

**BY ORDER OF THE  
SECRETARY OF THE AIR FORCE**

**AIR FORCE INSTRUCTION 48-307,  
VOLUME 1**



**9 JANUARY 2017**

***Health Services***

***EN ROUTE CARE AND AEROMEDICAL  
EVACUATION MEDICAL OPERATIONS***

**COMPLIANCE WITH THIS PUBLICATION IS MANDATORY**

---

**ACCESSIBILITY:** Publications and forms are available for downloading or ordering on the e-publishing website at [www.e-publishing.af.mil](http://www.e-publishing.af.mil).

**RELEASABILITY:** There are no releasability restrictions on this publication.

---

OPR: AF/SG3/5X

Certified by: AF/SG3/5  
(Maj Gen Roosevelt Allen)

Supersedes: AFI41-307, 20 August 2003;  
AFI41-301, 1 August 1996; Medication  
Administration Policy Letter, May 2010;  
AFI44-165, 28 November 2014

---

Pages: 250

This instruction implements Air Force Policy Directive (AFPD) 48-1, *Aerospace Medicine*; supports AFPD 10-29, *Worldwide Aeromedical Evacuation Operations*; and establishes, defines, and implements standards of care in the Air Force Aeromedical Evacuation System (AE). This instruction applies to all Aeromedical Evacuation (AE) and En Route Patient Stage (ERPS) assigned personnel, associated in-flight care personnel and ground-based Air Force Aeromedical Evacuation personnel, and applies to all Air Force personnel, including Air Force Reserve Command (AFRC) and Air National Guard (ANG) involved with AE patient care. Patient Staging has several connotations and denotes all patient staging missions, in garrison and expeditionary. The En Route Patient Stage (ERPS) is a specific, Unit Type Code (UTC) staging facility. The En Route Patient Staging System (ERPSS) denotes the global system. There are also facilities that may not have a designated ERPS UTC, in which patient staging also occurs. Refer recommended changes and questions about this publication to the OPR listed above using the AF Form 847, *Recommendation for Change of Publication*. Route AF Forms 847 from the field through the appropriate chain of command. The authorities to waive wing/unit level requirements in this publication are identified with a Tier ("T-0, T-1, T-2, and T-3") number following the compliance statement. See AFI 33-360, *Publications and Forms Management*, Table 1.1 for a description of the authorities associated with the Tier numbers. Submit requests for waivers through the chain of command to the appropriate Tier waiver approval authority, or alternately, to the Publication OPR for non-tiered compliance items. This publication may be supplemented at any level, but all Supplements must be routed to the OPR of this publication for

coordination prior to certification and approval. Ensure that all records created as a result of processes prescribed in this publication are maintained in accordance with Air Force Manual (AFMAN) 33-363, *Management of Records*, and disposed of in accordance with Air Force Records Information Management System Records Disposition Schedule (RDS). This publication requires the collection and or maintenance of information protected by Title 5 United States Code (USC) Section 552a, *The Privacy Act of 1974*. The authorities to collect or maintain the records prescribed in the publication are 10 USC § 8013, *Secretary of the Air Force*; Executive Order 9397 (SSN), as amended; and AFI 36-2101, *Classifying Military Personnel (Officer and Enlisted)*. The applicable SORN, F036 AF PC C, *Military Personnel Records System*, is available at: <http://dpcl.d.defense.gov/Privacy/SORNsSearchResults/tabid/7541/Category/277/Default.aspx>.

Do not use this instruction as permission to move patients. Patients must be eligible for aeromedical transportation according to Department of Defense (DoD) Regulation 4515.13-R, *Air Transportation Eligibility*. The use of the name or mark of any specific manufacturer, commercial product, commodity, or service in this publication does not imply endorsement by the Air Force.

<b>Chapter 1— PROGRAM OVERVIEW</b>	<b>9</b>
1.1. Mission Description.....	9
1.2. Purpose.....	9
1.3. Applicability. ....	9
1.4. Scope.....	9
1.5. Standards.....	10
<b>Chapter 2— OPERATIONAL AND ADMINISTRATIVE ROLES AND RESPONSIBILITIES</b>	<b>11</b>
2.1. Air Force Surgeon General .....	11
2.2. Pacific Air Forces .....	11
2.3. United States Air Forces Europe-Air Forces Africa .....	11
2.4. United States Transportation Command.....	11
2.5. Air Mobility Command. ....	11
2.6. Wing Commander.....	16
2.7. Flight Surgeon (FS). ....	17
2.8. Patient Staging and En Route Patient Stage .....	17

2.9.	Contingency Operations.....	18
2.10.	AELT/AE Crew Structure.....	18
<b>Chapter 3—</b>	<b>REQUESTING AE PATIENT MOVEMENT THROUGH PMRC</b>	<b>20</b>
3.1.	Requesting AE for Patients.....	20
3.2.	Local Flight Surgeon. ....	22
3.3.	Patient Movement Considerations. ....	22
3.4.	Submitting a PMR for Validation and Movement. ....	23
3.5.	Determining Movement Precedence.....	25
3.6.	Special Category Patients. ....	26
3.7.	Determining Patient Classification. ....	27
3.8.	PMR Validation and Acceptance for Flight.....	30
3.9.	Patient Movement Policy and Operations.....	30
3.10.	Theater Validating Flight Surgeon (TVFS). ....	32
3.11.	TRAC2ES. ....	33
<b>Chapter 4—</b>	<b>ORIGINATING AND DESTINATION FACILITY</b>	<b>35</b>
4.1.	General Information.....	35
4.2.	TRAC2ES.....	35
4.3.	Theater Medical Data Store. ....	35
4.4.	Travel Authorizations. ....	35
Table 4.1.	TCSG/GPMRC. ....	36
4.5.	Transportation.....	36
4.6.	Documentation and Transfer of Patient Records. ....	37
4.7.	Mission Coordination. ....	37
4.8.	Accountability.....	37
4.9.	Entry Requirements. ....	37
4.10.	Patient Safety Events/Near Miss Events.....	37
4.11.	RON Patients. ....	37
4.12.	MTF Support Requirements for the Co-Located ERPS.....	38

<b>Chapter 5— EN ROUTE PATIENT STAGING SYSTEM (ERPSS)</b>	<b>40</b>
5.1. En Route Patient Stage (Facility).....	40
5.2. Roles and Responsibilities. ....	40
5.3. Vehicles. ....	41
5.4. Interface with MTFs/Other Agencies. ....	42
5.5. Force Protection. ....	42
5.6. Training.....	43
5.7. Expeditionary Medical Logistics. ....	44
5.8. ERPS Facility Administration.....	44
5.9. Mission Launch and Recovery.....	45
5.10. Reports and Communication.....	46
<b>Chapter 6— PATIENT PREPARATION</b>	<b>47</b>
6.1. Overview of patient preparation. ....	47
6.2. Litters.....	47
6.3. Clothing the Patient. ....	47
6.4. Equipment and Supplies. ....	48
6.5. General considerations for attendants (NMA and MA).....	48
6.6. Baggage. ....	50
6.7. Anti-hijacking. ....	51
6.8. Valuables. ....	52
6.9. Patient Identification.....	52
6.10. Weapons.....	53
6.11. Nutrition and meals.....	53
Table 6.1. Aircraft Refrigeration and Heating Capability.....	54
Table 6.2. Planning Patient Meals and Snacks. ....	55
6.12. Patient Briefings. ....	57
6.13. Mission and Patient Documentation Requirements. ....	58
6.14. Hand-off Identify, Situation, Background, Assessment, and Recommendation (I-SBAR) AE/ERPS.....	59

<b>Chapter 7— FLIGHT PHYSIOLOGY AND STRESSES OF FLIGHT</b>	<b>61</b>
7.1. Flight Environment .....	61
7.2. Gas Laws.....	61
7.3. Physiological Stressors of Flight. ....	62
<b>Chapter 8— PATIENT CARE RESPONSIBILITIES</b>	<b>66</b>
8.1. Aeromedical Evacuation Clinical Protocols. ....	66
8.2. Preflight Assessment and Report. ....	66
8.3. General Nursing Care. ....	68
8.4. Airway and Respiratory Management. ....	69
Table 8.1. O2 Delivery Methods.....	72
Table 8.2. Oxygen Requirements for Low Hemoglobin States. ....	73
Table 8.3. Conversion for In-flight Oxygen Administration. ....	74
8.5. Hypoxia:.....	82
Figure 8.1. Altitude Blood Oxygen Saturation.....	83
Table 8.4. Signs and Symptoms of Hypoxia.....	84
8.6. PE/VTE Events During AE. ....	85
8.7. Cardiovascular Management. ....	86
8.8. Shock Management.....	88
8.9. Burn Management.....	92
8.10. Not Used. ....	96
8.11. Decompression Sickness.....	100
8.12. Neurological Management.....	101
Table 8.5. Management and Treatment Considerations/Recommendations for TBI and Increased ICP. ....	102
Table 8.6. ICP and Cerebral Perfusion Pressure (CPP) Parameters. ....	104
Table 8.7. MACE - Red Flags. ....	104
Table 8.8. Special Considerations for CNS-injured/Neurologic Disease/Comatose/Vented Patient. ....	105
Table 8.9. Seizure Precaution and Treatment. ....	107

	8.13.	Musculo-Skeletal System/Wound Disorders/Injuries. ....	108
	8.14.	Wound management. ....	111
	8.15.	Medical Devices. ....	112
	8.16.	Eyes, Ears, Nose, and Maxillofacial Management. ....	115
	8.17.	Gastrointestinal (GI)/Genitourinary/Tube Management.....	120
	8.18.	OB/In-Flight Child Birth Management.....	126
	8.19.	Pediatric Management. ....	132
	8.20.	Mental Health Patient Management.....	138
	8.21.	Pain Management. ....	146
Figure	8.2.	Dermatome Map. ....	152
Table	8.10.	Motor Activity Assessment Scale (MAAS) Sedation Scoring System.....	156
	8.22.	Medications.....	158
	8.23.	IV Therapy.....	165
	8.24.	Management/Administration of Blood and Blood Products.....	167
	8.25.	Infection Control.....	170
<b>Chapter 9— PATIENT MOVEMENT PATIENT SAFETY PROGRAM (PMPS)</b>			<b>186</b>
	9.1.	General.....	186
	9.2.	Objectives include but not limited to: .....	186
	9.3.	Responsibilities:.....	186
	9.4.	Patient Movement Event/Near Miss Reporting Process (DD Form 2852). ....	192
Figure	9.1.	AMC/SGK PSM. ....	193
	9.5.	Event Classification. ....	193
Table	9.1.	Event Classification. ....	193
	9.6.	Event Categories.....	194
	9.7.	Reporting a Medical Class A, B, or Significant C event. ....	194
	9.8.	PM Event Review. ....	195
	9.9.	PM Medical Incident Investigation (MII).....	195
	9.10.	Clinical Operations Patient Safety Alert (COPSA). ....	196

