:
    b. Rank:
    c. SSN::
    d. Age: DOB:
    e. Component:
    f. MOS/AOC:
    g. Years of service:
    h. Profiles:
    i. Previous waivers/terminations:
    j. Home address: Phone:
    k. Unit address: Phone:
    m. How was the condition discovered:
    n. Primary aircraft
    o. Military flight hours:
    p. Current duty
    q. Flying position:
    r. Grounded: Yes or No
    s. Date Grounded:
    t. Temp FFD issued: Yes or No
    u. Date temporary clearance issued:
    v. Date of incapacitation: Date determined to be medically disqualified. This is used for suspensions only.

3. Military/Occupational History:

4. Aviation History:

5. Social and Family History:

6. Past Medical History:

7. Present Problem:

8. Physical Examination:

9. Laboratory and X-Ray Data:

10. Discussion:

11. Recommendations:

12. Synopsis of Diagnoses:

Example:

Diagnosis	**Tests**	**Procedures**	**Medications**
Hypertension	Chem 7,uric acid, CBC, UA		Lisinopril/HCTZ
Coronary Artery Disease	GXT, Echo	Cath	ASA

13. Enclosures:
    I.e.,: Discharge Summary, Outpatient Reports, Pathology Reports, Specialty consultations, Tests/Lab reports (i.e., include actual original tracings, Echo videos, cardiac cineangiograms, etc.), and letters of support from the command, SIPs, etc., as required.

14. Flight Surgeon's Signature Block

AERO Submission and Documents

With AERO being an electronic, web-based system, follow the embedded template to complete the submission. Cut and paste pertinent information from AHLTA/word processing documents as required. For lengthy information, it is acceptable to provide a summary of referenced information. Upload as a PDF all supporting documents and required letters of support to AERO. Any documents not found in AHLTA must be uploaded to AERO to prevent delays in processing. Ideally, USAAMA flight surgeons should be able to review all required information in one narrative summary location. As much as practical, avoid saying, "See AHLTA/HAIMS" especially for any section of the AMS that requires aeromedical decision making or judgment. Additionally, USAAMA relies heavily on the local flight surgeon's opinion given their unique knowledge of the member, the airframe, the unit, and the mission. Facts and figures are less relevant than a concise and well thought out explanation either in support of, or against, ETP/waiver. Directing USAAMA to a separate electronic health record disregards this necessary perspective from the submitting physician.

The Aeromedical Epidemiology Data Registry (AEDR)

Enacted in 1973 per AR 40-501, the AEDR, maintained by USAAMA, contains the medical information concerning the physical and historical data related to Army aviators, which has been migrated and tied into AERO. With USAAMA disposition on FDME/FDHS, entries are made in AERO that appear in the medical history. With hardcopy submissions, this document is returned with the original FDME/FDHS to the originating/return facility or becomes available electronically. The local FS office and the crewmember should review this on an annual basis, ensure compliance with any annual waiver or information requirements, and submit corrections or changes electronically via the AERO/USAAMA helpdesk.

The AEDR provides the compilation of aeromedical history for use in retrospective analyses, ecologic demographic research, queries from OTSG, HRC, other military services, and is used in revision of aeromedical policy and standards. AERO and the AEDR is closely secured and monitored to remain in compliance with HIPAA and security directives. Requests for research or queries should be directed to the Director, USAAMA, or Deputy Director, USAAMA. Information from the AEDR is sanitized of unique personal identifiers prior to release.

Review of the AMS / Waiver Process

1. The aeromedical provider prepares an aeromedical summary (AMS). The AMS is submitted to USAAMA and placed into AERO, if not already. USAAMA's Review/Disposition Service directs it to the Consult Service Inbox.

2. The USAAMA Consult Service reviews the AMS and current FDME/FDHS for its content, compliance, and annotations to support the recommended action. Straightforward cases with clear policies and directives are processed to the Director. More complex, complicated, or precedent setting cases are further reviewed and discussed with the USAAMA Aeromedical staff, Aeromedical consultants, and/or with the Aeromedical Consultant's Advisory Panel (ACAP). Further information, review of AHLTA documentation, and review of AEDR may be utilized for these cases.

3. Complicated or complex cases are further reviewed as above. Some are handled within the Aeromedical Staff (Mini-ACAP) or taken to formal ACAP meetings. Results of Mini-ACAP and ACAP are forwarded to Director, USAAMA, for final review and recommendation.

4. Director's waiver recommendation is forwarded from USAAMA to HRC, NGB, or appropriate waiver authority for final waiver approval or disapproval.

Table 12: Waiver Authorities

Component	Waiver Authority
Active Army or USAR – Classes 1, 2 (aviators), 3 and 4	HRC – Pay Incentive Branch
Active Army or USAR – Classes 2F/P	HRC – Medical Corps Branch
Army National Guard – All classes	National Guard Bureau
Department of the Army Civilians	Commanding General or his/her designated waiver on each installation. Send signed copy to USAAMA.
Contract Civilians	Commanding General or his/her designated waiver on each installation. Send signed copy to USAAMA, and the contracting office.

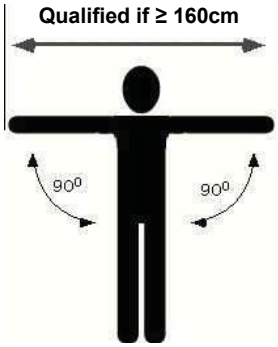
Crotch Height (Leg Length) - The subject must stand completely erect against a wall, heels together, weight evenly distributed, and knees locked. The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline.

Total Arm Reach - The subject must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked. The fingertips of one hand must be in contact with the adjacent wall in the corner of the room. The horizontal distance between fingertips is recorded.

Sitting Height - The subject must sit on a hard, flat surface, facing forward, feet flat on the floor, with buttocks, shoulders, and back of head against the wall. Using a right angle on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.

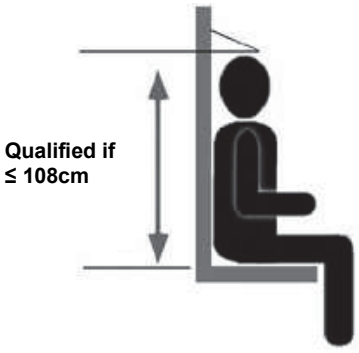
Measurement	Qualified if:
Crotch Height	≥ 72.0cm
Total Arm Reach	≥ 160.0cm
Sitting Height	≤ 108.0cm

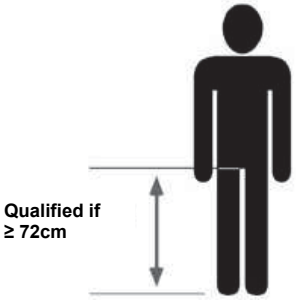
Anthropometric Diagrams



TOTAL ARM REACH (TAR) —the aviator candidate must stand erect against a wall, arms outstretched at a 90 degree angle and parallel with the wall. The elbows must be locked with the fingertips of one hand in contact with the adjacent wall in a corner of that room. The horizontal distance between fingertips is recorded in centimeters.

SITTING HEIGHT (SH) — the aviator candidate must sit on a hard flat surface, facing outward, feet flat on the floor, with the buttocks, shoulders, and back of head against the wall. Using a straight angle ruler on the head, the distance between the sitting surface and the top of the head is recorded in centimeters.





CROTCH HEIGHT (CH) — the aviator candidate must stand completely erect against a wall in bare feet, heels together, weight evenly distributed, and knees locked.
The measurement is taken parallel with the wall from the floor to a point where light contact is made with the perineum in the midline. Results are recorded in centimeters.

ATB: Table 1: Summary of Anthropometric Standards

TAR	▪ Greater than or equal to 160cm is a qualified measurement. ▪ If the range is < 160cm to >/= 154cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 154cm to greater than or equal to 150cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ TAR of less than 150cm is not considerable nor evaluated; this is disqualifying with no ETP recommended.
CH	▪ Greater than or equal to 72cm is a qualified measurement. ▪ If the range is < 75cm to >/= 72cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 72cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.
SH	▪ Equal to or less than 97cm is a qualified measurement. ▪ If the range is > 97cm to </= 108cm, the ICE may be conducted at home station as previously explained. ▪ If the range is > 108cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.

ATB: Table 2: Procedures for each Anthropometric Standard

TAR	▪ Greater than or equal to 160cm is a qualified measurement. ▪ If the range is < 160cm to >/= 154cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 154cm to greater than or equal to 150cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ TAR of less than 150cm is not considerable nor evaluated; this is disqualifying with no ETP recommended.
CH	▪ Greater than or equal to 75cm is a qualified measurement. ▪ If the range is < 75cm to >/= 72cm, the ICE may be conducted at home station as previously explained. ▪ If the range is < 72cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.
SH	▪ Equal to 106cm to </= 108cm is a qualified measurement. ▪ If the range is > 97cm to </= 106cm, the ICE may be conducted at home station as previously explained. ▪ If the range is > 108cm, the only accepted evaluation is an ICE that is conducted at Fort Rucker AL through the POCs provided. ▪ There is no CH measurement below which is disqualifying; an ICE at Fort Rucker by the POCs provided may be recommended.

Note: All inquiries can be addressed by the primary POC, the 110 AB Deputy Chief of Standardization at (334) 255-3259 (voice mail capable). The alternate POC is the 110 AB CCWO at (334) 255-1713. Note: Alternate POC will not assist until referred by primary POC.

ATB: Aeromedical Graded Exercise Test (AGXT)

1. The indications for the Aeromedical Graded Exercise Test (AGXT), also called graded exercise treadmill (GXT), are described in various chapters of AR 40-501, Standards of Medical Fitness, and various APLs where cardiac health is an issue, most often from conditions referenced in the Cardiology Chapter of the APLs, in particular the Cardiovascular Risk Screening Program APL. The guidelines for performing an aeromedical GXT are outlined below to apply a uniform standard in the performance and interpretation of this test on aircrew members.

2. Prior to the AGXT, the aircrew member should be briefed by the local aeromedical provider as to the indications for the test, the procedure, and the significance of the results. The patient should sign an informed consent statement.

3. The following conditions should be assured prior to testing:

    a. Minimum of four hours fasting prior to test.

    b. No tobacco or caffeine products one hour prior to test.

4. The aeromedical GXT must be a maximal effort, limited only by symptoms, exhaustion, or objective signs (medically significant ectopy, dysrhythmia, ischemia, or blood pressure response). Exercise should not be halted on attainment of a predicted maximal heart rate. Often, testing should proceed to 100% of predicted HR or beyond. Clinical decision- making may override termination.

5. A final report of the AGXT including date of study, interpretation, patient’s activity level and attained workload should be annotated with the FDME/FDHS and /or AMS for review and disposition. Actual tracings do not need to be sent, and if required, will be requested by USAAMA.

6. A copy of Aeromedical Graded Exercise Test Report Form (enclosure 1) and Letter to the Attending Physician (enclosure 2) of this ATB should be forwarded with the patient to the attending physician conducting the AGXT.

7. Aeromedical standards for interpretation of treadmill exercise tests in Army aircrew members.

    a. Baseline: The location of three consecutive coplanar ST segments, measured 80 milliseconds after the "J" junction, following 30 seconds of standing hyperventilation. This baseline may be on, above, or below the PQ segment, but must be parallel to it.

    b. Definition of Abnormal tracing: 1.0 or more millimeters of ST depression in three (3) consecutive coplanar complexes, measured 80 milliseconds after the "J" junction, irrespective of slope. Other causes for an abnormal result include: atrial flutter or fibrillation, supraventricular or ventricular tachycardia (three or more consecutive premature beats including multifocal atrial tachycardia), supraventricular or ventricular pairs (couplets), multiform ventricular premature ectopy, ventricular premature R wave on preceding T wave, or hypotensive or excessive hypertensive response of any degree. Chest pain/pressure, angina, infarction, or the suspicion of significant peripheral vascular disease, likewise, constitutes an abnormal result requiring further evaluation and management. If abnormal, apply follow up guidelines from the most applicable APL.

Enclosure 1:

Aeromedical Graded Exercise Test Report Form

Patient Name:		DoD ID#:		Date:
Rank:	Age:	Gender:	Race:	HT/WT (in/lbs):
Medications:			Facility:	
LDL:	HDL:	Chol/HDL ratio:	Tot Chol:	FRI:

Bruce Protocol

Pre-Exercise	Sitting Heart Rate: Hypervent Heart Rate: Supine Heart Rate:	Sitting BP: Hypervent BP: Supine BP:	Resting EKG Analysis:

	Minutes	MPH	% Grade	Heart Rate	BP	Comments (Sxs, EKG changes, etc.)
Exercise	0	1.7	10			
	1					
	2					
	3	2.5	12			
	4					
	5					
	6	3.4	14			
	7					
	8					
	9	4.2	16			
	10					
	11					
	12	5	18			
	13					
	14					
	15	5.5	20			
Post Exercise	Immediate	-	-			
	2	-	-			
	5	-	-			
	8	-	-			

Analysis

Total Exercise Time:	Max BP:	Peak Exercise Heat Rate:	Total Mets:

Reason for Termination

( ) Exhaustion ( ) Chest Pain/Angina ( ) Dysrhythmia
( ) ST Segment Changes ( ) Hypertensive BP Response ( ) Fatigue
( ) Joint/Muscle Pain ( ) Poor Conditioning ( ) Other

Physician Interpretation:

( ) Normal ( ) Abnormal

Comments:

Physician Stamp:	Physician Signature:

ENCL 1 ATB 11-01

Enclosure 2: AGXT: Letter to the Attending Physician

TO: ATTENDING PHYSICIAN

FROM: FLIGHT SURGEON'S OFFICE SUBJECT: Aeromedical Graded Exercise Test

1. A graded exercise test has been requested by the US Army Aeromedical Activity on this US Army aircrew member to explore the possibility of aeromedically significant coronary disease and other cardiac abnormalities. Please follow the definitions and diagnostic criteria listed below in the interpretation of this test. Since this study has occupational medicine importance, these criteria are intended to yield maximal sensitivity. Please do not apply other criteria.

2. The following conditions should be assured prior to testing:

a. Minimum of four (4) hours fasting prior to test.
b. No tobacco or caffeine for one (1) hour prior to test.

3. The aeromedical GXT must be a maximal effort, limited only by symptoms, exhaustion, or objective signs (medically significant ectopy, dysrhythmia ischemia, or blood pressure response). Exercise should not be halted on attainment of a predicted maximal heart rate. Often, testing may proceed beyond 100% of predicted maximal HR, and clinical decision- making should be used for termination.