<b>Chapter 10— MISSION IRREGULARITIES</b>	<b>197</b>
10.1. Cabin Altitude restriction.....	197
10.2. Medical Emergency/Change in Patient Status .....	197
10.3. Death In-flight/Do Not Resuscitate (DNR). ....	198
10.4. Mission Delays. ....	198
10.5. Medical Delays. ....	198
10.6. In-Flight Refueling Considerations.....	199
10.7. En Route Diversions. ....	199
10.8. Scheduled and Unscheduled RONS. ....	199
10.9. Patients Requesting Release from the Aeromedical Evacuation System.....	200
10.10. Prisoner-patients .....	200
10.11. Unaccompanied Minors/Incompetent Patients. ....	201
10.12. Conflict Resolutions. ....	201
10.13. Credentials Considerations. ....	201
10.14. Engine Running Off/On Loads (ERO). ....	202
10.15. No and Low Light Conditions. ....	202
10.16. Service Animals and Emotional Support Animals .....	202
10.17. Military/Government Working Dogs.....	203
10.18. Passenger Requiring Medical Attention. ....	203
<b>Chapter 11— POST-MISSION PROCEDURES</b>	<b>205</b>
11.1. Post-Mission Responsibilities.....	205
11.2. AECM will ensure: .....	205
11.3. AE Patient and Customer Satisfaction Survey.....	205
<b>Chapter 12— MEDICAL LOGISTICS</b>	<b>206</b>
12.1. MEFPK. ....	206
12.2. PMI Asset Tracking System (PMI-ATS).....	206
12.3. PMI Levels.....	206
12.4. Equipment Responsibility.....	207
12.5. Equipment Malfunction/Failure.....	208

12.6.	Procurement of medical material.....	209
12.7.	ERPS Medical Logistics.....	209
12.8.	Recommended changes.....	210
<b>Attachment 1— GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION</b>		<b>211</b>
<b>Attachment 2— HELPFUL RESOURCES</b>		<b>223</b>
<b>Attachment 3— NON-MEDICAL, FAMILY OR NON-MILITARY ATTENDANT INFORMATIONAL SHEET</b>		<b>225</b>
<b>Attachment 4— MEDICAL ATTENDANT DUTY LIST</b>		<b>226</b>
<b>Attachment 5— NON-MEDICAL ATTENDANT DUTY LIST (MILITARY)</b>		<b>227</b>
<b>Attachment 6— PATIENT PREP CHECKLIST</b>		<b>228</b>
<b>Attachment 7— PATIENT MOVEMENT INPATIENT HANDOFF REPORT WORKSHEET</b>		<b>229</b>
<b>Attachment 8— OUTPATIENT HAND-OFF COMMUNICATION TOOL</b>		<b>231</b>
<b>Attachment 9— BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK BY LEVEL OF RISK</b>		<b>232</b>
<b>Attachment 10— BURN CENTER REFERRAL CRITERIA</b>		<b>233</b>
<b>Attachment 11— MILITARY ACUTE CONCUSSION EVALUATION</b>		<b>235</b>
<b>Attachment 12— ALCOHOL WITHDRAWAL ASSESSMENT SCORING GUIDELINES</b>		<b>236</b>
<b>Attachment 13— PAIN ASSESSMENT SCALES</b>		<b>237</b>
<b>Attachment 14— AIRCRAFT AIRFLOW</b>		<b>241</b>
<b>Attachment 15— AIRBORNE PRECAUTION GUIDELINES</b>		<b>242</b>
<b>Attachment 16— PATIENT MOVEMENT SAFETY PROGRAM EVENT CATEGORIES</b>		<b>243</b>
<b>Attachment 17— AEROMEDICAL EVACUATION (AE) PATIENT AND CUSTOMER SATISFACTION SURVEY</b>		<b>248</b>
<b>Attachment 18— EN ROUTE CARE EQUIPMENT MALFUNCTION REPORT TAG</b>		<b>249</b>



## Chapter 1

### PROGRAM OVERVIEW

**1.1. Mission Description.** AE includes all elements of medical care, support, treatment, staging and transport, from the point at which a request for movement has been received, through the final destination for definitive care. Aeromedical Evacuation (AE) provides time-sensitive movement of casualties to and between Medical Treatment Facilities (MTFs), using organic and/or contracted aircraft with medical aircrew trained explicitly for this mission. AE forces can operate as far forward as aircraft are able to conduct air operations, across the full range of military operations, and in all operating environments. Specialty medical teams may be assigned to work with the AE aircrew to support patients requiring more intensive patient care. The goal is to match patient needs with the appropriate skills, knowledge, equipment, and infrastructure to enable safe, effective, and efficient AE. The AE system is a subset of the overall patient movement system. Patient movement begins as soon as a patient receives care, which may be at point of injury. Patient staging provides medical personnel and equipment necessary for 24-hour patient staging operations, patient transportation to/from aircraft, and administrative processes for tracking patients transiting the AE system worldwide.

**1.2. Purpose.** This AFI provides clinical information and guidelines to promote safe and effective en route care for Department of Defense (DoD) beneficiaries and designees. Information presented in this AFI sets minimal standards for stabilized/stabilizing peacetime and wartime/contingency patient airlift operations, and is not intended to be used as a substitute for sound clinical judgment.

**1.3. Applicability.** This instruction applies to all Air Force personnel, AE and ERPS assigned personnel, associated in-flight care personnel and ground-based Air Force AE personnel, including Air Force Reserve Command (AFRC) and Air National Guard (ANG).

#### **1.4. Scope.**

1.4.1. Staging facilities provide inpatient medical-surgical care. Critically ill or inpatient mental health patients will be cared for at the nearest/supporting MTF with required capability or on a short-term basis by an En Route Critical Care (ERCC) team (i.e. Critical Care Air Transport Team; Tactical Critical Care Transport Team; Burn Team; Neonatal Intensive Care Team) at the staging facility for patients awaiting airlift. **(T-3)** En Route Critical Care teams encompass several critical care teams (e.g. burn, neonatal, lung, pediatric, trauma). Provisions must be in place to address support services and additional clinical care required by patients in the staging facility due to patient condition changes or mission delays/cancellations. **(T-3)** The primary supporting MTF is responsible for providing all clinical, surgical and ancillary support required for patients in the staging facility regardless of size.

1.4.2. The standard Aeromedical Evacuation Crew Member (AECM) complement will provide specialized inpatient medical-surgical care capability with Basic Life Support (BLS) and Advanced Cardiac Life Support (ACLS) resuscitative capability while contacting C2 for further medical direction. **(T-2)** During mission execution, AECM's clinical practice is under the medical direction of the Theater Validating Flight Surgeon (TVFS). Mission requirements drive the use of specialty augmented medical teams, individual medical

attendants (MA), and advanced care teams subject to patient need, strategic requirements and aircraft availability/platform type. **NOTE:** In an emergency, when no physician is present or cannot be contacted, AECMs and/or medical personnel will follow guidance outlined within this instruction, and are authorized to perform BLS/ACLS within their scope of practice in emergency situations to preserve life, limb, or eyesight. **(T-2)** The medical crew director (MCD) will notify the appropriate Patient Movement Requirements Center (PMRC) of any treatment performed outside a patient's written orders as soon as operationally feasible. **(T-2)**

1.4.3. Medical personnel in the AE system provide care based upon their Air Force Specialty Code (AFSC), Military Occupational Specialty (MOS), and Naval Enlisted Classification (NEC) scope of practice/specific core competencies, level of knowledge, training, and skills.

## 1.5. Standards.

1.5.1. Standards of Care (SOC): The AE and patient staging environments present the health care provider with unique challenges. The stresses of flight must be considered in patient preparation. The SOC in the air are adapted to the aircrafts' capabilities and limitations, and the in-flight environment. Refer to AFPD 46-1, *Nursing Services*.

1.5.2. Standards of Performance: The standards of professional performance are the expected level of function based on education, level of experience and criteria of the current AFSC/MOS/NEC position requirements. The baseline educational clinical standards of care is inpatient medical-surgical care. AMC/SGK has adopted Mosby Online, Lippincott, and Air and Surface Transport Nurses Association (ASTNA) standards of professional performance (when operationally feasible). Refer to AFI 46-101, *Nursing Services and Operations*.

1.5.3. Standards of Practice: Standards of practice focus on the medical personnel and their competency, experience, and education. The primary goal of the AE system is to meet the perceived, actual, or potential health needs of the patient, while maintaining the continuum of care. Refer to AFPD 46-1.

1.5.4. Aeromedical Evacuation Clinical Protocols. AE Clinical Protocols are evidence based clinical protocols that provide standard orders in specific clinical scenarios. AE Clinical Protocols are located at: <https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx>.

## Chapter 2

### OPERATIONAL AND ADMINISTRATIVE ROLES AND RESPONSIBILITIES

**2.1. Air Force Surgeon General .** AF/SG is primarily responsible for developing and coordinating health care policy for the Air Force Medical Service (AFMS). The AF/SG is also responsible for coordinating and aligning health care programs and services to integrate with other Services' medical departments and the Office of the Assistant Secretary of Defense for Health Affairs. AF/SG is responsible for organizing, training and equipping the AF medical force to include the medical operations of AE.

**2.2. Pacific Air Forces .** PACAF/SG is the theater Air Component Surgeon for United States Pacific Command (USPACOM) and has clinical oversight of the AE mission for the Pacific theater to include US Forces Korea and US Forces Japan.

**2.3. United States Air Forces Europe-Air Forces Africa .** USAFE-AFAFRICA/SG is the theater Air Component Surgeon for United States European Command (USEUCOM) and USAFRICOM has clinical oversight of the AE mission for the European and African theaters.

**2.4. United States Transportation Command.** The Commander, is the DoD single manager for implementing policy and standardizing procedures and automated information system requirements for global Patient Movement (PM); provides global PM in coordination with the Geographic Combatant Commanders (GCCs) through the Defense Transportation System and in accordance with DoD Instruction 6000.11, *Patient Movement*. **(T-0)**

2.4.1. United States Transportation Command, Command Surgeon (TCSG) orchestrates strategic, operational and tactical guidance on patient movement; guides unity of effort, total interoperability and standardization between PMRCs to ensure optimal fusion of expediency and patient safety across the patient movement system. Provides clinical and administrative support to PMRCs during peacetime and contingency operations, and maintains trained patient movement joint service enablers ready to deploy anytime, anywhere.