4. Determination of abnormal exercise tolerance tests for US Army aircrew members:

a. Baseline: The location of three (3) consecutive coplanar ST segments, measured 80 milliseconds after the "J" junction following 30 seconds of standing hyperventilation. This baseline may be on, above, or below the PQ segment, but must be parallel to it.

b. Abnormal: 1.0 or more millimeters of ST depression in three (3) consecutive coplanar complexes, measured 80 milliseconds after the "J" junction, irrespective of slope. Other causes for an abnormal result include: atrial flutter or fibrillation, supraventricular or ventricular tachycardia (three or more consecutive premature beats including multifocal atrial tachycardia), supraventricular or ventricular pairs (couplets), multiform ventricular premature ectopy, ventricular premature R wave on preceding T wave, or hypotensive or excessive hypertensive response of any degree. Chest pain/pressure, angina, infarction, or the suspicion of significant peripheral vascular disease, likewise, constitutes an abnormal result requiring further evaluation and management.

ATB: ATC Medical Standards (DAC and Civilian Contract)

Aeromedical Concerns: The duties of an ATC require a certain level of health status or fitness based on the nature of the position—duties involving a high degree of responsibility toward the public in view of their control of aircraft at and in the vicinity of military and civilian airfields.

General: This aeromedical technical bulletin will serve as a guide for the conduct of the Air Traffic Controller Medical Examination (ATCME) for DAC and civilian contract ATCs. The ATCME may be completed by an aeromedical provider (flight surgeon, APA, AMNP, or AME) from any branch of military service and will be completed annually for all DAC/civilian contract ATC. Per reference 3 listed below, medical standards for DAC and contract civilians are outlined in the OPM manual and summarized here.

This ATB implements the occupational health standards for DAC/civilian contract ATCs as outlined bythe Office of Personnel Management (OPM). Current OPM standards address both application and retention for ATCs. These standards do not provide any specific means to apply those standards, nor do they outline any process to waive medical conditions or continued medical treatment for continued safe execution of ATC duties. Thus, personnel found to be outside medical standards within the current OPM standards must follow the Aeromedical Policy Letters for evaluation, waiver submission, and annual waiver requirements. Waiver or suspension requests for those conditions not meeting current application or retention standards will be processed per current USAAMA policy. Review of cases requiring waiver from the OPM standards involving DAC or civilian contract ATCs will include consideration of the very low, but real, likelihood of deployment to austere environments or stationing away from regular medical care. These waiver or suspension requests will be prepared, submitted, and processed as outlined in AR 40-501 and the Flight Surgeon Administrative Guide. Aeromedical Policy letters will serve as guidelines for required evaluation and information of such conditions. Evaluations will often need to be completed by the DAC/civilian contract ATC's regular civilian health care providers and will be reviewed by the aeromedical provider to complete the aeromedical summary for waiver or suspension. The patient, and not the MTF or US Government, is ultimately responsible for any costs accrued in the evaluation and maintenance of aeromedically disqualifying conditions.

FAA Physicals: FAA physicals for either category of ATC are not required by DA or the FAA and will not be accepted as certification of medical fitness. Any DAC or civilian contract ATC who pursues a FAA certificate does so at their own expense, unless specifically covered by their contract.

DD Form 2992, Medical Recommendation for Flying or Special Operational Duty (upslip and downslip): A DD Form 2992 signed by an aeromedical provider of any military service must be completed as part of the ATCME and serves as a recommendation to the local airfield commander of the individual's medical fitness for execution of ATC duties. A FAA examination or 8500-9 certificate for DAC or civilian contract ATCs will not be accepted or processed by USAAMA for this requirement. Aeromedical providers will not accept a FAA physical to issue a DD Form 2992 based on presentation of a FAA examination or certificate. Failure to comply with the annual requirement for an ATCME or a current valid DD Form 2992 may result in medical disqualification.

ATC Medical Examinations (ATCME): There are two broad categories of ATCMEs. They are:

1. Initial ATCME - Performed for initial employment purposes. They are valid for up to 18 months from the date of examination.
2. Retention ATCME - Performed on an ATC once already trained or in service. This is performed for re-certification for DAC and civilian contract ATC on an annual basis. It is generally valid for 12 months and is synchronized with the ATC's birth month.

For birth month alignment of the ATCME, see the Flight Surgeon Administrative Guide.

Forms: The initial and retention ATCMEs are performed on DD Forms 2807-1 and 2808. The ATCME will be submitted electronically to USAAMA using the AERO system. If AERO is not available then the physical may be mailed, faxed, or e-mailed to USAAMA. AERO does not have separate standards for these exams and the aeromedical examiner must ensure all of the required items per the OPM standards are included in the physical. Civilian or contract civilian ATCs do not have an interim FDHS (DA 4497-R).

OPM Standards for Air Traffic Controllers:

The text below is extracted verbatim from OPM General Schedule Qualification Standards for Air Traffic Control Series, 2152. The link to the standards is https://www.opm.gov/policy-data-oversight/classification-qualifications/general-schedule-qualification-standards/2100/air-traffic-control-series-2152/. Not summarized below, but also found at the above link are the individual occupational requirements to apply for an ATC position.

Table 13 is a summary of the DD Form 2808 requirements and Table 14 is a summary of the OPM/GS-2152 DAC/Civilian Contract ATC Standards.

Medical Requirements: In general, air traffic control specialist applicants and employees must have the capacity to perform the essential functions of these positions without risk to themselves or others. The provision of sufficient information about physical capacity for employment requires that before appointment applicants undergo appropriate pre-employment physical/medical evaluations.

The physical impairments/medical conditions that follow, unless otherwise noted, are disqualifying because there are medical and/or management reasons to conclude that an individual with such impairment/condition cannot perform the duties of the position without unacceptable risk to his or her own health, or to the health or safety of others (employees or the public).

Initial Employment: Applicants for initial employment to air traffic control specialist positions must meet the following requirements. (Unless otherwise indicated, these requirements are identical for all specializations.)

Eye

1. Visual Acuity
    a. Terminal and Center Positions -- Applicants must demonstrate distant and near vision of 20/20 or better (Snellen or equivalent) in each eye separately. If glasses or contact lenses are required, refractive error that exceeds plus or minus 5.50 diopters of spherical equivalent or plus or minus 3.00 diopters of cylinder is disqualifying. The use of orthokeratology or radial keratotomy methods is not acceptable for purposes of meeting this requirement. The use of contact lenses for the correction of near vision only or the use of bifocal contact lenses for the correction of near vision is unacceptable.
    b. Flight Service Station Positions-- Applicants must demonstrate distant and near vision of 20/20 or better (Snellen or equivalent) in at least one eye. If glasses or contact lenses are required, a refractive error in at least one eye that exceeds plus or minus 8.00 diopters of spherical equivalent will necessitate an ophthalmological consultation to establish absence of ocular pathology that could interfere with visual function. The use of contact lenses for the correction of near vision only or the use of bifocal contact lenses for the correction of near vision is unacceptable.

       Equivalents in Near Visual Acuity Notations
       Standard Test Chart: 14/14
       Snellen Metric: 0.50M
       Jaeger: J-1
       Metric: 6/6

2. Color Vision -- For all specializations, applicants must demonstrate normal color vision.
3. Visual Fields
    a. Terminal and Center Positions -- Applicants must demonstrate a normal central visual field, i.e., the field within 30 degrees of the fixation point, in each eye. They must also demonstrate a normal peripheral visual field, i.e., the field of vision beyond the central field that extends 140 degrees in the horizontal meridian and 100 degrees in the vertical meridian, in each eye.
    b. Flight Service Station Positions -- Applicants must demonstrate a normal central field of vision, i.e., the field within 30 degrees of the fixation point, in at least one eye.

4. Intraocular Pressure -- For all specializations, if tonometry reveals either intraocular pressure greater than 20 mm of mercury, or a difference of 5 or more mm of mercury intraocular pressure between the two eyes, ophthalmological consultation is required to rule out the presence of glaucoma. If a diagnosis of glaucoma is made, or if any medication is routinely required for control of intraocular tension, the applicant is disqualified.
5. Phorias
    a. Terminal and Center Positions -- If an applicant demonstrates greater than 1-1/2 prism diopters of hyperphoria or greater than 10 prism diopters of esophoria or exophoria, evaluation by a qualified eye specialist is required. If this evaluation determines that bifoveal fixation and vergence-phoria relationships sufficient to prevent disruption of fusion under normal working conditions are not present, the applicant is disqualified.
    b. Flight Service Station Positions -- Applicants must demonstrate the absence of diplopia in the cardinal fields of gaze.
6. Eye Pathology -- For all specializations, if examination of either eye or adnexa reveals any form of glaucoma or cataract formation, uveitis, or any other acute or chronic pathological condition that would be likely to interfere with proper function or likely to progress to that degree, the applicant is disqualified.
7. Chronic Eye Disease -- For all specializations, an applicant with any chronic disease of either eye that may interfere with visual function is disqualified.
8. Ocular Motility -- For terminal and center specialist positions, applicants must demonstrate full extraocular motility.
9. History of Eye Surgery -- For all specializations, a history of ocular surgery requires ophthalmological consultation. If consultation indicates that the condition that necessitated surgery could interfere with the visual function necessary for performance as an air traffic control specialist, the applicant is disqualified. A history of radial keratotomy is disqualifying.

Ear, Nose, Throat, Mouth

1. Examination must show no outer, middle, or inner ear disease, either acute or chronic, unilateral or bilateral.
2. Examination must show no active disease of either mastoid.
3. Examination must show no unhealed perforation of either eardrum.
4. Examination must show no deformity of either outer ear that might interfere with the use of headphones of the applied or semi-inserted type.
5. Examination must show no disease or deformity of the hard palate, soft palate, or tongue that interferes with enunciation. The applicant must demonstrate clearly understandable speech, and an absence of stuttering or stammering.
6. Applicants must demonstrate, by audiometry, no hearing loss in either ear of more than 25 decibels in the 500, 1000, or 2000 Hz ranges and must demonstrate no hearing loss in these ranges of more than 20 decibels in the better ear, using ISO (1964) or ANSI (1969) standards. Hearing loss in either ear of more than 40 decibels in the 4000 Hz range may necessitate an otological consultation. Incipient disease processes that may lead to early hearing loss will be cause for disqualification.

Cardiovascular

1. No medical history of any form of heart disease. Must demonstrate absence of heart disease to clinical examination, including resting and post-exercise electrocardiogram.
2. Blood pressure levels no greater than the appropriate values as shown below:

Age	Maximum Reclining Blood Pressure	
	Systolic	Diastolic
20 to 29	140	90
30 to 39	150	90
40 to 49	150	100
50 & over	160	100

3. Must demonstrate to X-ray no evidence of increase in heart size beyond normal limits.
4. An applicant under any form of treatment for any disease of the cardiovascular system is disqualified.

Neurological

1. No medical history or clinical diagnosis of a convulsive disorder.
2. No medical history or clinical diagnosis of a disturbance of consciousness without satisfactory medical explanation of the cause.
3. No other disease of the nervous system that would constitute a hazard to safety in the air traffic control system.
4. An applicant under any form of treatment, including preventive treatment, of any disease of the nervous system, is disqualified.

Musculoskeletal

1. No deformity of spine or limbs of sufficient degree to interfere with satisfactory and safe performance of duty. Certain limitations of range of motion may be acceptable for certain specific options or positions, in which case acceptance of limitations will be noted specifically for that position or option only.
2. No absence of any extremity or digit or any portion thereof sufficient to interfere with the requirements for locomotion and manual dexterity of the position being sought. Acceptance of limitations for employment for a specific option or position will be noted for that option or position only.
3. No condition that predisposes to fatigue or discomfort induced by long periods of standing or sitting.

General Medical

1. No medical history or clinical diagnosis of diabetes mellitus.
2. Must possess such a body build as not to interfere with sitting in an ordinary office armchair.
3. Must have no other organic, functional, or structural disease, defect, or limitation found to indicate clinically a potential hazard to safety in the air traffic control system. A pertinent history and clinical evaluation, including laboratory evaluations, will be obtained, and when clinically indicated, special consultations or examinations will be accomplished.

Psychiatric

No established medical history or clinical diagnosis of any of the following:

1. A psychosis;
2. A neurosis; or
3. Any personality or mental disorder that clearly demonstrates a potential hazard to safety in the air traffic control system. Determinations will be based on medical case history (including past, social, and occupational adjustment) supported by clinical psychologists and board-certified psychiatrists, including such psychological tests as may be required as part of medical evaluation.

Substance Dependency

A history, review of all available records, and clinical and laboratory examination will be utilized to determine the presence or absence of substance dependency, including alcohol, narcotic, and non-narcotic drugs. Wherever clinically indicated, the applicant must demonstrate an absence of these on any clinical or psychological tests required as part of the medical evaluation.

Retention Requirements:

The physical requirements in this section apply to: (1) air traffic control specialists in the center and terminal specializations who are actively engaged in the separation and control of air traffic, (2) immediate supervisors of air traffic control specialists actively engaged in the separation and control of air traffic, and (3) air traffic control specialists in the station specialization who regularly perform flight assistance services.

Employees occupying the types of positions described above must requalify in an annual medical examination, usually given during the employee's month of birth. Controllers incurring illness, injury, or incapacitation at any time between the annual examinations must be medically cleared before returning to air traffic control duty. Examinations, including laboratory tests and consultations, will be accomplished to the extent required to determine medical clearance for continued duty. New employees are required to meet the retention requirements by examination during the first 10 months of service.

Employees who are found to be not physically or emotionally qualified for air traffic control duties at any time will be subject to reassignment to a position for which they are fully qualified, retirement for disability if eligible, or separation from the service.

To be medically qualified for retention, an air traffic control specialist must meet the following requirements. (Unless otherwise indicated, these requirements are identical for all specializations.)

Eye

Retention requirements for vision and eye conditions are identical to the requirements for initial hire.

Ear, Nose, and Throat

1. Ear Disease; Equilibrium
    a. Terminal and Center Positions -- Must demonstrate no chronic disease of the outer or middle ear, unilateral or bilateral, that might interfere with the comfortable, efficient use of standard headphone apparatus or that might interfere with accurate perception of voice transmissions or spoken communications. Must have no ear disease that might cause a disturbance of equilibrium.
    b. Flight Service Station Positions -- Must demonstrate no chronic disease of the outer or middle ear, unilateral or bilateral, that might interfere with accurate perception of voice transmissions or spoken communications. Must have no ear disease that might cause a disturbance of equilibrium.
2. Mastoid -- No active disease of either mastoid.
3. Eardrum Perforation -- Must demonstrate no unhealed perforation of either eardrum.
4. Speech -- Must have no interference with enunciation, and must have clear speech free of stuttering or stammering.
5. Hearing Loss -- No hearing loss in either ear of more than 30 decibels in either the 500, 1000, or 2000 Hz ranges. No loss in these ranges greater than 25 decibels in the better ear. Non-static hearing loss in either ear of greater than 50 decibels in the 4000 Hz range will require an Audiological consultation.