2.4.2. PMRCs will clinically and administratively validate PMRs through the Transcom Regulating Aeromedical Command and Control Evacuation System (TRAC2ES) in accordance with (IAW) Department of Defense Instruction (DoDI) 5154.06, *Armed Services Medical Regulating*. **(T-0)** Once validated, a requirement for PM passes to the respective transportation operations center (maritime, air, etc.) or agency to identify appropriate transportation based on available resources and clinical requirements.

**2.5. Air Mobility Command.** AMC serves as the lead major command (MAJCOM) for AE. As outlined in AFPD 10-21, *Air Mobility Lead Command Roles and Responsibilities*, AMC will manage and coordinate with the other commands (i.e. AFRC and NGB) involved in air mobility operations, to include AE, those processes designated to enable the interoperability of air mobility forces regardless of the command. AMC will maintain clear, detailed, and accountable standards in this mission area to ensure efficient employment and interoperability. AMC ensures that appropriate forces are organized, trained, and equipped to perform the AE mission across the full spectrum of operations to meet global AE requirements. All AE forces will comply with lead MAJCOM readiness standards addressing operational and clinical requirements. **(T-2)** Aeromedical Evacuation policies and procedures will be fully coordinated through AMC and

supporting MAJCOMs to ensure needs are identified and policies and procedures are thoroughly formulated. (T-2)

2.5.1. AMC Command Surgeon. (AMC/SG), serves as the AE program medical director, responsible for the overall supervision, safety, and quality of medical care provided worldwide by the AE system, ERCC, and patient staging personnel. AMC/SG establishes clinical practice standards and clinical training requirements. AMC/SG collaborates with AMC Directorate of Operations (AMC/A3) to ensure medical/clinical operations and aircrew operations are fully integrated.

2.5.1.1. AMC En Route Medical Care Division (AMC/SGK) establishes and maintains clinical policy and procedures for AE and the clinical standardization and training of medical personnel assigned to AE/patient movement duties. Represents the AMC/SG regarding AE clinical programs and activities. Serves as a clinical advisor to all AMC, AMC-gained ANG and AFRC AE/patient movement units. Responsible for and manages the AE Patient Safety and ERCC team programs. Provides necessary clinical inputs to include special interest items, allowance standards substitutions, and crew complement to AMC/A3 to ensure current medical/clinical operations are incorporated into operational processes. Maintains oversight and guidance of the medical/clinical operations of AE and ensures integration with global patient movement processes in the 4X publications series.

2.5.1.1.1. AMC/SGK guides clinical operations through release of clinical information impacting AE through the use of policies, COPSA, guidance memorandums, and emergency care research institute notifications.

2.5.1.1.2. Manages the AE COPSAs to facilitate the timely communication of AE-focused clinical information and lessons learned from AMC/SG to the global AE community. The COPSAs, guidance memorandums, policies, and emergency care research institute notifications will be sent to the applicable leadership for dissemination. The COPSA carries the same weight as the Flight Crew Information File (FCIF) and medical unit commanders will ensure widest dissemination and implementation of applicable recommendations. Additionally, AECMs and other ERC personnel must read and follow the recommendations contained in the COPSAs. (T-2) The COPSA will be maintained on the electronic flight bag (EFB) for AECMs and the medical read file for patient staging personnel. (T-2)

2.5.1.2. AMC Medical and Aeromedical Evacuation, Readiness and Plans Division (AMC/SGX). Oversees policy, guidance, strategic resource planning, mission capability reporting and expeditionary operations. Develops and monitors the Aeromedical Evacuation and Patient Staging Course. Supervises MEFPK Responsible Agency (MRA) duties covering medical and AFMS-owned AE UTCs and War Reserve Materiel (WRM) assets. Establishes policies, directives, and procedures for the medical readiness programs at subordinate units. Develops requirements for research and development of medical equipment proposed for and used in the AE. Directs AMC medical operations, deployments, contingency, disaster planning, and use of command medical assets in exercises. AMC/SGXM is the program execution office and is responsible to administer the PMI program. Responsible for AMC medical readiness and liaison with the MTFs, Major Commands (MAJCOM), AFMS, Combatant Command (CC), and partner agencies. Global Force Manager Functional Area Manager for AE Support UTCs (e.g.

CCATT, ERPSS, Tactical Critical Care Evacuation Team (TCCET) and recommends sourcing solutions to the TCSG to meet CCCR Requests For Forces. Training waiver authority for MEFPK training requirements as described in AFI 41-106, *Medical Readiness Program Management*. Assists in the development of component-level war planning and AE staging planning support for TCSG in support of Combatant Command (CCMD) Operational Plans (OPLANS) and Concept Plans (CONPLANS) under the authority of Joint Strategic Capabilities Plan (JSCP) planning tasks. Identifies AFMS-owned AE capabilities based on available resources to include organic assets and gained AFRC and ANG assets.

2.5.1.3. AMC Aerospace Medicine Division (AMC/SGP). Advises and assists the AMC Command Surgeon in the interpretation and implementation of the AMC aerospace medicine program and operational medical policies. Develops and implements policies related to aerospace clinical medicine, bioenvironmental engineering, public health, health promotion, preventive medicine, mental health and resiliency. Serves as waiver authority for aeromedical flight physical standards in AMC and coordinates aeromedical waivers for those cases requiring specialist review and/or Higher Headquarters (HHQ) authority. Consults on and coordinates installation Aerospace Medicine activities. Member of AMC Threat Working Group. Assesses medical threats for worldwide deployment locations and provides risk assessments for the AMC Threat Working Group. Develops policy for public health infection and communicable disease control for AE operations. Advises AMC senior leaders on behavioral health and resilience issues and develops policies, initiatives and guidance to AMC leaders and installations in the areas of mental/behavioral health and interpersonal violence.

2.5.1.4. AMC Medical Support Division. Advises and assists the AMC Command Surgeon (SG) on the development and implementation of policy relating to administrative support programs. Develops, coordinates, and advocates AMC/SG inputs into the AFMS strategic resourcing process including Medical Planning and Programming Guidance and Program Objective Memorandum. Develops and executes annual budget for directorate operations MEFPK mission. Advises the AMC/SG on establishing policy and guidance for the development and deployment of command-unique medical data and communication systems. Provides installation, operations, security training, and maintenance services for the AF en route electronic health record (EHR). Provides consultant services to field activities for medical information systems. Manages technology and processes for the AE EHR Program, including resourcing and device technology evolution. Validates and processes Military Personnel Appropriation(MPA) Man-day requests using the current HAF/A1R MPA Man-day system for AMC medical ANG and AFRC personnel to support active duty requirements.

2.5.1.5. AMC Modernization and Research Division (AMC/SGR). Develops, maintains, advances, and pursues funding for the AMC medical modernization portfolio. Leads AE research and development efforts across the AFMS. Articulates research needs and capability gaps with internal and external research partners, defines and articulates the process for users to submit research and technology solutions, and accurately categorizes initiatives with distinction between knowledge enhancement and technology development. Manages the Safe-to-Fly program for AE equipment. Identifies gaps in

doctrine, organization, training, materiel, leadership and education, personnel and facilities. Leads development activities of the EHR.

2.5.2. AMC Directorate of Operations (AMC/A3). Defines roles and responsibilities of the A3 in the AE system.

2.5.2.1. AMC Assistant Director of Operations for AE (AMC/DA3-2). Senior AE authority to Director of Operations and provides executive oversight for global Total Force AE operations. Directs efforts to include AE funding, manning, training and strategic direction for AMC/A3 assigned divisions and AE squadrons. Interfaces with Joint, North Atlantic Treaty Organization (NATO), and coalition forces to develop worldwide AE doctrine and policy. Provides AE expertise to Headquarters United States Air Force, MAJCOMs, and Numbered Air Force (NAF).

2.5.2.2. AMC Aeromedical Evacuation Operations Branch. Provides policy, procedures, and concepts of operations for all aeromedical evacuation squadrons. Develops ground operations training programs, standards, and inspection guidelines for global AE. Interfaces with joint, special operations, NATO, and coalition policy makers to standardize AE operations worldwide. Global Force Manager Functional Area Manager for AE (non AFMS) UTCs and recommends sourcing solutions to the Joint Force Provider to meet CCDR Requests for Forces. Identifies AE unit capabilities based on available resources to include organic assets and gained AFRC and ANG assets. Identifies AE WRM requirements and coordinates with AMC/SG for funding. Appointed by the AMC/A3 as the Program Element Monitor (PEM) for Program Element: 41133F – Aeromedical Evacuation. Coordinates with AMC/SG on all changes affecting the Medical Resource Letter (MRL) of AE squadrons. Implements changes to the MRL for personnel UTCs assigned to AE squadrons.

2.5.2.2.1. Establishes doctrine and policy to support AE operations, in coordination with AMC/SG and owning MAJCOM/A3s. **(T-2)** Establish and disseminate operational training and assessment policy. Advocate for, obtain and allocate resources for AE equipment and training. Execute AE Lead Command operational functions. Co-Chair the Aeromedical Evacuation Oversight Council (AEOC).

2.5.2.3. AMC Aeromedical Evacuation Standardization and Evaluation (AMC/A3VM). Office of primary responsibility to implement and manage AE specific issues for the flight manuals and Technical Order program for various Air Force weapon systems. Provides standardized operating guidance for aircrews to ensure publications are readily available to meet all aircrew and mission requirements. Reviews, coordinates, and authors AE-specific AFIs. Observes operational missions and performs No-Notice flight evaluations to provide feedback on the health of the AE system. Maintains current, universal qualification status in respective crew position to fulfill MAJCOM job responsibilities, administers required evaluations, and provides competent and current expertise on respective aircraft and aircrew-related issues. Develops and authors Master Question File for each crew position for in-unit closed book testing IAW AFI 11-202 V2, *Aircrew Standardization/Evaluation Program*. Coordinates with AMC/SG on development of new aeromedical evacuation equipment, assesses operational risk for use on AMC aircraft, and provides recommendations for medical equipment air worthiness testing. Provides guidance on medical equipment to aeromedical evacuation

crewmembers. Approves waivers for non-certified/non-standard medical equipment required for patient moves.

2.5.2.4. AMC Aeromedical Evacuation Training and Operations (AMC/A3TM). Establishes policies and procedures for AECM aircrew operational training and operations, including the preparation and update of AMC training publications, qualification programs, and continuation training. Training includes both peacetime and wartime requirements and ensures a global approach and interoperability with the worldwide AE system. Formulates and interprets policy and procedures for AE units which cannot be addressed at the local wing level. Participates in Unit Effectiveness Inspections to validate Wing compliance with training programs. Participates in frequent AE flights performing training, evaluation, and basic crewmember duties. Provides functional expertise to aeromedical evacuation units. Represents the AMC/A3TM Division Chief regarding AE training policy. Coordinates war readiness training and equipment issues with AMC Medical Equipment Force Packaging (AMC/SGXM/SGXO) and coordinates clinical training requirements with AMC/SGK.