Cardiovascular

1. Heart Disease
    a. Terminal and Center Positions -- No history or symptomatic form of heart disease or any form requiring therapy.
    b. Flight Service Station Positions -- No symptomatic form of heart disease.
2. Disturbance of Rhythm; Other Abnormality*; EKG* -- Must demonstrate no disturbance of rhythm or other cardiac abnormality on clinical examination, including resting, and when clinically indicated, post-exercise electrocardiography.
3. Blood Pressure -- Retention requirements are identical to the requirements for initial hire.
4. Heart Size -- Must have no increase in heart size beyond normal limits.

Neurological

Retention requirements are identical to the requirements for initial hire.

Musculoskeletal

Retention requirements are identical to the requirements for initial hire.

General Medical

1. Diabetes Mellitus
    a. *Terminal and Center Positions* -- An employee who has an established clinical diagnosis of diabetes mellitus will be evaluated for continued duty based upon the degree of control of the disease. Whether by diet alone, or diet and hypoglycemic drugs, control that results in the absence of symptoms and the absence of complications of the disease or the therapy may be considered as satisfactory control. A controller with diabetes mellitus who cannot demonstrate satisfactory control over specified and observed periods of 48 hours is not cleared for duty involving active air traffic control.
    b. Flight Service Station Positions -- An employee who has an established clinical diagnosis of diabetes mellitus will be evaluated for continued duty based upon the degree of control of the disease. Whether by diet alone, or diet and hypoglycemic drugs, control that results in the absence of symptoms and the absence of complications of the disease or the therapy may be considered as satisfactory control.
2. Body Configuration -- Must possess such a body build as not to interfere with sitting in an ordinary office armchair.
3. Other Medical Conditions -- Must have no other organic, functional, or structural disease, defect, or limitation found to indicate clinically a potential hazard to safety in the air traffic control system. A pertinent history and clinical evaluation, including laboratory screening, will be obtained, and when clinically indicated, special consultations and examinations will be accomplished.

Psychiatric

1. Psychotic Disorder -- No established medical history or clinical diagnosis of a psychosis.
2. Mental, Neurotic, or Personality Disorder -- No neurosis, personality disorder, or mental disorder, that clearly indicates a potential hazard to safety in the air traffic control system. Determinations will be based on medical case history (including past, social, and occupational adjustment) supported by clinical psychologists and board-certified psychiatrists, including such psychological tests as may be required as part of medical evaluation.
3. Alcoholism and/or Alcohol Abuse -- No clinical diagnosis of alcoholism or alcohol abuse, since these constitute a hazard to safety in the air traffic control system. A history and clinical evaluation, including laboratory evaluation (when indicated) will be accomplished to determine the presence or absence of alcohol addiction, dependency, habituation, abuse, or use.
4. Addiction, Dependency, Habituation, or Abuse of Dangerous Drugs -- No clinical diagnosis of addiction, habituation, dependency, or abuse of any narcotic or non-narcotic drug, since these constitute a threat to safety in the air traffic control system. A history and clinical evaluation, including laboratory evaluation (when indicated), will be accomplished to determine the presence or absence of drug addiction, dependency, habituation, abuse, or use.

ATCME CHECKLIST

The following is a checklist to assist in completing the required items for both the initial employment and retention ATCMEs for DAC/civilian contract ATC. DD form 2807-1, Report of Medical History, will be completed as for all other classes of ATCME and will be submitted annually.

Table 13: Summary of DD Form 2808 for OPM Standards

Block # on DD Form 2808	Initial Applicants	Retention
1-16: Admin Data	Y	Y
17-29, 31-33 and 38-40: Clinical exam note: Only certain sites are required	Y	Y
45b: Urine Glucose	N	(1)
50: Drugs	(2)	(3)
51: Alcohol	(2)	(3)
57: Pulse	Y	Y
58a: Blood pressure (only one reading required)	Y	Y
61: Distant Vision	Y	Y
62: Manifest Refraction	(4)	(4)
63: Near Vision	Y	Y
64: Heterophorias Cover Test / Cross-cover Near Point of Convergence	Y Y Y	Y Y Y
66: Color Vision	Y	Y
67: Depth Perception	Y	Y
68: Field of Vision	Y	Y
70: Intraocular Pressures	Y	Y
71a: Audiometer	Y	Y
72a: Reading Aloud Test	Y	Y
73: Notes Additional Lab: Fasting Glucose ECG CXR Aeronautical Adaptability	 N Y(5) Y (6)	 (1) Y (3) (6)
74a: Qualification	Y	Y
77: Summary of Defects	Y	Y
78: Recommendations	Y	Y
81a-81b: Examiner names and signatures	Y	Y

Notes:

(1) For retention examinations only, ATCs with a diagnosis of Diabetes Mellitus will undergo the FBS and urine glucose to demonstrate satisfactory control.

(2) For initial applicants, the provisions of AR 600-85, Chapter 14, and Federal Acquisition Regulation (FAR), subpart 23.5 apply.

(3) If clinically indicated.

(4) Required if unaided near/distant vision is not 20/20-1.

(5) For initial applicants must include resting and post-exercise electrocardiogram.

(6) For initial or retention examinations, this will only be completed if there is no evidence by medical history or clinical diagnosis by clinical psychologists and board certified psychiatrists of a psychosis, neurosis, or any other personality or mental disorder that clearly demonstrates a potential hazard to safety in the air traffic control system.

- EKGs are required on all examinations and for initial require resting and post- exercise. If clinically indicated, the retention ATCME also requires a post-exercise study.
- Drug and alcohol screening will be done as listed above per regulatory guidance for initial applicants. For retention physicals, any questionable medical history or clinical findings should be referred to the local Alcohol and Substance Abuse Program office for evaluation.
- Reading Aloud Test (RAT) will be performed annually to assess for understandable speech and no pattern of stuttering or stammering.
- CXR will be done on initial applicants to assess for any increase in heart size beyond normal limits.

- OPM standards will be used as the measure for vision testing and these standards are identical for initial and retention physicals. To assist the aeromedical provider in the conduct of visual testing the current vision ATBs may be used as a guide.

Note: ATCME with approved aeromedical waiver(s) must adhere to the annual waiver requirements as specified in the APL(s) and the waiver granted letter.

REFERENCES:

1. 5 CFR Part 339.
2. AR 40-501, Standards of Medical Fitness, paragraph 4-35.
3. OPM Qualification Standards for General Schedule Positions, GS 2152: Air Traffic Control Series.
4. Flight Surgeon Administrative Guide.
5. AR 600-85, Army Substance Abuse Program.

Table 14: OPM/GS-2152 DAC/Civilian Contract ATC Standards Summary

Aeromedical Vision Standards						
Qualified if:		Corrected Visual Acuity, Qualified if Better Than:		Phorias, DQ if:		
Position		Distant	Near	Eso	Exo	Hyper
Terminal and Center	Spherical equivalent not exceeding +/- 5.50 diopters or cylinder +/-3.00 diopters	20/20 in each eye	20/20 in each eye	>10	>10	>1.5
Flight Service Station	Spherical equivalent not exceeding +/-8.00 diopters	20/20 in each eye	20/20 in each eye	Diplopia in any of the cardinal fields of gaze		

Position	Visual Fields Qualified if:	IOP Qualified if:	Extra-Ocular Motility Qualified if:	Color Vision Qualified if:
Terminal and Center	Normal central and peripheral visual fields in both eyes (see standard)	<21 mmHg and difference <5 mmHg between eyes	Full	Normal color vision – test unspecified
Flight Service Station	Normal central visual field in at least one eye (see standard)	<21 mmHg and difference of <5 mmHg between eyes	Not addressed	Normal color vision – test unspecified

Aeromedical Audiology Standards						
Applicants Qualified if equal or better than:						
	500 Hz	1000 Hz	2000 Hz	3000 Hz	4000 Hz	6000 Hz
Either ear	25 dB	25 dB	25 dB	No standard	40 dB	No standard
Best ear	20 dB	20 dB	20 dB	No standard	40 dB	No standard
Retention Qualified if equal or better than:						
	500 Hz	1000 Hz	2000 Hz	3000 Hz	4000 Hz	6000 Hz
Either ear	30 dB	30 dB	30 dB	No standard	50 dB	No standard
Best eat	25 dB	25 dB	25 dB	No standard	50 dB	No standard

Laboratory Normal Values	
Fasting blood sugar	<126 mg%
Urine alcohol and drug screen	Negative (required for initials and as indicated for retention)

Age	Maximum Reclining SBP	Maximum Reclining DBP
20 - 29	140 mmHg	90 mmHg
30 - 39	150 mmHg	90 mmHg
40 – 49	150 mmHg	100 mmHg
50 & over	160 mmHg	100 mmHg

ATB: Color Vision Testing

With advances in Computerized Color Vision Tests (CCVTs) objective quantification of the degree of color vision deficit is possible. CCVTs may be used as a primary screening test or a secondary test if Pseudo-Isochromatic Plate (PIP) testing is failed (i.e., misses ≥3/14). There are three approved CCVT tests: the Rabin Cone Contrast Test (RCCT), the Waggoner CCVT (WCCVT), and the Colour Assessment & Diagnosis (CAD, City University London). For scoring of the CCVTs see Figure 1 and Table 1 below.

PIP testing, with proper lighting and randomized presentations, remains an approved screening test and CCVTs are the required testing method following a PIP failure.

PURPOSE/INDICATIONS:
Mandatory for all initial, comprehensive, and post-mishap FDMEs (i.e., Class A and B mishaps) IOT screen for color vision deficiencies.

TESTING EQUIPMENT:
Farnsworth Lantern test (FALANT) or OPTEC 900-Color Vision Test: As of 27 Jun 2019, not authorized in Army Aviation per AR-40-501, paragraph 4-5a(4)(b).

Farnsworth Dichotomous Test for Color Blindness Series D-15: Not authorized in Army Aviation.

CCVTs: CCVTs are computer based tests that are administered per the manufacturer guidelines. CCVTs may be used as a primary test of color vision but are required as a confirmatory test for PIP failures. Each CCVT may be administered only once per day with a recommended minimum of 1-3 days between attempts. Other CCVTs may be used as a backup and testing may be attempted up to a maximum of three (3) times. If multiple trials are attempted, select the one CCVT score sheet with the best calculated score and enter into AERO on DD Form 2808, blocks 66 and/or 73. Do not take the best from each trial.

Computerized Tests (validated and approved):

a. Rabin CCT: A score of 55 or greater in each eye is required for all three cone types. The test is given monocularly (non-tested eye is covered).
b. Waggoner CCVT: A score of “normal” or “mild” color vision deficiency in red, green or blue is acceptable for aviation. Any scores of “mild” should be listed as “Information Only.” The test is given binocularly (both eyes tested simultaneously). When tracking or isolating acquired color vision deficits, monocular testing is acceptable. Both desktop and tablet versions are acceptable.
c. Colour Assessment & Diagnosis (CAD, City University London): A score of less than or equal to 6 CAD units for all three cone types in each eye is acceptable. This test is given binocularly.

PIP:

- Only the 14 plate PIP test is authorized at this time (no traced lines). Most tests with 14 test plates also contain one or two ‘demonstration’ plates that can be seen readily, even in the presence of a color vision deficiency. Once the examinee understands the test with these demonstration plates, present the other 14 plates with proper lighting and in randomized presentations. **Do not count the demonstration plates when scoring.**

TESTING SET-UP:
CCVTs: Computer tests shall be administered per manufacturer recommendations with regard to distance, lighting, screen calibration, and monocular or binocular testing with best correction worn. Computer printout grade sheets shall be uploaded to AERO documents with the physical exam to ensure objectivity and correctness.

PIP:

- Place the light source (Macbeth Easel Lamp, Daylight HRR Illuminator, “daylight” fluorescent bulb, or other standard illuminant “C” light source) on a table or shelf so that the subject’s line of sight is at right angles to the plates, and so his/her eyes are at a distance of approximately 30 inches.
- If subject wears glasses for flight, test with glasses on.
- The subject should not face an open window or other strong light. Nearby incandescent lights (those with any yellow wavelengths) should be shielded (or off) so they do not illuminate the plates. Cover any nearby windows.

- If none of the recommended light sources are available, use regular room lighting but avoid any incandescent lights (yellow wavelengths).
- If the examinee fails a PIP, a CCVT is required.

STEP-BY-STEP PROCEDURE:
Colored lenses (i.e. “enchroma” glasses) and colored contact lenses are not authorized as their use negates the proper administration of the test by skewing color perception.

CCVTs:
- Each computer test shall be administered per manufacturer recommendations.
- Each CCVT may be administered only once per day with a recommended minimum of 1-3 days between testing and for a comprehensive total of three (3) attempts with the best calculated score being used for submission.
- All CCVTs have been validated and the scores are standardized across the DoD.
- Scoring sheet(s) must be uploaded to the documents section in AERO for AAMA review.

PIP:
- Examiner instructs subject to, “Please read the numbers aloud” (or words to that effect). The subject is not allowed to trace the numbers or touch the test plates.
- Examiner must show the demonstration plate(s) first, then the examiner presents the remaining 14 test plates (with proper lighting and a randomized order), showing each for approximately 2-4 seconds. Do not count the demonstration plate(s) in scoring.
- With the exception of always showing the demonstration plate(s) first, the examiner should randomize the order of the plates IOT prevent memorization. However, do not ‘mix and match’ test plates from multiple tests. (In a multiple-subject environment, do not allow those waiting to test to overhear the responses to the PIP.)
- The AERO DD Form 2808 has a pre-templated “Presentations” drop down box in block 66 followed by a “Missed” free text box. The 14 plate presentation should always be chosen followed by entering the number of plates missed in the free text box. A “P” for Pass or “F” for Fail auto-populates in a third “P/F” box depending on how many presentations were incorrect. 0-2 plates incorrect is passing and ≥3 plates incorrect is a failure.

REFER TO OPHTH/OPT:
Waiver may be considered based on the needs of the Army in rare cases for select aircrew. If waiver consideration is considered to be warranted please contact AAMA for guidance. In those exceptional cases where AAMA will consider recommending a waiver an MFR will be required as supporting documentation. The MFR must document the MOS and duty position as well demonstrated ability to complete essential MOS functions and emergency procedures completed by an appropriate unit trainer or supervisor.

DISCUSSION: The importance of color vision has been a focus of tri-service attention with more advanced cockpit and ground control station designs incorporating color symbology. More conditions and medications are being waived which may affect color vision (i.e., sildenafil). The pilot population is also aging, which increases the small risk of acquired color vision deficiencies. Previously, color vision testing was only done on initial FDMEs. The requirement for color vision testing has been revised and updated. Color vision testing is now required for all initial, comprehensive, and post-mishap FDMEs (i.e., Class A and B mishaps).