2.5.2.5. AMC Joint Exercises (AMC/A3Y). Focal point for command support and participation in joint and national exercises and provides foundational exercise inputs, establishes the framework for leadership decisions on the Mobility Air Force's Exercise Weight of Effort, and validates unique exercise plans and orders for exercise during the year. Exercises include, but are not limited to ULTIMATE FOCUS (headquarter crisis battle staff function), ULTIMATE REACH (strategic airdrop), and Theater AE system exercises at the Joint Readiness Training Center.

2.5.3. Eighteenth Air Force (18 AF). 18 AF is the Component-Numbered Air Force (C-NAF) within AMC; it is the AF component NAF within AMC which executes Commander United States Transportation Command (USTRANSCOMCC) assigned missions. The AMC C-NAF includes its commander, 18 AF/CC, an organic staff, the 618 Air Operations Center (AOC), and all assigned forces. 18 AF, with its organic staff and AOC, supports the AMC/CC through the full range of air mobility operations at the operational and tactical levels in world-wide operations. When the Commander of Air Force Forces (COMAFFOR) may delegate operational command and authorities to the 18 AF/CC, 18 AF/CC assumes the title 18 AF (AFTRANS)/CC. 18 AF (AFTRANS)/CC delegates tactical control (TACON) to 618 AOC/CC of the AMC gained and assigned forces made available for allocation and execution. Specific authorities are spelled out in the annual 18 AF standing execution order. 18 AF plans, coordinates and directs AE execution for real-world and exercise requirements and coordinates laydown of AE forces. 18 AF develops component-level war planning and AE planning support for USTRANSCOM in support of CCMD OPLANS and CONPLANS under the authority of JSCP planning tasks. 18 AF collaborates with USTRANSCOM and AMC to identify AE capabilities based on available resources to include organic assets and gained AFRC and ANG assets. 18 AF collaborates with PACAF and USAFE A3 for AE forces to coordinate AE support for real world, exercise and OPLAN/CONPLAN support.

2.5.4. 618th Air and Space Operations Center (AOC). The 618 AOC is the tasking and execution agency for 18 AF AE missions and requirements. Fusion center representatives consult with TCSG to refine and assess the feasibility of CCMD requirements. The 618 AOC provides centralized C2 of all AMC air mobility operations around the globe and acts as the single point of contact for AMC operations. A critical enabling feature of 618 AOC is its

robust C2 system, which allows 618 AOC to schedule, task, manage, coordinate, control, and execute air mobility missions globally. This system includes fixed and deployable en route mission support forces. Through the Global Transportation Network, 618 AOC is able to track the status and location of personnel and cargo, otherwise referred to as in-transit visibility (ITV).

**2.6. Wing Commander.** Exercise command over all units and personnel in their wing. Establish goals and programs within the wing in support of the wing's objectives. Establish plans, policies, and procedures necessary to the proper conduct of wing affairs that are not in conflict with National HQs and region policies and directives. Wing/CC ensures the safety of personnel and equipment through an active and aggressive safety education and inspection program.

2.6.1. Operations Group Commander (OG/CC). The primary mission of the operations group is to manage flying operations within the assigned wing. The OG/CC may have several different mission-design series aircraft assigned to the OG. Aeromedical Evacuation Squadrons (AESs) are assigned to the OG. The OG typically has a Standards and Evaluation (Stan/Eval) function as well as an operations support squadron to provide flying support in areas of airfield operations, aircrew training, weather, intelligence, host aviation resource management and current operations.

2.6.2. Aeromedical Evacuation Squadron Commander (AES/CC). Plans, directs, organizes, coordinates and evaluates all activities in support of AE training/operational missions and the Theater Aeromedical Evacuation System (TAES). Responsible for the welfare of squadron personnel and all issues pertaining to the good order and discipline of the unit. Advises the operations group commander on major policies and procedures affecting AE and the TAES. Provides guidance and direction to the Director of Operations, Chief Nurse (CN), Superintendent, and ensures all flights function optimally including Operations, Operations Support, Training, clinical management/currency as well as Stan/Eval and the Commander's Support Staff. AES/CCs will incorporate clinical information released by AMC/SG into a Medical Read File (MRF) which will be maintained in FCIF Volume I - Part B in accordance with AFI 11-202 V2 AMC Supp, *Aircrew Standardization/Evaluation Program*; AECMs will review and initial the MRF whenever the FCIF file is reviewed. **(T-2)**

2.6.3. Medical Group Commander (MDG/CC). Provides outpatient and/or inpatient medical care to DoD beneficiaries. Provides medical support to the AE system for patient staging and/or unscheduled remain overnight missions. Maintains readiness posture for Air Force Unit Type Codes in support of the DoD medical mission.

2.6.4. Staging Facility/Aeromedical Staging Squadron (ASTS). Wartime mission is to provide manpower for 24-hour operation of an aeromedical staging squadron. Provides coordination, communication, and transportation to support medical care of patients transiting the aeromedical evacuation system. Ensures patients are medically prepared for flight. The peacetime mission is to conduct a comprehensive training program to maximize wartime readiness.

2.6.5. Chief Nurse (CN). Patient staging, AE squadron, or expeditionary AE flight will have CN designated IAW AFI 46-101. **(T-2)**



2.6.5.1. The CN will administer, direct, and evaluate nursing service activities. **(T-2)** Evaluates the quality of nursing care provided to AE patients IAW AFI 44-119, *Medical Quality Operations*, and implements programs to improve patient care delivery and organizational efficiency. Performs roles/responsibilities/functions IAW AFI 46-101, *Nursing Services and Operations*. The CN advises the commander on nursing matters and clinical care and quality in AE and/or patient staging settings.

2.6.5.2. The CN will ensure care is delivered IAW DoD regulatory guidance and nursing standards of practice. **(T-0)** The CN will coordinate clinical training required by AFIs and clinical management and staff development programs to promote nursing practice proficiency. **(T-0)** Nursing personnel will have sufficient professional skill to provide the required medical support consistent with patient numbers, classification, and condition as determined by the CN. **(T-2)**

2.6.5.3. The CN in an AE squadron or expeditionary AE flight may reduce/increase the crew complement based on Operational Risk Management (ORM) and patient acuity IAW AFI 11-2AE V3, *Aeromedical Evacuation Operations Procedures*. IAW AF Pamphlet 10-1403; Air Mobility Planning Factors, for contingency planning only, the patient/crew ratio should be no greater than 10:1 (10 patients to each AECM). The MCD and charge medical technician are counted as AECMs.

**2.7. Flight Surgeon (FS).** The FS is responsible for continued medical treatment of AE patients to include reassessment and clearance of patients prior to loading patients on an AE mission. In contingencies, the ERPS FS serves as an AE consultant and triage officer. If needed, the FS serves as medical provider for medical personnel and aircrew. Due to the joint operational nature of contingencies, the FS may be placed in a role of educator for other physicians attempting to utilize the AE system.

**2.8. Patient Staging and En Route Patient Stage .** ERPS provides support and continuity of medical care for patient movement, and serves as an integral link in the global PM system. The ERPS, regardless of facility size, provides medical personnel and equipment necessary for 24-hour patient staging operations, patient transportation to/from aircraft, and administrative processes for tracking patients transiting the AE system worldwide. It is designed for short-term inpatient medical-surgical nursing care and limited emergent intervention. Consult **Chapter 5** of this instruction and the ERPS Tactics, Techniques, and Procedures (TTP) for additional guidance.

2.8.1. ERPSS-10 (FFEPS) and ERPSS Provider (FFPPS). Depending on the situation when deployed, these UTCs may be under the command of the EMEDS/MTF/CC or be an AE asset, aligned under the expeditionary AE Squadron to which they are assigned or attached. **NOTE:** If the ERPSS-10 is tasked, the AE communications team (FFQCR) UTC must be tasked to provide manpower for communication operations. **(T-2)**

2.8.2. The ERPSS-50/ERPSS-100 UTCs shall be under the command of the EMEDS/MTF/CC and follow the EMEDS or MTF command structure as outlined in the OPORD, or if deployed to support a sister service, they may fall under a different service MTF/CC. **(T-2)** If there is a requirement for an ERPSS/CC, this person needs to be placed on G-series orders and it will be identified in the OPORD. **(T-2)**

2.8.3. The ERPSS-50/ERPSS-100 UTCs will fall under TACON of the AF Air Expeditionary Wing or Air Expeditionary Group CC or MTF/CC (if other than AF) IAW the OPORD, which will define specific command relationships. **(T-2)** remains with the theater appointed AF Commander. **(T-2)**

2.8.4. Administrative control for AFRC and ANG personnel will IAW Air Force Doctrine Document 1 and AFI 38-101, *Air Force Organization*.

## **2.9. Contingency Operations.**

2.9.1. Air Operations Center (AOC). The AOC provides operation l-level Command and control of air, space, and cyberspace operations. (Ref: AFI 13-1AOC Vol 3)

2.9.2. Director of Mobility Forces (DIRMOBFOR). The DIRMOBFOR is responsible for integrating the total air mobility effort for the COMAFFOR or JFAC and, in this capacity, provides guidance to the AMD to execute the air mobility mission.

2.9.3. Air Mobility Division (AMD). The AMD is a division within AOC. The AMD chief and personnel plan, coordinate, task and execute the air mobility mission in support of the AOC air, space, and cyberspace operation planning and execution processes. The AMD consist of four teams: airlift control team, air refueling control team, air mobility control team and aeromedical evacuation control team.

2.9.3.1. Aeromedical Evacuation Control Team (AECT). The AECT is responsible for operational planning, scheduling and execution of intra-theater AE missions. The AECT advises and briefs the AMD chief and DIRMOBFOR on AE issues. The AECT provides command and control of all theater assigned/attached AE units/operations within the specified AOR/JOA and assists with inter-theater AE operations arriving, departing or transiting the AOR/JOA. The AECT receives validated patient movement requirements from the Patient Movement Requirements Center (PMRC) supporting the AOR/JOA. This could be the TPMRC-A (Global), TPMRC (Theater), or JPMRC (Joint). The AECT TAES manager will coordinate with theater medical planners and develop plans and strategies to determine appropriate force lay-down of AE ground forces and AE crews in support of joint patient movement operations. **(T-1)** The AECT maintains secure and non-secure communications links with all AE elements, patient movement requirements centers (PMRCs), theater medical planners and the deployment distribution operations center (DDOC). **(T-1)** The AECT should coordinate closely with the PRCC and joint personnel recovery center (JPRC) to establish/develop integrated AE support following PR operations. The AECT integrates its activities with the ARCT, AMCT, ALCT, and specialty/support functions to the maximum extent possible to support the total air mobility effort. **(T-1)**

2.9.4. Joint Patient Movement Requirement Center (JPMRC). The joint activity established to coordinate the joint patient movement requirements function for a joint task force operation within a unified command area of responsibility. It coordinates with the theater patient movement requirement center for intra-theater patient movement and the TPMRC-A for inter-theater patient movement.