Figure1: Color Vision Deficits Revised Standard (Algorithm):

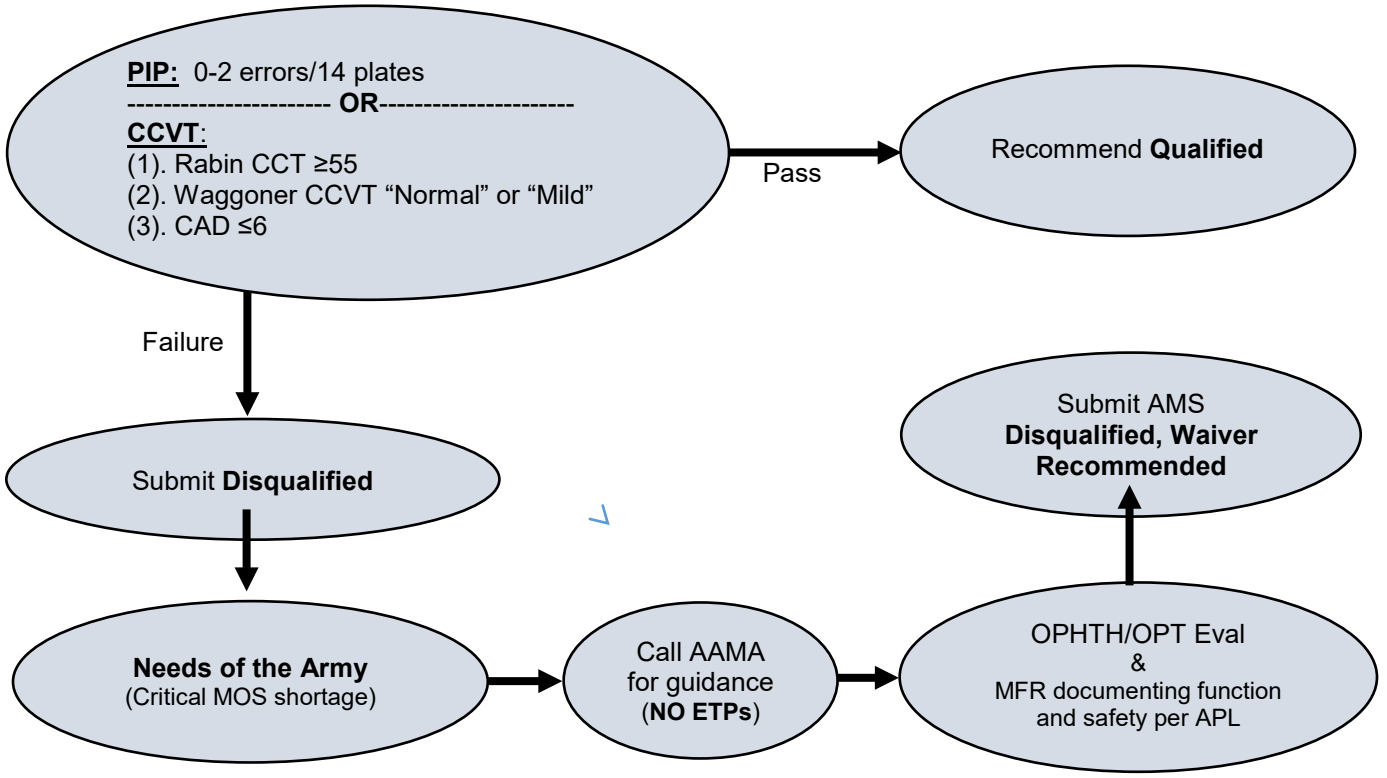


TABLE 1: PIP & CCVT AEROMEDICAL STANDARDS IN US ARMY AVIATION:

	PIP	CCT, Rabin	Waggoner CCVT	Colour Assessment & Diagnosis (CAD)
QUALIFIED	(0-2)/14	≥55	"Normal" or "Mild"	≤6 CAD units
DISQUALIFIED	≥3/14	<55	"Moderate or Severe"	>6 CAD units

NOTE:
(1). Color lenses & colored contact lenses are NOT allowed (i.e. "Enchroma" glasses). This negates the proper administration of the test by skewing color perception.
(2). Each CCVT may be administered only once per day with a recommended minimum of 1-3 days between attempts. Other CCVTs may be used as a backup and testing may be attempted up to a maximum of three (3) times. If multiple trials are attempted, select the one CCVT score sheet with the best calculated score and enter into AERO. Do not take the best from each trial.
(3). All CCVT scoring sheet(s) must be uploaded to AERO Documents.
(4). Farnsworth Lantern Test (FALANT) is no longer authorized in US Army Aviation as of 27 June 2019 per AR 40-501.
(5). Farnsworth Dichotomous Test for Color Blindness Series D-15 remains unauthorized in US Army Aviation.

ATB: Cycloplegic Refraction

Unfortunately, the pre-printed wording of block 62, “Refraction by Autorefraction or Manifest” may be very confusing. It is very important that anyone conducting testing for any FDME understand that an ‘autorefraction’ of any kind is not authorized and should never be entered on the DD Form 2808 unless it is in block 60 (Other Vision Test) or in block 73 (Notes) for reference only. Autorefraction results should never be entered into block 62! With AERO, enter information on page 2A in block 62 of DD Form 2808 and select manifest or cycloplegic from the dropdown. Place additional notes on page 2B in block 73.

Line through the entire “Refraction by Autorefraction or Manifest” wording and utilize the blank next to the refraction to enter the type of refraction utilized. For example:

By –0.50 S. –0.25 CX 180 (type of refraction here)

All ‘autorefraction’ entries on FDME’s in block 62 will be returned as incomplete.

Purpose/Indications: Cycloplegic Refraction (Cyclo):

Testing is mandatory for all Class 1 FDMEs. This measures a patient’s refractive error in the absence of accommodation (focusing ability), which is useful in confirming the presence of latent hyperopia (hidden farsightedness). This is accomplished through the use of a cycloplegic topical ophthalmic solution, an anticholinergic solution that is used to block the responses of the iris sphincter muscle and the accommodative muscle of the ciliary body to cholinergic stimulation, producing pupillary dilation (mydriasis) and paralysis of accommodation (cycloplegia).

An Optometrist or Ophthalmologist must conduct the cycloplegic refraction in a very specific manner outlined under the step-by-step procedure below. Conduct the cycloplegic refraction after all other eye testing.

Note: there is additional mandatory testing with the cycloplegic refraction as outlined on the last page.

Equipment/Supplies: Cycloplegic Refraction.

- Slit lamp biomicroscope
- Facial tissue(s)
- Mydriatic spectacles (disposable sunglasses)
- Topical anesthetic: (Proparacaine Hydrochloride Ophthalmic Solution, USP, 0.5%)
- Cycloplegic agent: (Cyclopentolate Hydrochloride Ophthalmic Solution, USP, 1.0%)
- Retinoscope (for objective start point or objective verification; an autorefractor may be used for an objective start point but in no instance will any autorefraction be entered onto an exam form.)
- Phoropter
- Projected Snellen distance visual acuity chart [must be projected IAW AR 40-501, paragraph 4-5a(1)].
  - Projected sources for a cycloplegic refraction include, but are not limited to:
    - Traditional projector with screen
    - Binocular Visual Acuity Tester (BVAT), or similar system
    - Refraction system with projected image (i.e. the Marco Nidek COS-1000 Compact Ophthalmic System, the Marco Nidek EPIC-2100, or similar system)
- Method for keratometry and/or topography (for new mandatory testing)

Set-up: Cycloplegic Refraction.

- Conduct a cycloplegic refraction after completing all other eye testing and verifying any disqualifying parameters from other tests. Highly recommend a brief review of the physical exam

form to ensure all other eye testing is complete and that no re-testing is necessary (i.e. meets standards). One more check in the process will only help to ensure the physical is correct when finally forwarded to AAMA for review.

- Highly recommend using a slit-lamp biomicroscope to ensure patient has open anterior chamber angles before instilling any drops.

  If an angle estimation is less than 0.25:1 (or Y:1), or a Van Herick angle estimation of '1', perform gonioscopy prior to instilling cycloplegic drops. If corneal epithelial disruption occurs with gonioscopy, confirm angles are open and have patient return in 24 hours for the cycloplegic refraction. If angles are narrow, refer to Ophthalmology for evaluation before proceeding.

- Ask patient about allergies, adverse reactions to any anesthetics (Proparacaine being utilized), or adverse reactions to any preservatives (Proparacaine is preserved with Benzalkonium Chloride, 0.01%).

Step-By-Step Procedure: Cycloplegic Refraction (Cyclo).

- Recommend verifying anterior chamber angles (see Set-Up).
- Verify allergies and possible adverse reactions (see Set-Up).
- Give patient a facial tissue and a pair of mydriatic spectacles. Explain effects from cycloplegic drops (especially temporary loss of focus at near and light sensitivity) and ensure this will not interfere with anything of pending importance (i.e., patient has final exam that evening, patient is not performing any type of flight duties within the following 24 hours, etc.).
- Instill drops in this exact order:
  - Instill one (1) drop of topical anesthetic (Proparacaine HCl 0.5%) into each eye. Record the drop and the time in block 60 or block 73 on DD Form 2808. Wait one (1) minute. Some think this is to make the patient more comfortable with the successive drops. Although this is a welcomed side effect, it is not the primary reason. The topical anesthetic helps ease the bonds between the corneal cell junctions, which allows increased permeability of the cycloplegic agent.
  - Instill one (1) drop of cycloplegic agent (Cyclopentolate HCl 1.0%) into each eye. Record the drop and the time in block 60 or block 73 on DD Form 2808. Wait five (5) minutes.
  - Instill one (1) drop of cycloplegic agent; wait a minimum of 45 minutes. Record the drop and the time in block 60 or block 73 on DD Form 2808.
- Perform a cycloplegic refraction between 45 minutes and 75 minutes after the last drop instillation (the minimum wait time of 45 minutes ensures all iris colors are in maximal cycloplegia before refraction). If the cycloplegic refraction cannot be performed between 45 and 75 minutes, there are two courses of action:
  - Instill another drop of Cyclopentolate HCl 1.0% in each eye and wait a minimum of 30 minutes more; -or-
  - Patient can return after a minimum of 48 hours to repeat the drop series and cycloplegic refraction.
- Enter the best corrected visual acuity in block 61 next to the pre-printed "Corr. to 20/ " entries for each eye. See 'Important Note for Eye Care Providers' on the last page. Be aware of patients memorizing the eye chart. Many clinics are limited to only a few 20/20 lines and must be creative in randomizing the letters (reading them backwards, etc.).
- Record the cycloplegic refraction findings for each eye in block 62 on DD Form 2808:
  - The 'sphere' amount in the first blank between the pre-printed entries of "By" and "S." If zero, use '0.'
  - The 'cylinder' amount in the second blank between the pre-printed entries of "S." and "CX". If there is no cylinder amount, enter 'sphere', 'sph', '0' or 'DS'. In AERO only numbers may be entered.
  - The 'astigmatism axis' in the third blank after the pre-printed entry of "CX". If there is no astigmatism, enter a horizontal line here. In AERO only numbers may be entered.
  - After the astigmatism axis, write the word 'cycloplegic' (or 'cyclo') to indicate the refraction conducted. In AERO select cycloplegic from the dropdown.

A typical cycloplegic refraction entry on DD Form 2808:

	59. RED/GREEN (Army Only)	60. OTHER VISION TEST 1 x Proparacaine 0.5% @ 1200 1 x Cyclopentolate 1.0% @ 1201 1 x Cyclopentolate 1.0% @ 1206
61. DISTANT VISION	62. ~~REFRACTION BY AUTOREFRACTION OR MANIFEST~~	63. NEAR VISION
Right 20/20 Corr. to 20/20	By +0.25 S. -0.25 CX 180 by cyclo	Right Corr. to
Left 20/25 Corr. to 20/20	By +0.75 S. -0.50 CX 180 by cyclo	Left Corr. to

If the refraction amount is outside of qualifying standards for flight school, make a note to the aeromedical provider in block 73 or on a separate note. This should be discussed with the Physical Exam Section and aeromedical provider per local SOP. All eye care providers and flight providers must know the most current standards and policies for entry to flight school.

Entry Standards for Class 1 Flight Duty Medical Examinations.

Hyperopia less than or equal to +3.00 diopters of sphere (in any meridian by transposition in either eye)
Myopia less than or equal to –1.50 diopters of sphere (in any meridian by transposition in either eye)
Astigmatism less than or equal to +/- 1.00 diopter of cylinder in either eye

Must meet above standards in both plus-cylinder and minus-cylinder formats because of the ability to write a disqualifying cycloplegic refraction as a qualifying one as in the example below. So, to prevent this error, transpose the refraction to ensure patient meets standards (spherical equivalent method does not apply). AERO does this automatically, and Table 15 below provides this information. Note: “B” is disqualifying, but in the range to consider for an ETP (see the Decreased Visual Acuity APL).

For example: the cycloplegic refraction of -1.00 – 0.75 x 180 (in minus-cylinder format) might appear qualified at first glance. However, after transposition into plus-cylinder format of –1.75 + 0.75 x 090 (in plus-cylinder format), it is apparent that this refraction is disqualifying because the sphere amount exceeds –1.50.

Note: If everything else is normal on the applicant, an ETP may be requested and granted if the cycloplegic refraction is within 0.75 diopters of the standard on each of the three cycloplegic refractions required by the Decreased Visual Acuity APL.

Transposition Review:

1. Algebraically sum the sphere and cylinder powers
2. Change the sign of the cylinder power
3. Change the axis by 90 degrees.

Example:

- Original cycloplegic refraction: -1.00 -0.75 x 180
- Step 1 -1.00 + -0.75 = -1.75 (sphere), Step 2 -0.75 to 0.75 (cylinder), and Step 3 180-90 = 90 (axis)
- Transposed cycloplegic refraction: -1.75 0.75 x 90

+Table15: Cycloplegic Transposition Table for Class 1 FDME

SPHERE	CYLINDER										
	-1.25	-1.00	-0.75	-0.50	-0.25	DS / SPH / 0.0	+0.25	+0.50	+0.75	+1.00	+1.25
-1.75	DQ	DQ	DQ	B	B	B	B	B	B	B	B
-1.50	DQ	DQ	B	B	B	Q	Q	Q	Q	Q	B
-1.25	DQ	B	B	B	Q	Q	Q	Q	Q	Q	B
-1.00	B	B	B	Q	Q	Q	Q	Q	Q	Q	B
-0.75	B	B	Q	Q	Q	Q	Q	Q	Q	Q	B
-0.50	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
-0.25	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
0.0 / Plano	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+0.25	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+0.50	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+0.75	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+1.00	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+1.25	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+1.50	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+1.75	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+2.00	B	Q	Q	Q	Q	Q	Q	Q	Q	Q	B
+2.25	B	Q	Q	Q	Q	Q	Q	Q	Q	B	B
+2.50	B	Q	Q	Q	Q	Q	Q	Q	B	B	B
+2.75	B	Q	Q	Q	Q	Q	Q	B	B	B	DQ
+3.00	B	Q	Q	Q	Q	Q	B	B	B	DQ	DQ
+3.25	B	B	B	B	B	B	B	B	DQ	DQ	DQ

DQ = Disqualified, ETP not recommended Q = Qualified B = Disqualified, ETP possible (see APL)

Important Note for Eye Care Providers

A cycloplegic refraction is not necessarily equal to the refraction you would give for spectacle lenses. If a patient is “on the border” of being qualified or disqualified, it is best for the Army and for the patient to use the least amount of prescription needed to see within standards approach.

For example, if a patient has a cycloplegic refraction that is +/- 0.25 diopters outside of standard but can still read to the $20/20^{-1}$ standard with the refraction amount that is within standards, enter the lesser amount.

Do not, however, try to “push” the $20/20^{-1}$ on borderline cases for three reasons. First, the current APL on “Decreased Visual Acuity” addresses policies for Exception to Policy for those within 0.75 diopters of the standards. Second, these patients receive an entirely new cycloplegic exam once they come to Fort Rucker to enter flight school. If outside of standards on the RO/RW (Rucker) physical, they will be required to request an exception to policy prior to starting training. Use professional judgment, but do not allow someone to come to flight school knowing he/she has a good chance of failing their detailed cycloplegic exam upon arrival and being held up from starting training.

Additional mandatory Testing With Cycloplegic Refraction:

Since the patient is dilated during a cycloplegic refraction, it is a prime opportunity to conduct a brief slit lamp exam to check any disorders of the anterior segment and optic nerve. A fully dilated fundus exam (DFE) is required. Note: for refractive surgery patients outside of the standards, a DFE is required as part of the ETP information. Due to the advent and popularity of refractive surgery, it is now mandatory for the eye care provider conducting the cycloplegic exam to also provide the following information with all Class 1 FDMEs:

1. Evidence of Refractive Surgery (Yes/No):
    - Make an entry in block 73 (Notes) indicating that there is no evidence of refractive surgery. Highly advise that the patient also sign an entry stating he/she has not had refractive surgery. This can

easily be made part of the local overprint to DD Form 2808. This block is included on page 2A, DD Form 2808 in AERO.

- If patient has had refractive surgery, see the APL for Corneal Refractive Surgery and the required information listed in Table 8. Ensure the patient can supply all of the information required for an ETP or Qualified, Information Only. If the patient is missing the information or records, contact USAAMA to discuss the case to determine how to proceed. Allowable procedures include PRK, LASEK, LASIK and SMILE. All other forms of corneal refractive surgery are not authorized.

2. Evidence of Corneal Curvature: Provide evidence of corneal curvature with one of the following:
   - Corneal Topography of each eye is required for all Class 1 physicals. Enter assessment in block 60 (Other Vision Test) or block 73 (notes). Attach full-size page to physical with assessment annotated if not using AERO or upload color images into AERO.
   - Manual or automated Keratometry readings of each eye. Enter in block 60 (Other Vision Test) or block 73 (Notes), photocopy to full-size page and attach to physical with assessment annotated if not using AERO, or upload document to AERO.
   - If abnormal or concerning (keratoconus, pre-keratoconus or suspect, or other), annotate and inform the aeromedical provider and physical exam clinic. Continue the evaluation per appropriate APL or discuss the findings with the aeromedical provider or USAAMA for further guidance and evaluation.

Important Note for Eye Care Providers and Aeromedical Providers for Class 1 Applicant vision:

With the advent and success of the Corneal Refractive Surgery program most individuals no longer require an ETP/waiver and meet the Information Only disposition criteria as outlined in the Corneal Refractive Surgery APL. The Army aeromedical standards for those with or without corneal refractive surgery are:

1. Distant visual acuity (DVA): 20/50 or better in each eye (and correctable to $20/20^{-1}$)
2. Near visual acuity (NVA): $20/20^{-1}$ in each eye uncorrected.
3. Cycloplegic refraction: Per Table 15

For Exception to Policy, in coordination with HRC waiver Authority, an applicant may be considered providing meeting all of the following: DVA 20/70 or better in each eye and correctable to $20/20^{-1}$, NVA 20/40 or better in each eye and correctable to $20/20^{-1}$, and cycloplegic refraction within 0.75 diopters of the aeromedical standards (noted as “B” in Table 15). See the APL, Decreased Visual Acuity.

ATB: DD Form 2992 Medical Recommendation For Flying or Special Operational Duty

1. What is a DD Form 2992?

DD Form 2992 is a required official means by which an aeromedical provider informs an aviation commander that military and civilian personnel are medically fit or unfit to perform Army aviation, air traffic control (ATC), or unmanned aerial systems (UAS) operator duties. This form is also known as the upslip or downslip and replaced the DA Form 4186.

2. Who needs a DD Form 2992?

The DD Form 2992 applies to all aviation personnel, including Department of the Army civilian (DAC) pilots, civilian contractor pilots (only if they do an Army flight physical), military and civilian (DAC and contractor) air traffic controllers (ATC), and DAC and military UAS operators. It is required for all personnel who must meet Army Class 1, 2, 3, or 4 medical fitness standards. Civilian contract pilots and civilian contract UAS operators who maintain a valid FAA Class 2 and Form 8500-9 certificate and civilian contract crewmembers who maintain a valid FAA Class 3 medical certificate do not require a DD Form 2992. Aviators in non-operational positions must complete a Class 2 flight physical and a DD Form 2992 issued annually (AR 600-105). Aviators in "simulator duty only" positions are required to maintain a current DD Form 2992.

3. Who prepares a DD Form 2992?

Any medical or dental officer, who must inform a commander of the status of an aircrew member, may prepare and sign a DD Form 2992 recommending temporary medical suspension (duties not including flying or DNIF). A recommendation returning the aircrew member to flying duties (full flying duties or FFD) must be signed by a flight surgeon, aeromedical physician assistant (APA), aeromedical nurse practitioner (AMNP), or aviation medical examiner (AME). APAs and AMNPs may issue the DD Form 2992 without flight surgeon co-signature as outlined in DA PAM 40-502. All other non-flight provider medical personnel require an aeromedical provider countersignature for all upslips. All aeromedical physician assistants, aeromedical nurse practitioners, or other non-flight surgeon medical providers require a flight surgeon countersignature when completing DD Form 2992 for Air Force, Navy, Marine Corps, or Coast Guard personnel.

4. When is a DD Form 2992 Issued?

The DD Form 2992 is to be completed:

a. At the time of periodic examination (FDME/FDHS).
b. After an aircraft mishap.
c. When reporting to a new duty station or upon being assigned to operational flying duties. This includes changing units or companies at the same duty station, changing from "simulator only" to full flying duties (FFD), or returning from a deployment if assigned to a different commander’s Aircrew Training Program (ATP) during the deployment.
d. When admitted to a medical treatment facility, sick in quarters, entered into a drug or alcohol rehabilitation program, or when treated by health care professional who is not an aeromedical provider or otherwise authorized to issue a DD Form 2992 (AR 600-85 and AR 40-8).
e. When treated as an outpatient for conditions or with drugs which are disqualifying for aviation duty. See APLs, AR 40-501, and AR 40-8.
f. When being returned to flying status following restriction imposed under (d or e) above.
g. After an FEB.
h. Other occasions, as required.

5. How is the DD Form 2992 Prepared?

The hard copy DD Form 2992 is prepared in three copies. The 2nd page of the form has the instructions

To and From blocks (Blocks 1 and 2).
Found only on the top portion of the form. These blocks contain the mailing address of the individual's commander that the DD Form 2992 is being sent to, and the mailing address of the flight provider the DD Form 2992 is from.

Blocks 3 through 10 contains demographic data are self-explanatory except as below.

- Block 5: Only use the DoD ID number or if Coast Guard use their employee number. The social security number is no longer used.
- Block 9: In this block enter the flying class and the duty performed. For example, Class 2 – Aviator, Class 3 – Crew Chief, Class 4 – UAS Operator, etc. If completing this form for members of the Air Force, Navy, Marines or Coast Guard please refer to the appropriate regulations in the instructions for this block to ensure the correct flying class and duty performed is utilized.
- Block 10: Enter the date the flight physical was completed. This only needs to be done when the form is being completed for the completion of the flight physical.

Block 11. Up: The Above Individual Has Been Found Qualified by Medical Authority – Qualifying actions (FFD).

- If the examinee is qualified to perform flying duties in accordance with chapters 2 and 4, AR 40-501, the flight provider completes Block 11, Up: The Above Individual Has Been Found Qualified by Medical Authority. Indicate the reason(s) for the medical clearance recommendations in blocks 11a (more than one box may be selected). Further explanation of each item should be explained as appropriate in Block 13: Remarks/Limitations.
- The following are the options for recommending a qualifying action (FFD)
    - Cleared after temporary medical disqualification is self-explanatory
    - Waiver recommended is used when a waiver or exception to policy has not yet been approved by the waiver authority. In AERO this will have a WR or ER next to the encounter. See the Table 11 in the ATBs for conditions that may not be granted temporary clearance. Note this block is not used for Air Force aircrew.
    - Aircraft mishap is used when clearing an individual who has been involved in an aircraft mishap.
    - Reporting to new duty station is used when an individual has arrived at a new duty station. It is also used when an individual is changing companies within the same unit or units on the same installation. If an individual is returning from deployment and they were attached to another commander for flight, UAS or ATC duties they will require a new duty upslip. Remember the unit commander is the one who approves or disapproves individuals to perform their aviation duties within the commander's aircrew training program (ATP). A new duty station upslip is not required if the company commander changes due to a change of command. The new commander assumes the ATP as is from the old company commander.
    - Waiver granter is used once the waiver authority has approved the waiver. In AERO this will have a WG or EG next to the encounter.
    - The other box is used only if one of the other boxes is not appropriate. Further explanation will be required in Block 13. Remarks/Limitations. For example, the annual flight physical is done off cycle and you are going to do a birth month realignment. In Block 13 annotate FFD – Flight physical completed off cycle due to (reason) and will do birth month realignment.
    - Cleared after flight duty medical examination is self-explanatory.

Block 12. Down: The Above Individual Has Been Found Disqualified by Medical Authority - Disqualifying actions (DNIF).

- Disqualifying action recommended by medical authority is completed when the examinee is found medically unfit for flying duties in accordance with the APLs and/or chapters 2 and 4, AR 40-501, or is medically disqualified because of a temporary medical problem or medication. Only one box may be selected.
- The choices in Block 12a are:
    - Temporary disqualification due to illness or injury is used for a typical sick call problem, medical conditions that are not permanently disqualifying or will not result in a disqualification longer than 365 days (AR 600-105).

- Temporary disqualification due to an aircraft mishap is used if the individual requires grounding after a mishap.
- If the other box is used further explanation is required in Block 13. Remarks/Limitations.
- Permanent disqualification is for conditions that have resulted in continuous grounding for longer than 365 days or for any medical condition that is determined to be permanently disqualifying per the APLs. If the waiver authority has granted a suspension or denied a waiver/exception to policy (SG or WD in AERO next to the encounter) use this box.

- If an individual is temporarily grounded the aeromedical provider may allow the individual to perform simulator duties, ground based flight line duties or other duties not involving flight by checking one of the three boxes in Block 12a. If the aeromedical provider does not check any of these boxes when an individual is grounded, they many not perform any of these duties. If the other box is checked please explain in Block 13. .For example, if placed on quarters, ground run up and simulator duties would not be wise. If your examinee has a cast, ground run-up duties might not be allowed, but simulator duties might be authorized. Generally speaking, simulator duties can be authorized anyone who can safely get into the simulator, such as uncomplicated pregnancy. Ground run-up duty is specifically authorized when controls can be safely managed despite medical restriction from flying duty.
- Block 12b is the date the grounding is effective. This can be the date the individual is seeing the provider or it may be another date based on the date the condition was diagnosed. For example, an aviator is seen in the ER over the weekend and is still sick on Monday. The effective date would be the date he/she was seen in the ER.
- Block 12c is the estimated duration of grounding. This is just an estimate and if the individual is still not ready for an upslip when the estimated duration of grounding has elapsed, a new downslip is not required since this is just an estimate. The original downslip is valid until such time the individual gets an upslip.

If the medical incapacitation is expected to last more than 365 days without waiver, termination from aviation service (permanent medical suspension) is required (AR 600-105). An AMS will be prepared and submitted for completion of permanent suspension.

Block 13 – Remark/Limitations

- Regulations require the examinee's vision must be $20/20^{-1}$ both near and far. Check the “Vision correction devices required in the performance of flight duties” and “Must carry extra spectacles” boxes in Block 13.
- Use Block 14 to communicate to the commander the medical recommendation to perform flight, UAS or ATC duties. Some example comments are "FFD Annual FDME (or FDHS) Completed"; if arriving at a new duty station remarks such as "FFD Current FDME (or FDHS) on file"; or "Temporary FFD 30 days pending receipt of FDME (or FDHS) further evaluation"; “FFD – Birth month extension to complete annual flight physical”; or "Temporary FFD 90 days pending in-cockpit evaluation."
- Information in block 13 shall not conflict with HIPAA. Do not put any medical information in this section. Although it is the commander’s approval, the form is stored in the Individual Flight Record Folder (IFRF) and seen by anyone who works in flight records.

Block 14 – Aeromedical Provider’s Signature.

- Check either flight surgeon or other as appropriate for the individual completing Blocks 14a-d. If not a flight surgeon see below for countersignature requirements.
- The provider’s name and grade should be typed or stamped.
- If the provider is a flight surgeon no other signature is required.
- The flight surgeon countersignature (Blocks 14e-h) is required when the DD Form 2992 is completed for grounding or return to flight status by an aeromedical physician assistant or aeromedical nurse practitioner for Air Force, Navy, Marine or Coast Guard personnel. A healthcare provider who has not attended the flight surgeon course will always require a flight provider countersignature for all upslips (return to flight status). This is not required for grounding (downslip) Army personnel.

- If the form is completed by a provider who has not attended the Flight Surgeon Course there should be a remark in Block 13 detailing the name of the flight provider authorizing the upslip and the date and time they discussed the case with the flight provider if there will be a delay in obtaining the flight provider countersignature.
- The date of the signature may be different than the effective date annotated in Block 11b or Block 12b.

Block 15 – Member Certification.

- The examinee completes Block 15 when informed of the recommendations contained in Block 11 or 12 of the DD Form 2992. The examinee will check the "may" or "may not" block in block 15a as appropriate, sign and date the form in blocks 15b and c.
- If the aircrew member is not available, these blocks may be left blank. If the aircrew member refuses to sign, a notation to that effect should be made in block 13, Remarks/Limitations, and the commander notified immediately.