## **2.10. AELT/AE Crew Structure**

2.10.1. AE Liaison Team (AELT) FFQLL. The Air Force AELT provides support between the forward user and the AE system in the form of operational and clinical interface. This interface may occur at locations without other AF personnel such as far forward bases and onboard ship. An AELT may be geographically separated from other AF assets. The flight nurse provides clinical expertise to facilitate clinical support for administrative, aircraft specific requirements, equipment requirements and clinical implications of altitude and stresses of flight. The flight nurse on the team assists the medical unit in preparing AE patients for flight. The administrative officer is responsible for working with the airlift center and aerial port element to ensure the aircraft is properly configured and equipment pallets, patients and AE support personnel are properly manifested on the AE mission.

2.10.2. Aeromedical Evacuation Crew (FFQDE) A basic AE crew consists of 2 FNs and 3 AETs specially trained to provide in-flight inpatient medical-surgical level care during air transport using medical equipment certified for use by airworthiness testing standards. Crewmembers are knowledgeable about the stresses of flight, aerospace physiology on patients, basic trauma skills and patient safety. AECMs are experts on the interface between aircraft systems and medical equipment to meet clinical care requirements. Crews can augment any ground UTC requiring additional clinical management or mission support capability as assigned by C2 or unit commander. AECMs also ensure medical mission management, aircraft safety, configuration and integration of medical equipment with aircraft systems.

2.10.2.1. AE has limited medical and diagnostic capabilities available. The FS or other privileged providers are not always present on AE missions.

2.10.3. AE Command Squadron (AECS) FFQCC. In a contingency the AECS provides command and control (C2) of assigned AE Forces. The AECS can deploy in advance of other AE UTCs to establish the support required for AE forces and establishment of a theater aeromedical evacuation system. The AECS will advise Wing and Operations Group commanders, as well as other appropriate personnel/agencies on AE CONOPS, doctrine, capabilities, and requirements. **(T-3)** This UTC provides procedural guidance, technical guidance, and management oversight for assigned, attached, and transiting AE elements.

2.10.4. AEOT (FFQNT) provides operations and mission management support to airfields supporting AE. Provides supervision and crew management for all assigned or transiting AE crews and ERCC teams. Manages launch and recovery of missions, interfaces with flight line support agencies, assists with configuration of aircraft for AE missions, and overseas flight line activities for patient loading and unloading. Supports AE and ERCC teams equipment and resupply. Coordinates AE crew and ERCC teams requirements for life support, billeting, food service, transportation, finance, and administrative needs (when ERCC teams are attached to the AES).

## Chapter 3

### REQUESTING AE PATIENT MOVEMENT THROUGH PMRC

**3.1. Requesting AE for Patients.** The referring privileged provider assesses risks associated with patient movement and determines the need for evacuation. The AE environment and the physiological stresses of flight described in **Chapter 7** can impair the ability to assess and deliver care while airborne. Consultation between the referring privileged provider and the PMRC is essential to mitigating these risks. Transport can be executed by military or commercially procured modes. The request for AE begins with the initiation of a PMR by the referring privileged provider. If the patient requires Urgent or Priority movement, call the PMRC immediately in addition to starting a PMR.

3.1.1. PMRs and AF Form 3899s are generated at the referring MTF by entering patient information into TRAC2ES. The PMR contains fields for administrative and clinical data for validation and regulation. The AF Form 3899 has the referring privileged provider's signature and orders for AE (ground transport, staging, in-flight, and remain-overnight phases). The AF Form 3899 is the authorizing document for in-flight care, as well as part of the patient's permanent medical record.

3.1.2. Referring Privileged Provider. The referring privileged provider and the Validating Flight Surgeon (VFS) both have patient care responsibility roles. The referring privileged provider initiates a medical referral and clinical assessment, much like they do when requesting medical consultation. The VFS reviews this information, makes adjustments and interventions, then oversees the movement of the patient from one location to the next. Both providers have significant clinical input into the patients' care and outcome.

3.1.2.1. The referring privileged provider will be responsible for finding an accepting privileged provider at the destination facility, if applicable. **(T-2)** The PMRC will verify an accepting privileged provider, once obtained by referring privileged provider. **(T-2)**

3.1.2.2. The referring privileged provider will stabilize patients entering the regulated patient movement system as much as the situation and resources allowed include, but are not limited to: securing airway, controlling hemorrhage(s), treating shock and stabilizing fractures. **(T-2)**

3.1.2.3. The referring privileged provider is responsible for completing transfer orders on the AF Form 3899 for all routine, urgent and priority patients. **(T-2)**

3.1.2.3.1. This order will include the phone number, service and name of the accepting provider (i.e., Transfer to Dr. X, General Surgery) as applicable. **(T-2)**

3.1.2.3.2. Hand-written orders and patient information must be written legibly so accurate patient information is relayed. **(T-2)**

3.1.2.3.3. After consulting with the governing PMRC and the TVFS, the referring privileged provider must take into account the adverse effects of stresses of flight when writing orders. **(T-2)**

3.1.2.3.4. Orders for AE must be signed by the referring privileged provider in order to be carried out. **(T-2)**

- 3.1.2.3.5. All special diets will be ordered by the referring privileged provider and documented on the AF Form 3899 or EHR equivalent. (T-2)
- 3.1.2.4. The referring privileged provider is responsible for writing or dictating a transfer summary whenever a patient is being transported in the AE system. (T-2)
- 3.1.2.4.1. The referring privileged provider should provide key information, including pending labs, x-rays, consults and the current status of the patient and their anticipated needs. (T-2)
- 3.1.2.4.2. The referring privileged provider will outline recurring assessment requirements. (T-2)
- 3.1.2.4.3. The referring privileged provider in collaboration with the VFS will order any O2 requirements needed during flight.
- 3.1.2.4.4. The referring privileged provider in collaboration with the VFS must provide appropriate documentation requesting use of VSB or a NATO litter with a Cervical Collar and have an ERCC team assigned to the patient. (T-2)
- 3.1.2.4.4.1. Originating facilities are responsible for assisting ERCC team with putting the patient on the VSB.
- 3.1.2.4.4.2. Always use a cervical collar (C-collar), in conjunction with the VSB, if C-Spine injury is suspected. **NOTE:** Equipment waiver is required from Standards & Evaluations (AMC/A3VM) for VSB.
- 3.1.2.5. Intra-theater triggers to activate burn flight team. Patients with significant burns, as defined by ABA criteria (<http://www.ameriburn.org>) as described in Attachment 10, will benefit from prompt consultation with a burn surgeon and transport to a burn center.
- 3.1.2.5.1. Treating physician will initiate PM process and contact USAISR Burn Center designated representative. (T-2) Governing PMRC will assist sending physician with appropriate recommendations for PM process. (T-2) Physician-to-physician communication is vital in developing optimal movement plan for each patient. The USAISR can be contacted at 210-222-2876 or DSN 312-429-2876.
- 3.1.2.5.2. Burn patients who meet ABA burn center referral criteria shall be validated for movement precedence in consultation with the TVFS, USAISR and referring privileged provider. (T-2) If TRAC2ES is not available, direct contact with servicing PMRC is recommended to facilitate PM. (T-2) The USAISR Burn Center will provide name of accepting burn surgeon. (T-2) Delay or inability to contact the Burn Center directly should not delay processing of the PMR.
- 3.1.2.5.3. Criteria for Significant burns: Full thickness (3rd degree) burns of any size, partial thickness (2nd degree) involving >10% Total Body Surface Area (TBSA), or Burns >20% total body surface area. Only partial and full thickness burns are used to calculate % TBSA.
- 3.1.2.5.4. Burns involving >10% TBSA in children and adults over 50 years old.
- 3.1.2.5.5. Significant burns to the hands, face, feet, ankles, perineum, genitals, across major joints or circumferential burns.

3.1.2.5.6. Smoke inhalation injury.

3.1.2.5.7. Burn patients with associated polytrauma.

3.1.2.5.8. Burn patients requiring mechanical ventilation.

3.1.2.5.9. Burn injury in patients with preexisting medical disorders which could complicate management, prolong recovery, or affect mortality.

3.1.2.5.10. Burn patients with high voltage (>1000 V) electrical injury, including lightning. Fluid rate cannot be estimated using % TBSA because much of the high voltage injury is hidden. Consultation with a burn surgeon at the USAISR is recommended to guide initial resuscitation guidelines.

3.1.2.5.11. Chemical burns.

3.1.2.5.12. Burns that require critical care or resuscitation (e.g. needing ERCC team transport).

**3.2. Local Flight Surgeon.** The FS is the local authority for determining whether patients are physiologically ready for air transport. The FS or privileged provider in consultation with the TVFS (if a FS is not available) will clear AE patients for flight. **(T-2)** The FS in collaboration with the VFS, may also determine if a patient's category should change and adjust AE clinical care as indicated to safely transport patient.

3.2.1. Patients in remain overnight (RON) status will remain under the care of the local FS, unless transferred to other privileged providers for specialty or higher-level care. **(T-2)**

3.2.2. The FS must reevaluate each RON patient for continuation in the AE system, including those that are transferred. **(T-2)** This clearance to fly (proceed) will be documented on the AF Form 3899 or EHR equivalent. **(T-2)**

3.2.3. If transferred, the local MTF FS must assess whether the patient's condition warrants removal from AE until further stabilized for movement. **(T-2)**

3.2.4. When no FS is available, the privileged provider at the RON location responsible for the RON-ing patients is responsible for the above duties **(T-2)** Approval for the RON with no FS should be confirmed before the patient departs the sending facility. **(T-2)**

### **3.3. Patient Movement Considerations.**

3.3.1. When requesting AE, the requesting provider obtains an accepting provider at the receiving facility. The referring privileged provider consults the governing PMRC to consider standards for aeromedical movement of patients, flight safety and operational constraints of the current operational environment. Weather, maintenance problems, availability of aircraft, crew duty day limitations, en route stops, and diversions may cause delays, cancellations, or denials to requests for AE patient movement. Secondly, patients should not experience any degradation in the delivery of a required level of care as a patient moves through different phases of patient movement, e.g. ground to air to ground. The FS and referring privileged provider, in conjunction with the PMRC will work to mitigate any issues resulting from degradation in the level of care. **(T-3)**

3.3.2. All non-contingency inpatients being moved must have an accepting privileged provider and available bed prior to PMR submission. **(T-2)** If a non-contingency inpatient is

transiting a Continental United States (CONUS) patient staging facility without the required clinical capability, an interim RON accepting privileged provider at a local hospital must be arranged by the referring privileged provider and documented in the PMR. **(T-2) NOTE:** There are situations when contingency patients also require an accepting privileged provider. The PMRC will provide guidance for these situations. **(T-2)**

### **3.4. Submitting a PMR for Validation and Movement.**

3.4.1. Submit a PMR as soon as the need for movement is determined. The patient movement process begins when the referring MTF electronically submits the PMR to the PMRC through TRAC2ES. If the MTF does not have access to TRAC2ES, call the PMRC for assistance in obtaining access and/or submitting the PMR. The PMR contains fields for clinical data and administrative data.

3.4.2. The PMR will accurately reflect the patient's current condition and medical equipment requirements. **(T-2)** The PMR also provides a succinct care summary to ensure the receiving MTF is prepared and capable for assuming care of the patient upon arrival. Significant changes in the patient's condition require updates to the PMR. Submitting thorough clinical and administrative information will shorten the validation process. The PMR content will contain the following information when applicable and should be consistent with documentation contained within the patient's medical record:

3.4.2.1. Diagnosis. **(T-2)**

3.4.2.2. Reason for movement. **(T-2)**

3.4.2.3. Concise and accurate medical history. This includes any procedures/treatments specifically addressed in this document, related to patient diagnosis (i.e., chest X-ray results at least 24 hrs. post chest tube removal). **(T-2)**

3.4.2.4. Date and time of last relevant surgery. Absolute dates and times are used (i.e. 3 Aug 14); not relative dates/times (i.e., 3 days ago). **(T-2)**

3.4.2.5. Privileged provider's orders. **(T-2)**

3.4.2.6. Plan of care. **(T-2)**

3.4.2.7. Current Vital Signs (VS) will be documented in the PMR within 72 hours prior to validation for all routine in-patients. All Urgent (U) and Priority (P) patients will have VS documented in the PMR within 12 hours prior to validation. **(T-2)**

3.4.2.8. Significant lab values. Will have current hemoglobin and hematocrit (H&H) for all trauma, post-arrests, and post-operative patients. If ventilated, will include arterial blood gas results within 12 hours of validation. **(T-2)**

3.4.2.9. Oxygen (O2) requirements. **(T-2). NOTE:** A pulse oximeter is available on board AE aircraft, but referring privileged providers must recognize these devices can give erroneously higher readings under certain physiologic conditions (i.e., carbon monoxide poisoning, dehydration, anemia, impaired peripheral circulation, and high or low cardiac output states). **NOTE:** A cabin altitude restriction is sometimes required in addition to supplemental oxygen therapy.

3.4.2.10. Documentation for regional and epidural pain management infusions will include the medication, dosage, drug concentration, location, rate of infusion, pump type,

and the service that is overseeing the infusion. The pain score will also be documented in the PMR. Orders for break through pain management must be included. **(T-2)**.

3.4.2.10.1. Prior to manifesting a patient with epidural analgesia or Peripheral Nerve Block (PNB) infusions onto an AE flight, the presence of the epidural or PNB (infusing or capped) will be annotated on the PMR within the TRAC2ES system. **(T-2)** The TVFS must be aware of the presence of the epidural or PNB infusion prior to clearing the patient for flight. **(T-2)**

3.4.2.10.2. It is essential for all providers to know the action and side effects of patient specific medications prior to starting care and prior to departure.

3.4.2.10.3. During the placement of the epidural catheter if “loss of resistance technique with air” has been used, or a “wet tap” occurs, the patient will wait a minimum of 24 hrs. prior to planned AE mission to decrease the possibility of complications such as pneumoencephalopathy occurring. **(T-2)**

3.4.2.11. All current medications with dose, frequency and route. **(T-2)**.

3.4.2.11.1. Anesthesia will order and/or review all pain medication loading dose(s), PCA bolus dose amount, lock-out interval, basal flow (continuous) rate, breakthrough pain orders, continuous peripheral IV infusion or saline lock, and over-sedation protocol on the AF Form 3899 or EHR equivalent. **(T-1)**

3.4.2.12. Self-medicating patients will be clearly identified and must have “Self-Administering Medication” (SAM) clearly indicated in current orders and “SAM” box must be marked on the 3899A or EHR equivalent at the end of the sentence. **(T-2)**

3.4.2.13. Nutritional status and diet orders. **(T-2)**

3.4.2.14. Ambulatory status and/or physical limitations. **(T-2)**

3.4.2.15. Travel limitations. (i.e., stops, RONS, cabin altitude restriction). **(T-2)**

3.4.2.16. Patient equipment, but not limited to the following. (external fixators, epidural pain pumps, cardiac monitors, chest tube drainage systems, wheelchair to include dimensions, crutches). **(T-2)**

3.4.2.17. Request for medical attendants (MA) or non-medical attendants (NMA) or specialty medical teams. **(T-2)**

3.4.2.17.1. The attending privileged provider may request MA in order to avoid a decrement in the level of care during transport. Types of MAs may include the following:

3.4.2.17.1.1. ACLS credentialed.

3.4.2.17.1.2. Specialty medical attendant team for ventilated patients (i.e., ERCC team).

3.4.2.17.1.3. Privileged providers, obstetrical nurses, or nurse practitioners for obstetric patients on continuous IV medications for premature labor or pre-eclampsia.

3.4.2.17.1.4. Nurses or technicians (if the PMRC requests) i.e., neuropsychiatric



class 1A and 1B patients.

3.4.2.17.1.4.1. Validation must look carefully for signs that mental health patients may have a change of status during flight that may directly threaten the aircraft or personnel onboard. The most helpful information to the VFS can be ascertained by asking the originating mental health and medical staff, “what has the patient actually said or done?”

3.4.2.17.1.4.2. The VFS needs to know if the patient is a danger to self, others, or the aircraft/facility.

3.4.2.17.1.5. Other special attendants for patients whose needs exceed the capabilities of the aeromedical evacuation crew.

3.4.2.17.2. Non-Medical Attendants. A complete discussion of NMAs & MAs can be found in Section 6.5.

3.4.3. Required information and documentation (i.e., scanned copies of passports, contractor letters of authorization) will vary by patient situation and theater of operation. Contact your servicing PMRC for detailed guidance.

### **3.5. Determining Movement Precedence.**

3.5.1. Precedence determines how quickly the patient is moved by the patient movement system. Precedence is determined by the clinical requirement for saving life, limb, or eyesight and must be consistent with the delivery date to the destination medical facility. **(T-2)** The movement precedence is determined through consultation between the referring and accepting privileged provider. The TVFS and the PMRC make the final determination on the precedence. **NOTE:** During contingency operations, additional information may be required as determined by the PMRC. Generally, patients may be regulated to the closest uniformed services treatment facility having the medical capability to care for the patient.

3.5.2. Precedence categories are Urgent (“U”), Priority (“P”) and Routine (“R”). All “U” or “P” requests must be approved in accordance with PMRC guidelines. **(T-2)**

3.5.2.1. If a request for “U” or “P” movement is not validated and the referring privileged provider non-concurs with the decisions, he/she can request a review by TCSG, the appropriate theater command surgeon, or designated representative.

3.5.2.2. Report “U” and “P” patients directly to the PMRC with the help of the AE clerk or patient administration personnel. “U” or “P” patients require direct communication between the referring, accepting privileged providers and validating flight surgeon.

3.5.2.3. “U” Precedence (stabilizing/unstable) requires immediate PM to save life, limb, eyesight, or prevent serious complications of injury or existing medical condition. Immediate action shall be taken to obtain suitable transportation to meet patient requirements. **(T-2)** Timeline for movement is as soon as possible and will be validated by supporting PMRC TVFS. **(T-2)** PM should commence within 12 hours of a validated patient movement request.

3.5.2.4. “P” Precedence (stabilizing/stabilized) requires expedient PM and prompt medical intervention when care is unavailable locally and medical condition could deteriorate; PM is required sooner than the next scheduled channel AE mission. Timeline

for movement will be defined by the competent medical authority and validated by the supporting PMRC TVFS. **(T-2)** PM typically commences within 24 hours of a validated patient movement request, but may be modified based on the patient's requirement for next clinical intervention.

3.5.2.5. “R” Precedence (stabilized/stable) requires timely PM, can tolerate longer periods except when clinical requirements/or status change warrants higher movement precedence. Timeline for movement will be defined by competent medical authority and validated by the supporting PMRC TVFS. **(T-2)** PM typically commences within 7 days of a validated patient movement request, but may be modified based on the patient's requirement for next clinical intervention.

3.5.2.6. Response Time.

3.5.2.6.1. Many factors influence response time for “U” and “P” movements. Validation of the PMR by the PMRC is required before airlift will be allocated. **(T-2)** The PMRC provides the validated PMR to the appropriate C2 agency to procure airlift. **(T-2)**

3.5.2.6.2. The 618 AOC/AMD/AECT will consider all airlift sources to include commercial air ambulances. **(T-2)** The PMRC will consider alternative sources of patient movement or transport if airlift response time does not meet the patient's clinical needs. **(T-2)**

### **3.6. Special Category Patients.**

3.6.1. A special patient is any patient who can be considered at significant risk being aeromedically evacuated. To designate a patient as “special” is a matter of judgment based on many factors. Among these are the patient's clinical status and degree of stability, amount of time between origination and destination MTF, and duration of individual missions if more than one is needed to move. Special patients can be designated by the MCD/FN, Patient Movement Clinical Coordinators (PMCCs), VFS or responsible physician and must be coordinated through the PMRC. **(T-2)**

3.6.2. Potential special category patients.

3.6.2.1. Cardiac patients: Cardiac monitor for transport, implanted defibrillator/pacemaker.

3.6.2.2. Do not resuscitate patients.

3.6.2.3. Infants: Less than 10 lbs. requiring Airborne Life Support System (ALSS) for temperature control; in ALSS for other than temperature control; requiring medical attendant; apnea monitor; pulse ox/cardiac monitor for flight; ventilator support.

3.6.2.4. Blood disorder patients: Hemoglobin less than 7.0 (coordination required with TVFS), sickle cell crisis, patients requiring blood/blood products in-flight. Refer to paragraph 8.10.

3.6.2.5. Communicable disease patients: Tuberculosis (TB) with less than 2 weeks treatment with TB meds, MRSA/VRE (Methicillin [oxacillin])-Resistant Staphylococcus Aureus/ Vancomycin Resistant Enterococcus ) (must be briefed to the TVFS prior to any

validation), Rule out clinical (ROC) indicators list for potential contagious patient movements. **(T-2)**

3.6.2.6. Dialysis patients.

3.6.2.7. Continuous IV/Intrathecal Medications: ICU (Intensive Care Unit) type IV drips (Dobutamine, Dopamine, etc.), heparin, insulin, epidural patients, nerve-block patients.