Block 16 – Action Taken by Commander.

- The commander either approves or disapproves the recommendation from the aeromedical provider.
- The commander will then sign and date the form using blocks 16a-c.

DD Form 2992 Distribution.

A copy of the DD Form 2992 is filed in the medical record per AR 40-66 and constitutes the medical recommendation pending the commander's signature. The DD Form 2292 will be scanned into the electronic medical record. The rest of the packet is sent to the aircrew member's commander by a distribution system agreed upon by the aeromedical provider and commander(s). The most expedient means is usually hand carried by the individual.

Once the commander has approved or disapproved the DD Form 2292 and signed it this copy is placed in the Individual Flight Records Folder maintained by flight records personnel.

The aircrew member can get a copy of the form before or after the commander signs the form.

6. How are the DD Form 2992 and related forms filed in the outpatient medical record?

AR 40-66 has not been updated to reflect the DD Form 2292 and the text below has been updated to reflect the use of the new form. The DD Form 2992 will be scanned into the electronic health record and also be filed as directed in AR 40-66.

File the most recent DD Form 2992 IAW AR 40-66, chapter 5-21b(6): "File the most recent DD Form 2992 or electronic equivalent according to figures 5–1 and 5–2. Additional DD Forms 2992 will be filed in order according to the guidelines in (a)-(c) below. Destroy other DD Forms 2992. Block 8b of DD Form 2766 will be updated in pencil to show the current flying status. When available, the AHLTA application will be used to capture this information."

a. "The most recent DD Forms 2992 that shows a medical restriction from flying if the person is granted clearance to fly."
b. The most recent DD Form(s) 2992 showing that a waiver has been granted for any cause of medical unfitness for flying."
c. "Any additional DD Form(s) 2292 that the flight surgeon determines to be required as permanent record. (enter "Permanent Record" in "Remarks/Limitations" section.)"

7. Extensions.

The DD Form 2992 may be used by the flight provider to extend a currently valid medical examination clearance for a period not to exceed 1 month beyond the end of the birth month for the purpose of completing an examination begun before the end of the birth month (AR 600-105). In this case block 11a, "Other" will be checked and in block 13, "Remarks" will appear the statement "FFD – Extension to

complete annual FDME (or FDHS)." Blocks 11b and c will be dated appropriately. Extensions requested after the birth month will not be granted.

Exception to the Extension Rule (AR 600-105). Medically disqualified aircrew members have 365 days to complete their flight physical and request a waiver to continue flying duties despite the disqualification. Medical termination from aviation service is mandatory if the condition is not waiverable within 365 days (AR 600-105), or is found to be non-waiverable based on AR 40-501, policy letters (APLs), or consultation with USAAMA.

8. Alternate DD Form 2992s.

International agreements with allies permit the use of forms equivalent to the DD Form 2992 when the patient is examined by a non-U.S. Army flight surgeon. The DD Form 2992 is used by the Army, Air Force, Navy, Marines and Coast Guard so no agreement is required. However, during the transition to the DD Form 2292 from the existing service specific forms, the other services' forms will be accepted.

ATB: Depth Perception Testing

Please note that when not using AERO, the current DD Form 2808 has a pre-printed 'AFVT' in block 67. Although this is convenient for entering in the results of the Armed Forces Vision Tester (AFVT) depth perception test, it is not intended to exclude other authorized depth perception testing, such as the OPTEC 2300, the Random Dot (RANDOT) Circles Test, or the Titmus Graded Circles Stereoacuity Test. If not using the AFVT, line through the pre-printed entry and record the test used with the proper score. If using the AFVT and then also another depth perception test, record the AFVT in block 67 and then record the additional depth perception test findings in block 60 (Other Vision Test) or block 73 (Notes). With use of the AERO DD Form 2808, annotate results on page 2A, Block 67, and additional results/comments in the Notes, Block 73 on page 2B

Purpose/Indications.

Mandatory for all flight physicals. This measures fine depth perception through the ability to fuse stereoscopic targets.

Equipment.

AFVT (Armed Forces Vision Tester) or OPTEC 2300
- or -
RANDOT (Random Dot Circles Test) - with polarized glasses (included with test)
- or -
Titmus (Titmus Graded Circles Stereoacuity Test) - with polarized glasses (included with test)

Set-Up.

AFVT (Armed Forces Vision Tester) or OPTEC 2300:
- Patient seated comfortably at the AFVT (or OPTEC 2300).
- Patient wears habitual spectacle prescription (if applicable).
- May test without corrective prescription, but if fails, retest with corrective prescription.
- Test emulates distance test (optical infinity).
- Refer to manual for correct settings for model being used.

RANDOT (Random Dot Circles Test) or the Titmus (Titmus Graded Circles Stereoacuity Test):
- Patient wears habitual spectacle prescription (if applicable).
- May test without corrective prescription, but if fails, retest with corrective prescription.
- Polaroid spectacles worn (over habitual prescription if also worn).
- Test distance is 40 cm (16 inches).
- Provide adequate light but avoid reflections from the test's surface.
- Hold test upright to maintain the proper axis of polarization.
- Do not permit the patient's head to tilt during testing.

Step-By-Step Procedure.

AFVT (Armed Forces Vision Tester) or OPTEC 2300:
- Refer to manual for correct settings for model being used.
- Group A is for demonstration purposes only and should not be used as part of the actual test (see manual).
- Group B is at the level of the overall standard of 40 seconds of arc; there are three presentations of five circles each within Group B.
- Patient identifies the circle within each presentation that appears 'closest'.
- Patient must correctly identify all presentations within Group B to pass.
- You may test beyond Group B if desired, but it is not necessary.
- Record as "AFVT Group B – 40 arc sec PASS" or words to that effect.
- If fails any in Group B, retest using RANDOT and/or Titmus below.

RANDOT (Random Dot Circles Test):

- There are ten presentations of three circles each in the RANDOT.
- You must test all ten presentations; do not stop after number seven.
- You must test all presentation in order and do not jump around since each level is progressively more difficult.
- Patient identifies the circle that appears 'closest'.
- Test until the patient misses two levels in a row.
- Record the last level passed successfully.
- For RANDOT, a minimum passing score is correctly identifying presentations 1 THROUGH 7 which equals 40 seconds of arc.
- Record as the number missed over the number possible.
- For example, 'RANDOT 3/10 – 40 arc sec PASS' or words to that effect.
- If fails the RANDOT, may retest using AFVT/OPTEC 2300 or Titmus.

Titmus (Titmus Graded Circles Stereoacuity Test):

- There are nine presentations of four circles each in the Titmus.
- You must test all nine presentations.
- You must test all presentations in order and do not jump around since each level is progressively more difficult.
- Patient identifies the circle that appears 'closest'.
- Test until the patient misses two levels in a row or the last presentation.
- Record the last level passed successfully.
- For Titmus, a minimum passing score is correctly identifying ALL of the presentations 1 THROUGH 9 which equals 40 seconds of arc.
- Record as the number missed over the number possible.
- For example, 'Titmus 0/9 – 40 arc sec PASS' or words to that effect.
- If fails the Titmus, may retest using AFVT/OPTEC 2300 or RANDOT.

Note: Refer to Eye Clinic for further evaluation if subject fails any depth perception testing, i.e.:

- misses any presentations within Group B of the AFVT or OPTEC 2300;
- or, misses any of presentations 1 through 7 of the RANDOT;
- or, misses any of the nine presentations of the Titmus.

Note: The Verhoeff Testing Apparatus remains unauthorized for depth perception screening on any flight physical.

ATB: Field of Vision Testing

Purpose/Indications.

Mandatory for all initial flight physicals. This screens for gross visual field defects.

Equipment.

- Occluder (and/or use palm of hand to cover respective eye).
- Examiner's fingers.

Set-Up.

- Patient removes glasses (if applicable).
- Adequate lighting.
- Ideal lighting is bright illumination between patient and examiner with dim room illumination; avoid patient facing any direct source of light.
- Examiner is 60-80 centimeters (cm) from patient.
- Examiner must have full visual fields to be able to properly conduct this test.

Step-By-Step Procedure.

- This is a monocular test; ensure you are testing only one eye at a time.
- Instruct the patient to cover his/her left eye first; you, as the examiner, cover your right eye (mirror-imaging patient).
- Tell the patient, "I want you to keep looking at my open eye and, without looking anywhere else, use your side vision and tell me how many fingers I am holding up." (Or, words to that effect.)
- Place your closed fist in the peripheral visual field in a location where you will be able to distinguish the number of fingers exposed.
- Present one, two, or five fingers in the plane mid-way between you and the patient; the fingers should not point toward the patient and you should not wiggle or move.
- Repeat the presentation of fingers in the appropriate eight locations in the field (on each side of the four visual field meridia).
- Repeat the entire procedure for the patient's left eye.
- If the patient successfully answers all presentations within the field, record the findings for each eye even though there is no longer a separate entry block on the new DD Form 2808 for each eye.
  🕓 For example:
  OD FTC OS FTC
  [FTC = "Full To Confrontations"]

  - or –

  Right NTC Left NTC
  [NTC = "Normal To Confrontations"]

Refer any deficiencies or abnormal findings to the eye clinic for verification and possible further testing.

ATB: Management Of International Military Pilots And Student Pilot Candidates

1. DEFINITIONS/ABBREVIATIONS:

a. Parent Nation: country of origin
b. Host Nation: country hosting training (for most cases, USA)
c. STANAG: NATO Standardization Agreement
d. AR: Army Regulation
e. PfP: Partnership for Peace
f. NATO: North Atlantic Treaty Organization
g. DOD: Department of Defense
h. DD Form 2992: Medical Recommendation for Flying or Special Operational Duty
i. IMS: International Military Pilots and Student Pilots

2. REFERENCES:

a. AR 40-501: Standards of Military Fitness
b. AR 12-15: Joint Security Cooperation Education and Training
c. STANAG 3526: Interchangeability of NATO Aircrew Medical Categories

3. **INTRODUCTION:** Per AR 12-15, 8-21a, International Military Pilots and Student pilots attending US Army flight training are required to meet the appropriate US Army Aviation Class medical standards per AR 40-501, paragraph 4-2. AR 40-501, paragraph 4-2 specifies that "provisions in this chapter are subject to STANAG 3526, which applies to allied nation aircrews serving with U.S. Forces or attending U.S. Army training programs, and to U.S. aircrews serving with foreign forces..." STANAG 3526 applies to all international personnel from NATO/PfP nations. In contrast, AR 12-15, paragraphs 8-21a(2)(a-f) contains verbiage different from STANAG 3526 stating that all IMS are required to meet US Army Flight Class standards and the examination must be completed by US DOD flight surgeons. As opposed to NATO/PfP IMS, personnel from non-NATO/PfP nations are not covered with STANAG 3526 and must adhere to AR 12-15, paragraphs 8-21a(2)(a-f).

4. **GUIDANCE FOR NATO/PfP IMS:** IAW NATO/PFP STANAG 3526, NATO and AR 12-15, paragraphs 8-21a(1)(a-d) as detailed below. The information below has been corrected to reflect changes since the publication of AR 12-15.

a. AR 12-15, paragraphs 8-21a(1)(a-d)
   1) In accordance with NATO/PFP STANAG 3526 edition 7, NATO and PFP IMS members will conduct their normal flight physical examination using their military's qualified flight surgeons. Parent nations are responsible for standards of primary selection, permanent medical disqualification, and determination of temporary flying disabilities exceeding 30 days.
      a) The U.S. Army will accept the medical category and qualification for flying status, including the expiration date. Parent nations will provide a medical statement in English describing the IMS's medical fitness for flying duties, and forward the latest flight physical report with pertinent medical information and other pertinent documentation helpful in case of post-mishap identification purposes (fingerprints, dental records, and so forth) to the U.S. Army Aero-medical Activity (USAAMA) (MCXY–AER), Building 110, 6th Avenue, Fort Rucker, AL, USA 36362.
      b) Upon reporting to the U.S. Army training facility, the local flight surgeon will review the IMS's medical information, insure there has been no change in medical status, and issue a DD Form 2992 (Medical Recommendation for Flying or Special Operational Duty), using the expiration date assigned by the parent nation, for medical clearance for local flying duties.
      c) In cases where the expiration date for flying status occurs during training, periodic flight physical examinations will be conducted in accordance with U.S. Army policies and procedures, and entered in the Aeromedical Electronic Resource Office (AERO). A copy of the flight physical report will be forwarded to the appropriate aeromedical authority of the Parent Nation for review and determination of fitness to fly.
      d) If a medical issue is discovered or occurs prior to completion of training, any provider may temporarily ground the IMS until resolution using U.S. Army policies and procedures. Only a

U.S. DOD Flight Surgeon may return the IMS to flying status. If the grounding condition is of more than 30 days or potentially permanently disqualifying, the case will be referred to the parent nation for action in accordance with its regulations. The parent nation is responsible for the costs per established agreements.

b. NATO STANAG 3562 paragraphs 2a-c

2. Participating nations agree:

a. That the following factors remain the responsibility of parent nations:
    1) Standards for primary selection.
    2) Permanent medical disqualification.
    3) Determination of temporary flying disabilities exceeding 30 days.

b. That with regard to the medical categories concerning the flying status of aircrew, the following procedures will apply:
    1) When aircrew are sent for temporary flying duty to another nation or become part of a combined NATO unit, the host nation or NATO unit will accept the medical category concerning the flying status issued by the parent nation, including the expiration date.
    2) Aircrew proceeding on such duty for periods of more than 30 days are to be accompanied by a medical statement in English or French, describing their medical fitness for flying duties. Nations will also forward:
        a) Latest flight physical report with pertinent medical information.
        b) Documentation helpful for post-accident identification purposes (fingerprints, dental charts, etc.).
    3) Periodic Flight Physical Examinations will be conducted by attending flight surgeons IAW the Host Nation's aircrew physical standards and physical examination periodicity policy. For the aircrew of NATO Airborne Early Warning (NAEW) E-3A Component, the Flight Physical Examinations will be conducted according the physical standards of the Flight Surgeons Manual of NATO E-3A Component. A copy of the flight physical report will be forwarded to the appropriate aeromedical authority of the parent nation. The medical authority of the host nation or NATO unit shall only apply their medical standards to new medical problems.
    4) Whenever aviation personnel are deployed as part of a multinational force, or when on temporary assignment in another NATO country, their routine Role/Echelon 1 medical care may be provided by a military Flight Surgeon of any NATO nation. This care may involve routine sick call, care for medical conditions found, and temporary grounding or ungrounding of aviation personnel. Any physician or dentist who feels that an aviator is unfit for flight may temporarily ground that aviator in accordance with his own national procedures. In nurse-led clinics, where a physician is not available, also other healthcare professionals have the authority to ground an aviator. But in all cases only a Flight Surgeon may return the aviator to flying duties. The medical determination as to when an aviator may return to flying duties will be determined by the servicing Flight Surgeon in accordance with his experience and training, using his own nation's Aviation Medicine Regulations for reference as needed. If conditions are found which in the opinion of the attending Flight Surgeon mandate long-term (more than 30 days) or potentially permanent disqualification, the case will be referred to the parent nation for action in accordance with their regulations.

c. That with regard of the transfer of medical records and information, the following procedures will apply:
    1) Transfer of medical records and information can only take place According to the laws and regulations of the different nations.
    2) If national laws and regulations do not allow transfer of information without permission of the individual, a written consent is necessary. If the individual chose to withhold consent, the only information that will be given to the parent nation will be a statement of fitness / unfitness for flying duties.

5. **GUIDANCE FOR Non-NATO/PfP IMS**: AR 12-15, paragraphs 8-21(2)(a-f) apply as detailed below. The information below has been updated to reflect changes since the publication of AR 12-15.

a. AR 12-15, paragraphs 8-21(2)(a-f)

1) If the IMS is not from a NATO/PFP nation, and not subject to STANAG 3526, the IMS will need to meet U.S. Army standards with submission and approval through the USAAMA (MCXY–AER), Building 110, 6th Avenue, Fort Rucker, AL, USA 36362.
   a) If available, a U.S. Army aviation medical examination will be performed by a qualified U.S. DOD flight surgeon before the IMS departs from their home station; the cost of the examination and transportation will be borne by the foreign government. A flight student must meet Class 1 standards. A rated aviator must meet Class 2 standards.
   b) If a U.S. DOD flight surgeon is not available, a U.S. Army aviation medical examination may be performed by a parent nation flight surgeon and submitted to the USAAMA for review. A flight student must meet Class 1 standards. A rated aviator must meet Class 2 standards.
   c) Flight physical examinations should be documented in English on DD Forms 2807–1 and 2808 in accordance with U.S. Army flight standards. The flight physical examination will be given as soon as possible to prevent cancellation of training because of physical non-qualification.
   d) Host nation waivers for medically disqualifying conditions will be reviewed by the U.S. Army Aviation School and the USAAMA.
   e) Upon the IMS's arrival at the U.S. Army training location, a U.S. DOD flight surgeon will review Aeromedical Electronic Resource Office (AERO) and all examinations/applicable waivers prior to completing a DD Form 2992 and prior to the IMS participation in actual aerial flight.
   f) If a new disqualifying defect is discovered upon arrival to the U.S. Army training location, the IMS will undergo the necessary evaluations for requesting the new medical waiver/exception to policy through the appropriate U.S. Army Aviation Waiver Authority. The parent nation is responsible for the costs per established agreements. The medical examination/aeromedical summary will be referred from the DOD flight surgeon to the Director, USAAMA (MCXY-AER), Building 110, 6th Avenue, Fort Rucker, AL 36362-5377, for advice, recommendation for waiver/exception to policy approval. Waiver approval authority for IMS will be in accordance with AR 40–501, chapter 6–20*a*, Commander, AHRC (AHRC-EPB-T), 1600 Spearhead Avenue, Room 2-1-021, Fort Knox, KY 40122-5408. Temporary up-slips (DD Form 2992) may be given pending receipt of the waiver per the aeromedical policy letters. For further questions or requests status please contact the U.S. Army Aeromedical Activity's AERO Helpdesk by phone at 334–255–0749/0750 or DSN 558 or e-mail: usarmy.rucker.medcom-lahc.list.lahc-aero-helpdesk@mail.mil.

ATB: Manifest/Subjective Refraction

The pre-printed wording of block 62, “Refraction by Autorefraction or Manifest” may be very confusing. It is important that anyone conducting testing for any flight physical understand that an autorefraction of any kind is not authorized and should never be entered on the DD Form 2808 unless it is in block 60 (Other Vision Test) or in block 73 (Notes) for reference only. Autorefraction results should never be entered into block 62. With AERO, enter information on page 2A of DD Form 2808 with additional notes on page 2B.

In AERO select “Cycloplegic Class 1W/1A” from the dropdown on page 2A of the DD Form 2808.

If using the hardcopy DD Form 2808 line through the entire “By Autorefractor or Manifest” wording and utilize the blank next to the refraction to enter the type of refraction utilized. For example:

By –0.50 S. –0.25 CX 180 (type of refraction here)

All autorefraction entries on FDME’s in block 62 will be returned as incomplete.

The terminology of cycloplegic, subjective, and manifest can be confusing when it comes to FDME/FDHSs. For standardization, this guide explains how these entries are commonly utilized:

Terminology	Class of Physical	When Indicated
Cycloplegic	Class 1 only (drops given)	Class 1 FDME only (See ATB-Cycloplegic Refraction)
Subjective or Manifest	All classes except Class 1 (no drops given) (phoropter used)	Corrected vision with current glasses (Hx Rx) or uncorrected vision worse than $20/20^{-1}$ in either eye at distance or near with no previous use of glasses.
Habitual or Historical (Hx Rx) = current glasses	All classes except Class 1 (no drops given) (lensmeter used)	Corrected vision with current glasses (Hx Rx) at least $20/20^{-1}$ in each eye at distance and near.

* Some use the term manifest to mean Hx Rx also. See “Notes About Manifest Refraction” on the last page of this ATB.

Purpose/Indications.

Needed for all classes of FDME/FDHS, other than Class 1 (requires cycloplegic refraction), if the patient is not $20/20^{-1}$ in each eye uncorrected for both near and far vision. This measures a patient’s refractive error without the use of a cycloplegic agent (no drops) as well as obtains the eyeglass prescription needed to bring the corrected vision to $20/20^{-1}$ in each eye. This is often missed or omitted on FDHSs and comprehensive FDMEs, despite AERO reminders.

Equipment/Supplies.

- Phoropter
- Projected Snellen distance visual acuity chart [unless deployed, must be projected IAW AR 40-501, paragraph 4- 5a(1), a(1), and b(1)]. Projected sources for a subjective or manifest refraction include, but are not limited to:
  - Traditional Projector with screen
  - Binocular Visual Acuity Tester (BVAT), or similar system
  - Refraction system with projected image (i.e. the Marco Nidek COS-1000 Compact Ophthalmic System, the Marco Nidek EPIC-2100, or similar system)
- Standard Reduced Snellen near visual acuity card (needed if uncorrected near vision is worse than $20/20^{-1}$ in either eye.)

Set-up.

A subjective refraction should only be conducted after completing all other eye testing and verifying any disqualifying parameters from other tests. However, it can be done at any time in the physical exam procedure. Highly recommend a brief review of the physical exam form to ensure any other eye testing completed at that time does not require re-testing (i.e. meets standards). One more check in the process only helps ensure the physical is correct when sent to AAMA for review.

Step-By-Step Procedure.

- This is not for any Class 1 FDME (cycloplegic refraction will be used for eyeglass prescription if needed).
- Perform a subjective refraction for either distance and/or near depending on the referral criteria and findings in blocks 61 and 63.
- Enter the best corrected distance visual acuity in block 61 and the best corrected near visual acuity in block 63 next to the pre-printed "Corr. to 20/ " entries for each eye.
- Record the subjective refraction findings for each eye in block 62:
  - The sphere amount in the first blank between the pre-printed entries of "By" and "S" and in AERO "Sph." If zero, enter 0 or plano. In AERO all entries must be a number.
  - The cylinder amount in the second blank between the pre-printed entries of "S." and "CX" and in AERO "Cyl." If there is no cylinder amount, enter sphere, sph, 0 or DS. In AERO entries must be a number.
  - The astigmatism axis in the third blank after the pre-printed entry of "CX" and in AERO "X'. If there is no astigmatism, enter a horizontal line here. In AERO all entries must be a number.
  - After the astigmatism axis, write the word subjective, subj, or manifest" if using this term interchangeably with subjective to indicate the type of refraction conducted. In AERO select "Manifest, glasses RX" from the dropdown.
  - If the patient's best-corrected near visual acuity utilizes the same prescription as the best-corrected distance visual acuity, simply enter the word "lens" next to the pre-printed entry of "by" under block 63 ("Near Vision"). If the best-corrected near visual acuity utilizes an "Add" (bifocal), enter the amount of the "add" that will always be a number preceded by a '+' sign.
  - If you know the refraction still does not correct patient to qualifying standards at distance and/or near, perform a full eye exam to try and determine the cause. If undeterminable, refer to ophthalmology or optometry.

A typical ideal subjective refraction entry on DD Form 2808 (hardcopy):

	59. RED/GREEN (Army Only)	60. OTHER VISION TEST
61. DISTANT VISION	62. ~~REFRACTION BY AUTOREFRACTION OR MANIFEST~~	63. NEAR VISION
Right 20/25 Corr. to 20/20	By Plano S. -0.50 CX 180 by Subj	Right 20/30 Corr. to 20/20 by +1.00
Left 20/30 Corr. to 20/20	By +0.25 S. -0.75 CX 180 by Subj	Left 20/30 Corr. to 20/20 by +1.00

Referral Criteria – Subjective/Manifest Refraction:

- Class 1 FDME – ALL Class 1 FDMEs receive a cycloplegic exam.
- All other classes of FDME/FDHS – refer if either eye's best corrected vision is worse than $20/20^{-1}$ at distance or near.

Notes About Manifest Refraction.

Over time, with physicals, many have come to use manifest refraction to identify the patient's current spectacle prescription (the glasses the patient is wearing). However, most eye care providers utilize the words subjective and manifest interchangeably and use terms such as, "Hx Rx" or "Spec Rx" to identify the current spectacle prescription. If the patient meets standards in each eye with his/her current spectacle prescription, it should be entered on the physical in a clear manner as to show that the visual acuity was tested with the current spectacle prescription. This would never be entered for a Class 1 FDME and should be verified by subjective refraction if the prescription is older than one year.

ATB: Night Vision

Purpose/Indications.

Mandatory for all initial FDMEs to determine history of night vision problems. The current DD Form 2808 has a pre-printed 'Test used and score" in block 69. However, there is no established test for night vision and therefore no score. This part of the physical is still conducted through history only. If doubt or concern, refer to Optometry/Ophthalmology for further evaluation.

Equipment.

None.

Set-Up.

Patient privacy.

Step-By-Step Procedure.

- Ask the patient, "Have you ever had any night vision problems?" (or words to that effect.)
- If the response is negative, record "NIBH" for "Not Indicated By History".
- Any positive responses are abnormal and must be referred to the eye clinic for further evaluation and investigation.

ATB: Ocular Motility

Purpose/Indications.

Block 64 includes several sub-tests for ocular motility along with true heterophoria testing, even though the title of the block is “Heterophoria”. Therefore, each sub-test will be covered separately below. Abnormalities must be evaluated per the Excessive Phorias/Tropias/Amblyopia APL to include completion of the Ocular Motility Worksheet.

Heterophoria Testing (ES°, EX°, R.H., L.H.):
Mandatory for all Class 1 and comprehensive FDMEs. This measures the latent or relative deviation between the eyes that occurs when fusion is interrupted. A phoria can be lateral [ES° for esophoria (in), and EX° for exophoria (out)] and/or vertical (R.H. for right hyperphoria, and L.H. for left hyperphoria). Do not use hypophoria entries). A phoria does not apply to one eye or the other. It is basically a resting position of the eyes. Everyone has a phoria, but, it might be so small as to come out to zero (0) on testing.

Tropia Testing (Cover Test (“CT”) measured as “Prism div”, or “Prism Conv.” if needed):
The “CT” (Cover Test) is mandatory for all initial and comprehensive FDMEs. A tropia is a manifest deviation of one eye and can be lateral and/or vertical with the same prefix identifiers as a phoria (eso, exo, and hyper). Tropia is also known by the names such as heterotropia, strabismus, and squint. A tropia applies to only one eye or the other at any given time. It can be constant or intermittent; unilateral or alternating. Not everyone has a tropia.

When the cover-uncover or unilateral cover test is performed properly, this test can detect the presence of a tropia. The presence of a tropia could lead to lack of fusion, reduced or no stereopsis (affecting depth perception), suppression of vision in one eye, or diplopia (double vision). These are all disqualifying conditions for flight school. Passing phoria testing does not necessarily mean a person is without a tropia. If a person fails the phoria testing or has difficulty with it, it could be an indicator that the patient may have a tropia. Do not confuse this cover- uncover or unilateral cover test that tests for tropia with the cross-cover or alternating cover test that is utilized by Optometry/Ophthalmology to verify a phoria.

This test is conducted at both distance and near. If any tropia is detected, the patient must be referred to Optometry or Ophthalmology for verification and measurement of the amount of tropia to be entered by the “Prism div.” (prism divergence) and “Prism Conv.” (prism convergence) entries. If no tropia is detected, the word “Ortho” is placed next to the preprinted entry of “CT”. One entry presumes the test was conducted at both distance and near but the proper entry would be “Ortho @ distance and near” or words to that effect. The “Prism div.” and “Prism Conv.” entries are left blank if no tropia detected.

NPR [“NPR” (Near Point of Recovery) on DD Form 2808 should be “NPC” (Near Point of Convergence)]:
Mandatory for all initial FDMEs. Near point of convergence testing determines the patient’s ability to converge the eyes while maintaining fusion.

PD (Pupillary Distance):
This test is not utilized for flight physicals. However, it is the measurement of the patient’s inter-pupillary distance and can be included if known. Otherwise, leave blank.

Equipment:

Heterophoria Testing (ES°, EX°, R.H., L.H.):
- Armed Forces Vision Tester (AFVT) or OPTEC 2300
- The cross-cover or alternating cover test and/or the von Graefe method of measuring phorias should only be used for verification of a phoria by Optometry/Ophthalmology. Do not confuse the cross-cover test with the cover-uncover or unilateral cover test that detects tropia.

Tropia Testing (CT – Cover Test):

- Occluder for cover-uncover or unilateral cover test.
- Distance and near visual acuity charts or appropriate targets.
- Ideally, an appropriate target is an isolated letter on a visual acuity line that is one to two lines larger than the patient's best corrected visual acuity of the poorer seeing eye. If the patient is 20/20, then utilizing a 20/25 or 20/30 isolated letter at both distance and near would be ideal.

NPR ["NPR" (Near Point of Recovery) on DD Form 2808 should be "NPC" (Near Point of Convergence)]:

- Any instrument having an appropriate target that is one to two lines larger than the patient's best corrected near visual acuity in the poorer seeing eye. The instrument or device must be easy for the examiner to manipulate and not interfere with the testing method.
- Metric ruler for measuring in millimeters (mm).

Set-up.