3.6.2.8. Obstetric (OB) patients in active labor with a medical attendant.

3.6.2.9. Orthopedic patients with spinal precautions and/or needing a Stryker frame/traction.

3.6.2.10. Respiratory disorder patients: Ventilator patients.

3.6.2.11. Specialized team patients: ERCC, extra corporeal membrane oxygenation team, lung team, burn team, neonatal intensive care unit team.

3.6.2.12. Special operational restrictions: Urgent, priority, cabin altitude restriction, command interest, any patient O-6 or higher (active or retired), E-9 depending on position (command), foreign national, secretarial designee, or any other high visibility patient movement. Indicate the patient is a special patient in the PMR within TRAC2ES.

### **3.7. Determining Patient Classification.**

3.7.1. Classification will be assigned by a referring privileged provider in coordination with the PMRC and designates the patient status, based on diagnosis and ability to self-help in an emergency. **(T-2)** The MCD may assign a higher (upgrade) classification, e.g. 2B to 2A if the patient's condition warrants.

3.7.1.1. A patient's classification will not be downgraded without the approval of the VFS (i.e. 1A to 1C). **(T-2)** Patient status changes can and do occur after the initial reporting of patient movement requests. All medical personnel will continuously re-assess and document patient status changes and ensure updated information is communicated to the PMRC. **(T-2)**

3.7.1.2. The MCD will notify C2 who will then contact the governing PMRC of any change in patient status or classification as soon as possible. **(T-2)** Complete DD Form 2852, *Aeromedical Evacuation Event/Near miss Report*, and update AF Form 3829, *Summary of Patients Evacuated by Air*. **(T-2)**. The DD Form 2852 is protected from disclosure except as specified in 10 U.S.C. Section 1102, Confidentiality of Medical Quality Assurance Records: Qualified Immunity for Participants.

3.7.2. Psychiatric classifications.

3.7.2.1. Patients are classified according to the severity of symptoms. **(T-2)**

3.7.2.2. 1A and 1B patients must have standing and/or as needed (PRN) medication orders for agitation/anxiety/sleep. **(T-2)**

3.7.2.3. 1A – Severe. Psychiatric litter inpatient requiring the use of restraining apparatus, sedation, close supervision, and will have a medical attendant. **(T-2)**

3.7.2.3.1. Patients will have restraints on prior to boarding the aircraft, be sedated for flight and have close supervision. **(T-2)**

3.7.2.3.2. Inspect short and long restraint belts and wrist and ankle cuffs for cuts, tears, or excessive wear. Assure there are compatible/operable restraint keys available and the caregivers know the location of the keys. Prior to take-off, verify the restraint key opens the locking device. **(T-3)** The patient's restraints will not be attached to or around the litter itself. See Section 8.20.9. for guidelines. **(T-3)**

3.7.2.3.3. Restraints must be four point restraints and patient must be dressed in a hospital garment, or physical training gear, and sedated. Continually monitor throughout the flight with line of sight at all times while in the AE system. **(T-2)** Sedated patients will have respiratory status monitored (to include pulse ox) at regular intervals and observed for signs of over-sedation. **(T-2)**

3.7.2.3.4. The referring physician, PMRC, MA, or MCD may determine the patient's behavior is too high risk to flight safety, thus requiring further stabilization.

3.7.2.3.5. The patient will be stabilized prior to AE movement with appropriate psychiatric medications that will effectively control symptoms of extreme agitation and/or anxiety. **(T-2)**

3.7.2.3.6. Patient requiring a MA. The MA will be same gender, preferably of equal or higher rank. **(T-2)**

3.7.2.3.7. Patients will only RON at a bedded MTF. **(T-2)**

3.7.2.3.8. Patients will travel in hospital garments, pajamas, or physical training (PT) gear. **(T-2)** The PT gear should have all strings, laces, and belts removed.

3.7.2.4. 1B – Intermediate. Psychiatric litter inpatient of intermediate severity.

3.7.2.4.1. Patients should be transported on a litter. In coordination with the MCD/Flight Nurse (FN)/ Aeromedical Evacuation Technician (AET), these patients may be allowed to sit up for comfort under close observation.

3.7.2.4.2. Psychiatric patients may require tranquilizing or sedating medications to prevent harm to self, aircrew members, or the aircraft. These patients will have a restraint order for applying restraints or restraints immediately available at the litter. **(T-2)** Once available restraints are applied to the patient, the MCD will contact the VFS for an applied restraint order. **(T-2)**

3.7.2.4.3. They will not be seated near exits, flight deck or where emergency equipment (i.e., oxygen, crash axes, or emergency O2 shut off valve) is kept. **(T-2)** **NOTE:** all aircrew members will be informed of the patient's location. **(T-2)**

3.7.2.4.4. Patients should travel in hospital garments, pajamas, or physical training (PT) gear. The PT gear should have all strings, laces, and belts removed.

3.7.2.4.5. Patients will only RON at a bedded MTF. **(T-2)**

3.7.2.5. 1C – Ambulatory psychiatric inpatient. Psychiatric patients who are cooperative and who have proved reliable under observation. May or not require an attendant for movement.

3.7.2.5.1. May be dressed in civilian or military clothing.

3.7.2.5.2. Will not be seated next to an emergency exit or O2 shut off valve. **(T-2)**

- 3.7.2.5.3. May require a medical attendant if patient need dictates.
- 3.7.2.5.4. Patient will not self-medicate or carry their own medication. **(T-2)**
- 3.7.2.5.5. Patients will only RON at a bedded MTF. **(T-2)**
- 3.7.2.6. 3C - Inpatient ambulatory, drug or alcohol (substance) abuse patient going for inpatient treatment or evaluation dressed in military or civilian clothing.
  - 3.7.2.6.1. Individuals who have recent alcohol consumption may exhibit signs or symptoms of withdrawal. For more information on alcohol and drug withdrawal, see section 8.20.13.
  - 3.7.2.6.2. Patient can be managed as a 1C but may sit next to exits and O2 shut off valves, if determined to be competent by a FN.
  - 3.7.2.6.3. Patients may RON at an ERPS if determined by the FS and the senior nurse at the ERPS to be stable and safe.
- 3.7.2.7. 5B - Outpatient ambulatory, drug or alcohol (substance) abuse. **NOTE:** Patients may RON at an ERPS if determined by the FS and senior nurse at the ERPS to be stable and safe.
- 3.7.2.8. 5C - Psychiatric outpatient going for treatment or evaluation. **NOTE:** Patients may RON at an ERPS if determined by the FS and senior nurse at the ERPS to be stable and safe.
- 3.7.3. Inpatient litter patient classifications.
  - 3.7.3.1. 2A - A litter patient who may not or cannot ambulate. Requires assistance in the event of an emergency.
  - 3.7.3.2. 2B - A litter patient, able to sit in a seat, should be able to ambulate with assistance in the event of an emergency.
- 3.7.4. Ambulatory inpatient classifications.
  - 3.7.4.1. 3A - Inpatient non-psychiatric, non-substance abuse patient requiring medical treatment, assistance or observation en route (usually minimal).
  - 3.7.4.2. 3B - Recovering inpatient, returning to home station, and requires no medical attention en route.
  - 3.7.4.3. 3C - See Section 3.7.2.6.
- 3.7.5. Infant categories.
  - 3.7.5.1. 4A - Infant, less than 3 years of age, occupying a seat and going for treatment.
  - 3.7.5.2. 4B - Infant, less than 3 years of age, occupying a seat and returning from treatment.
  - 3.7.5.3. 4C - Infant requiring an approved air worthy certified incubator.
  - 3.7.5.4. 4D - Infant under 3 years of age on a litter.
  - 3.7.5.5. 4E - Outpatient under 3 years of age occupying a seat.
- 3.7.6. Outpatient categories.

3.7.6.1. 5A - Outpatient ambulatory going for treatment. Does not require a litter or medical assistance during flight.

3.7.6.2. 5B and 5C - See Sections 3.7.2.7. and 3.7.2.8.

3.7.6.3. 5D - Outpatient on litter for comfort or safety going for treatment.

3.7.6.4. 5E - Returning outpatient on a litter for comfort or safety.

3.7.6.5. 5F - Returning outpatient.

3.7.7. Attendant categories.

3.7.7.1. 6A - Medical attendant. A privileged/credentialed provider or clinician assigned to provide specialized medical/nursing treatment en route to the patient's destination facility. See Section 6.5.

3.7.7.2. 6B - Non-medical attendant. Family member or unit member accompanying patient to support/comfort. See Section 6.5.

### 3.8. PMR Validation and Acceptance for Flight

3.8.1. When the PMR is submitted with required information and all approvals are completed, a PMCC or TVFS will clinically validate, as appropriate. **(T-2)** The Patient Movement Operations Officer (PMOO) or Patient Movement Coordinator administratively validates the PMR. The airlift C2 agency, after receiving a validated PMR, will select the most advantageous mission for the patient and notifies the PMRC of the mission, who then notifies the facilities. **(T-2)** The PMOO will build the mission in TRAC2ES as required and the Duty Controllers will make appropriate notifications to originating and destination facilities prior to the mission and during execution. **(T-2)**

3.8.1.1. If the patient requires total care or continuous observation, a MA from the originating medical facility or staging unit may be required to accompany the patient.

3.8.1.2. The PMRC will coordinate any requirement for a specialty team or MA made by the referring privileged provider, in coordination with the TVFS. **(T-2)**

3.8.2. The CN IAW AFI 11-2AE, V3 at the AES tasked to support the mission will determine the appropriate crew complement required for clinical acuity. **(T-3)**

3.8.3. The validation process includes confirming the patient is medically cleared for flight and this movement is appropriate when all circumstances are considered. Circumstances include, but are not limited to information identified in [paragraph 3.5](#) and [3.6](#) as well as:

3.8.3.1. Availability of adequate care in the local economy.

3.8.3.2. Patient transportation eligibility. Regulations and references regarding patient transportation eligibility for evacuation can be found in the following references.

3.8.3.2.1. DoD 4515.13R, *Air Transportation Eligibility*

3.8.3.2.2. DoDI 6000.11, *Patient Movement*

### 3.9. Patient Movement Policy and Operations.

3.9.1. Global Patient Movement Requirements Center (GPMRC). The GPMRC is a joint activity reporting directly to the TCSG and serves as DoD's single manager for the

development of policy and standardization of procedures and information support systems for global patient movement. The GPMRC implements policy and standardization for the regulation, clinical standards, and safe movement of uniformed services and other authorized, or designated patients. The GPMRC also orchestrates and maintains "global oversight" of the PMRCs in coordination with the Geographic Combatant Commanders and external intergovernmental organizations, as required.