Heterophoria Testing (ES°, EX°, R.H., L.H.):

- Patient seated comfortably at the AFVT or OPTEC 2300.
- Test emulates distance test (optical infinity).
- Refer to manual for correct settings for model being used.

Tropia Testing (CT – Cover Test):

- Patient wears habitual spectacle prescription (if applicable) for the distance being tested (distance spectacle prescription when testing distance; near spectacle prescription when testing near).
- Set up the target:
  - Distance (tested at 20 feet or 6 meters) – isolated letter, one to two lines larger than the visual acuity in the patient's poorer seeing eye with correction if spectacles required.
  - Near (tested at 16 inches or 40 cm) – reduced Snellen letter one to two lines larger than visual acuity in the patient's poorer seeing eye with correction if spectacles required. The patient may hold the target but verify the test distance.
- The examiner holds the occluder.
- Sufficient room illumination to see the patient's eye movements.
- The examiner must be in a position to be able to see the patient's eyes easily without interfering with the patient's view of the target.

NPR ["NPR" (Near Point of Recovery) on DD Form 2808 should be "NPC" (Near Point of Convergence)]:

- Patient wears habitual near prescription if applicable.
- If spectacles interfere with testing, attempt testing without spectacles.
- Sufficient room illumination to see the patient's eyes and for the patient to see the target.

Step-By-Step Procedure.

Heterophoria Testing (ES°, EX°, R.H., L.H.):

- Test distance vertical phoria and lateral phoria in accordance with the manual for the AFVT or OPTEC 2300.
- Use associated scoring key to determine amount of phoria in prism diopters.
- Vertical phoria must be 1 or less. If a subject has a number other than zero in "RH", then the "LH" entry must be zero and vice-versa.
- Lateral phoria must be 8 or less. If a subject has a number other than zero in "ES°", then the "EX°" entry must be zero and vice-versa.
- Refer to the Eye Clinic if vertical phoria is greater than 1 or if lateral phoria is greater than 8.

Tropia Testing (CT – Cover Test):

- This is the cover-uncover or unilateral cover test to test for tropia, and does not test for phoria.
- Test at distance (20 feet or 6 meters) and then near (16 inches or 40 cm).
- Cover and uncover the right eye three times while you:
  - Watch behind the occluder for eye movement

- 🕓 Watch for eye movement after occluder is removed
- Repeat for left eye.
- Repeat entire procedure for near.
- No movement detected is recorded as “Ortho” (distance and near).
- Refer to the eye clinic for verification if any movement detected.
- The eye clinic will verify any tropia and measure to enter amount into the “Prism div.” or “Prism Conv.” blocks on DD Form 2808.

NPR [“NPR” (Near Point of Recovery) on DD Form 2808 should be “NPC” (Near Point of Convergence)]:

- This is a binocular test. Ensure test is performed with both eyes open.
- Start the fixation target at 40 cm from the patient and ensure he/she sees only one image at that start point before proceeding.
- Explain to the patient to tell you when the target appears double or when it splits into two images. Further explain that it only matters when the target doubles and not when it appears blurry.
- Bring the fixation target toward the patient slowly to allow him/her to maintain fixation on the target.
- Observe patient’s eyes until the patient reports that the target appears double or split; or until it is apparent that one eye loses fixation (turns in or out).
- Record this distance from the patient’s eyes in millimeters (mm).
- Passing is 100 mm or less.
- If greater than 100 mm, first carefully retest with repeat explanation to the patient of reporting only when the image is double or splits and not only when the image is blurry. If still greater than 100 mm, refer to the eye clinic for verification.

ATB: Reading Aloud Test

Background:
Administer the reading aloud test (RAT) to aviation training applicants (all classes) as a standardized assessment of an individual's ability to communicate clearly in the English language, in a manner compatible with safe and effective aviation operations. Current communication systems degrade speech intelligibility. The radio environment separates the speaker and the listener from the benefits of watching lips and body language cues. Those with marginal English skills have problems communicating effectively in the operational aviation environment.

Failure of the screening RAT by applicants with English as their native language may indicate undiagnosed or concealed learning disabilities. Administration of the RAT occasionally reveals immature, indecisive, careless, or excessively introverted personalities, which may indicate a high risk for aviation training failure.

When administered to aviation personnel, to include UAS and ATC personnel, the RAT will be used to determine the individual's ability to clearly enunciate, in the English language, in a manner compatible with safe and effective aviation operations.

The RAT appears to be a nonsense story, but was designed as a phonetic exercise. Assessment by the flight provider is subjective. Applicants should read the RAT clearly, deliberately, without hesitation, error, or stuttering. The test is scored as "RAT-PASS" or "RAT-FAIL." The examining physician will consult with a local instructor pilot or UAS/ATC supervisor in questionable cases. Clear failure may warrant evaluation with a speech pathologist for further testing. Any failure requires an aeromedical summary (AMS) for an exception to policy (ETP) or waiver consideration with pertinent information.

Procedure:
Have the examinee stand erect, face the examiner across the room and read aloud, as if he/she were confronting a class of students.

If he/she pauses, even momentarily, on any phrase or word, the examiner immediately and sharply says, "What's that?" and requires the examinee to start again with the first sentence of the test. The true stammerer usually will halt again at the same word or phonetic combination and will often reveal serious stammering.

Have the applicant read aloud as follows:

"You wished to know all about my grandfather. Well, he is nearly 93 years old; he dresses himself in an ancient black frock coat, usually minus several buttons; yet he still thinks as swiftly as ever. A long flowing beard clings to his chin giving those who observe him a pronounced feeling of the utmost respect. When he speaks, his voice is just a bit cracked and quivers a trifle. Twice each day he plays skillfully and with zest upon our small organ. Except in winter when the ooze of snow or ice is present, he slowly takes a short walk each day. We have often urged him to walk more and smoke less, but he always answers, "Banana oil!" Grandfather likes to be modern in his language."

ATB: Valsalva Maneuver

This is a very simple and quick physical exam technique used to assess gross Eustachian tube function. While the aeromedical provider views the crewmember's tympanic membrane (TM) through an otoscope, the crewmember pinches his/her nostrils and keeps his/her mouth closed while exhaling. Since the mouth and nose are closed preventing any air from escaping, the pressure in the nasopharynx increases. If the Eustachian tubes function properly, this increased pressure will open the collapsed Eustachian tubes and this increased pressure will be transmitted to the middle ear cavity. The visible result will be a bulging of the TM during the maneuver. The crewmember will also report he/she felt his/her ears clear. This maneuver is repeated while the aeromedical provider views the contralateral side. Visualization of good TM movement is taken as evidence of good Eustachian tube function.

The crewmember must be coached until he/she learns this maneuver. One will be surprised how difficult it can be to explain this maneuver to an applicant who has never flown in an airplane and has not had the need to clear his ears previously. Always caution the crewmember to perform the maneuver gently and to stop once he/she feels his/her ears clear. Too forceful a maneuver could over inflate the middle ear cavity and leave the TMs bulging making it difficult to visualize movement of the contralateral TM upon repetition.

Current aeromedical policy requires documentation of the Valsalva on all initial Class 1, 2 or 3 FDMEs. Eustachian tube function testing is not required for ATC and UAS operators. If not able to visualize good TM movement during the Valsalva maneuver or the applicant states he/she is unable to clear his/her ears, a tympanogram should be ordered. Refer to ENT for further evaluation if the tympanogram is abnormal or other disqualifying abnormalities are found on physical exam.

ATB: Visual Acuity Testing – Distant and Near Vision

Purpose/Indications. Distant and near vision.
Mandatory for all classes and types of flight physicals. This measures the best visual acuity at distance (20 feet or 6 meters) and near (14 inches, 16 inches or 40 cm depending on the test used) without any kind of correction whatsoever, followed by best-corrected visual acuity at distance with spectacle prescription if the patient wears any. No contact lenses allowed during testing and must be removed at least 24 hours prior to examination.

This measures the clarity of vision or the ability of the visual system to resolve detail at distance and near. A patient's visual acuity at distance and near depends upon the accuracy of retinal focus, the integrity of the eye's neural elements, and the interpretive faculty of the brain. Near visual acuity also depends upon accommodation, which is the eye's ability to focus clearly for objects at closer distances.

It is important to conduct distant visual acuity testing on all patients before near acuity testing. Testing for near visual acuity before distant visual acuity may disadvantage the patient, depending on their accommodative (focusing) ability.

Equipment.
- Occluder (to cover one eye at a time).
- Standard projected Snellen Distance Acuity Chart, AFVT (Armed Forces Vision Tester), or the OPTEC 2300. The AFVT and OPTEC 2300 are considered projected systems.
- Snellen near visual acuity card

Set-up.

1. Distant Visual Acuity:

Projected Snellen Distance Acuity Chart:
- Patient is 20 feet (or 6 meters) from acuity chart with center of chart at approximately eye-level for the patient. The intention is not to have any extreme angle between the patient and the chart.
- Patient holds occluder and covers eye as directed by tester. Patient may use palm of hand, if necessary, but ensure patient is using the palm, not the fingers, to preclude seeing between the fingers. Patient must keep both eyes open, must not press on either eye, and must not squint.

AFVT or OPTEC 2300:
- Patient is seated comfortably at the AFVT or OPTEC 2300.
- Far or near letter acuity slide(s) set correctly (see manual).
- Patient must push forehead against bar for internal light to work.

2. Near Visual Acuity:

Standard Reduced Snellen Near Visual Acuity Card:
- Patient is at the designated test distance from the Reduced Snellen Acuity Card (test distances may vary so ensure the test distance is correct; typically they are set for 16 inches, 14 inches, or 40 cm. There should be adequate illumination, with the light source either above or slightly behind the patient. Care should be taken so that the light is not directed toward the patient's eyes.
- Patient holds occluder and covers eye as directed by tester. Patient may use palm of hand, if necessary, but ensure patient is using the palm, not the fingers, to preclude seeing between the fingers. Patient must keep both eyes open, must not press on either eye, and must not squint.

AFVT or OPTEC 2300:
- See under distant visual acuity above.

Step-By-Step Procedure.

Uncorrected Distant and Near Vision:

- Test uncorrected visual acuity first. This is important because a patient may be able to memorize the letters on the chart with corrected vision and, intentionally or unintentionally, say aloud the smaller letters on the chart when uncorrected, whether or not actually seen by the patient.
- Observe the patient during testing to ensure no squinting (or at least attempt to observe the patient behind the AFVT or OPTEC 2300).
- Instruct the patient to cover one eye or occlude the non-tested eye with the appropriate buttons on the AFVT or OPTEC 2300. Direct the patient not to squint. By convention, it is best to test the right eye first, then left eye for consistency.
- Instruct the patient to "read the smallest line of letters you can, without squinting" or words to that effect.
- If the patient reads at least 4 or 5 out of 5 letters on a 20/20 line, record $20/20^{-1}$ or 20/20 for that eye, whichever is applicable. Repeat testing for other eye.
- If the patient misses two letters or more out of 5 letters on a 20/20 line, ask patient to read the next larger line of letters; continue this process until patient reads at least 4 out of 5 letters on a line of letters. Then, encourage the patient to read any letters on the next smallest line if they can. Record visual acuity based on standard methods. For example, if patient reads the entire 20/30 line easily, but can only read two of the letters on the 20/25 line, then record the visual acuity as $20/30^{+2}$.
- Repeat testing for the other eye.

Note:

- Per AR 40-501, paragraph 4-5a(1), a(2), and b(1), "…no more than 1 error per 5 presentations of 20/20 letters, in any combination, on either the Armed Forces Vision Tester (AFVT) or any projected Snellen chart set for 20 feet."
- The AFVT line has 10 letters but is split into two sets of five letters positioned next to each other on the same line. Test the entire line, if desired, but the patient is only required to get 4 out of 5 letters that are on a 20/20 line to be considered a pass for a flight physical. Therefore, entries of 20/20 or $20/20^{-1}$ are both passing entries. Most projected Snellen charts have 6 letters (some have 4, 5, 7, or 8 letters) per line. The regulation allows for presentation of 5 letters in any combination so you may meet the requirement. If in question, refer to the eye clinic for verification.

Referral Criteria:

- Class 1 FDME must see Optometrist or Ophthalmologist for cycloplegic refraction.
  - Uncorrected distant vision must be no worse than 20/50.
  - Uncorrected near vision worse than $20/20^{-1}$ does not meet the visual acuity standards.
  - If standards are not meet, an AMS is required. See the Decreased Visual Acuity APL for required testing. Exception to policy will be considered for uncorrected distant vision no greater than 20/70 or uncorrected near vision no greater than 20/40.
- All other classes of FDME/FDHS refer if either eye at distance or near the uncorrected visual acuity is worse than 20/400. See the Decreased Visual Acuity APL for required testing for waiver consideration.

Corrected Distant and Near Vision:

- Test corrected visual acuity after uncorrected visual acuity.
- For Class 1 FDME, perform the visual acuity with spectacle prescription, if wears any, before instilling any drops for the cycloplegic refraction to ensure current spectacle prescription is adequate. If patient is not corrected to 20/20 or $20/20^{-1}$, have the eye clinic refract the patient to ensure he/she is correctable to standard before the cycloplegic refraction. However, do not record these results in block 62 since all Class 1 FDMEs will receive a cycloplegic refraction by an Optometrist or Ophthalmologist who will enter the patient's cycloplegic refractive error there. Therefore, record the results in block 60 or block 73, but ensure these results do not get confused with the cycloplegic results. See standards under referral criteria below.

- For all other classes of FDMEs/FDHSs, repeat the distant and near visual acuity procedure for the right eye with distance or near spectacle correction as required if patient wears any. No contact lenses. Patient should be wearing the glasses he/she uses with aviation duties.
- For bifocal wearers, be certain patient is looking through the correct portion of the spectacles for the test being administered. For progressive bifocal wearers, also ensure patient is angled correctly for optimal visual acuity.
- Ensure the spectacles worn are not a reading only prescription before proceeding with distant visual acuity testing.
- If patient was at least $20/20^{-1}$ at distance and near without correction, this test can be skipped and a horizontal line drawn next to “Corr. to 20/--“.
- Repeat procedure for the left eye for corrected distant and near visual acuity.

Referral Criteria:

- Class 1 FDME must see Optometry or Ophthalmology for a cycloplegic refraction.
  - Uncorrected distant vision must be no worse than 20/50 and corrected to at least $20/20^{-1}$.
  - Uncorrected near vision no worse than $20/20^{-1}$ to meet the visual acuity standards.
  - If standards are not meet, an AMS is required. See the Decreased Visual Acuity APL for required testing. Exception to policy will be considered for uncorrected distant vision no greater than 20/70 or uncorrected near vision no greater than 20/40.
- All other classes of FDME/FDHS refer if either eye at is worse than $20/20^{-1}$ with correction for distant or near vision.