3.9.2. The PMRC is a joint activity reporting directly to GPMRC. The PMRC provides medical regulating services, including clinical and administrative validation, limited patient ITV and evacuation requirements planning for intra- and inter-theater PM. The PMRC is also responsible for prompt and accurate recording of mission information as well as appropriately requesting a diversion of a mission when necessary. The PMRC coordinates with supporting resource providers to identify available assets and communicates requirements to service components or other agencies to execute the mission.

3.9.2.1. PMRC will be responsible for the following:

3.9.2.1.1. Coordinate PM requirements with airlift, maritime, and/or ground operations as appropriate. **(T-2)**

3.9.2.1.2. Receive, consolidate, and process requests for patient movement, and where appropriate, transmit requests to other PM operating elements within the system.

3.9.2.1.3. Monitor ITV of patients. **(T-2)**

3.9.2.1.4. Monitor appropriate records and submit reports relating to PM activities. **(T-2)**

3.9.2.1.5. Coordinate the timely and orderly movement of patients and establish necessary records to make certain patients move consistent with their ready date, readiness and operating schedules. **(T-2)**

3.9.2.1.6. Consolidate patient movement requests and furnish necessary assistance to using agencies, including PM liaison functions. **(T-2)**

3.9.2.1.7. Advise the origination and destination hospital when a patient is removed from the PM system. **(T-2)**

3.9.2.1.8. Coordinates the arrival of the aircraft with the commercial air ambulance (CAA) agency. **(T-2)**

3.9.2.1.9. Coordinates with the origination MTF for patient departure. **(T-2)**

3.9.2.1.10. Coordinates with the destination MTF for patient arrival. **(T-2)**

3.9.2.1.11. Provides initial assistance and medical direction for Medical Class A, B or C safety events, as needed (see [Chapter 9](#)). **(T-2)**

3.9.2.2. Joint Patient Movement Requirements Center (JPMRC). For contingency operations, a JPMRC may be stood up by the geographic CCDR to handle patient movement within the Area of Operations.

3.9.2.2.1. TRANSCOM Patient Movement Requirements Centers-Americas (TPMRC-A). Located at Scott Air Force Base, IL and is responsible for patient

movement within U.S. Northern Command (USNORTHCOM), from U.S. Southern Command (USSOUTHCOM), and to and from USNORTHCOM. Contact Information: DSN: (312) 779-4200, commercial: (618) 229-4200; toll free: 1-800-303-9301.

3.9.2.2.2. TPMRC-East (TPMRC-E). Located at Ramstein AB, Germany, and is responsible for patient movement within USEUCOM, USAFRICOM, and United States Central Command (USCENTCOM) (when there is no JPMRC). Contact Information: DSN: (314) 480-8040/2264 or Civilian: 0049-6371-47-8040/2264.

3.9.2.2.3. TPMRC-West (TPMRC-W). Located at Joint Base Pearl Harbor-Hickam and is responsible for patient movement within United States Pacific Command (PACOM). Contact information: DSN: (315) 448-1602/04/09 or commercial: (808) 448-1602/04/09.

3.9.2.3. To facilitate guidance or coordination, the PMRC will be contacted with any questions, or patient concerns regarding the patient's AE movement. **(T-2)** During mission execution, the MCD will contact C2 and the airlift agency will contact the governing PMRC as soon as possible regarding mission irregularities, emergencies, or changes in a patient's condition impacting the continuity of care, transportation and other requirements. **(T-2)** For patient related issues, the cite number will be used to protect patient privacy. **(T-2)** A DD Form 2852 will be generated. **(T-2)**

### **3.10. Theater Validating Flight Surgeon (TVFS).**

3.10.1. The TVFS is assigned to each PMRC and has the appropriate knowledge-base and experience sufficient to ensure proper medical care and the ability to provide medical direction during transport for all patient types served by the PM system.

3.10.1.1. The TVFS will seek prompt specialty or subspecialty consultation, as appropriate, when a patient's needs exceed the scope of practice of the VFS. **(T-2)** The TVFS, working in concert with the PMRC PMCCs, identifies skill requirements to ensure appropriate level of care required for any patient movement.

3.10.1.2. The TVFS will work with the referring and accepting privileged providers, as well as any ERCC team MA when planning and coordinating the patient's transfer. **(T-2)** If there is a question as to the level of care required, the VFS will work with the sending physician and ERCC team MA to make a determination. **(T-2)**

3.10.2. The TVFS must ensure compliance with applicable accepted practice standards for air and ground patient movement. **(T-2)**

3.10.3. Medical direction is transferred from the TVFS to a privileged provider traveling with AE patients as a MA or as an ERCC team physician.

3.10.4. AECMs transporting AE patients provide care in-flight under the medical direction of the TVFS.

3.10.5. If the TVFS and/or PMRC have a question regarding the AECMs' ability to care for a patient without a specialty care team or medical attendant, the TVFS and/or the PMRC will contact the CN at the AES tasked with the mission to determine appropriate staffing levels for the mission. **(T-3)**



### 3.11. TRAC2ES.

3.11.1. TRAC2ES is the Automated Information System supporting patient movement which links the originating and destination MTFs with medical transportation assets and C2 infrastructure to plan and manage PM, and to maintain continuous global awareness of the PM system. The user interface is a primarily web-based application (T-Web), but a computer-based interface (T-Mobile) exists for users with sporadic or non-existent internet connectivity. The system is used by: PMRCs, fixed and deployed MTFs, PM C2 elements, and the headquarters of Joint Task Forces, combined task forces, and CCDRs. For the latest information regarding TRAC2ES, go to <https://www.trac2es.transcom.mil/> or email [trac2es@us.transcom.mil](mailto:trac2es@us.transcom.mil). Users may apply for new accounts by contacting the TRAC2ES Helpdesk at: [transcom.scott.tcj6.mbx.service-desk@mail.mil](mailto:transcom.scott.tcj6.mbx.service-desk@mail.mil). The help desk can provide them with the forms and guidance needed to fill out accounts.

3.11.2. Regulated Patient Movement (PM). All service MTFs should report into TRAC2ES any patient who requires PM beyond a 100 mile radius. During peacetime, patients are regulated to closest MTF capable of providing required care and disposition. Patients originating outside CONUS who are not expected to return to duty and being separated from service by reason of disability are regulated to MTF or Veterans Affairs Medical Center nearest patients' place of residence with medical capability to care for the patient. Patients who are expected to return overseas are regulated to the MTF nearest to the port of entry. Hospitalized patients who are away from their duty station may be returned to a MTF nearest their duty station. Patients moving through the AE system will be reevaluated/re-assessed post-flight at all interim locations by service staging or fixed-MTF FSSs/privileged providers. **(T-2)** This will identify changes in clinical status and clear patients for onward movement.

3.11.2.1. Standard regulation. This process selects destination MTFs for patients medically evacuated from a theater of operations. It provides identification of and assignment to MTFs capable of providing required definitive, recuperative or restorative care to eligible beneficiaries.

3.11.2.2. Open regulation. In the event of a National Emergency/Secretary of Defense (SecDef) designated military contingency where patient movement requirements exceed Federal/State, Military Health Services (MHS)/Health and Human Services (HSS) forces' capabilities to appropriately regulate patients to a preferred or Service designated capability. TCSG shall, in coordination with the GCCs, through the Chairman of the Joint Chiefs of Staff, initiate "Open" regulation of patients, providing PM to the closest MTF in any GCCs AOR. **(T-0)** TCSG/GPMRC shall provide detailed regulating instructions (forms/format) for contingency "Open" regulation. **(T-2)** Normally this period of "Open" regulation shall not exceed seven (7) days without the coordination and approval of the above agencies. **(T-0)**

3.11.2.3. Through regulation. Upon evaluation by competent medical authority, stabilized patients may enter the joint common user PM system near the first level of formalized medical care and be evacuated directly to a definitive care capability in another theater, or bypass interim levels of care if the patients' clinical requirements do not require earlier intervention. Patients still receive care and are re-assessed. **Exception:** When patients are through-regulated from a Joint Operations Area (JOA), the JPMRC will assist the originating MTF with identifying the appropriate destination MTF. **(T-2)**

3.11.2.4. Outpatient regulation. Outpatients may be regulated IAW service specific guidance. When outpatients are not expected to return to duty within a reasonable amount of time, or in the absence of theater specific guidance, outpatients should be regulated to the MTF located within the TRICARE area in which the patient is enrolled. This MTF is typically closest to their unit of assignment and has the capability to care for the patient's clinical needs. The PMRC will also verify this information prior to validation. **(T-2)**

3.11.2.4.1. Patients not requiring in-flight care may be manifested as passengers on the passenger manifest through the passenger terminal. Patients traveling as passengers will not have an AF Form 3899, but will still be entered and validated in TRAC2ES as "no in-flight care required." **(T-2)**

3.11.2.5. Unregulated patient movement. Refer to JP 4-02.

3.11.3. The PMRC provides the AOC with the PM requirement and the AOC will coordinate the tasking of appropriate aircraft and AE assets to execute an AE mission for regulated patients. **(T-2)** The AOC gives approved mission information to the PMRC. **(T-2)**

3.11.4. The minimum requirement for utilization of the aircraft for AE in peacetime is a qualified AE crew placed aboard AE-designated airlift when moving patients. **(T-2)**

## Chapter 4

### ORIGINATING AND DESTINATION FACILITY

**4.1. General Information.** Originating and destination facilities will assume the responsibilities of patient staging in the absence of an ERPS. **(T-2)** It is the responsibility of the originating facility to identify, create and submit a PMR and supply approved equipment, supplies and medications required to monitor and treat the patient throughout the AE system. MTF/CC will coordinate with supporting patient staging facilities for PM operations requirements and procedures. **(T-2)** See [Chapter 5](#) for additional ERPS information and [Chapter 6](#) for patient preparation.

**4.2. TRAC2ES.** Military MTFs are required to update their medical specialty capabilities in TRAC2ES semi-annually. **(T-2)** Any changes in medical specialty capability will immediately be reported to the service SG by the MTF. **(T-2)** Official notification to the respective PMRC will come from the respective service SG. **(T-2)**

4.2.1. All military MTFs and ERPS will:

4.2.1.1. Monitor TRAC2ES daily to identify any inbound/outbound patients regulated to their facility. **(T-3)**

4.2.1.2. Verify information on the mission manifest, including patient information, load data, special equipment requirements, meals, and AE mission information with appropriate agencies. **(T-3)**

4.2.1.3. Update ITV events, and document in TRAC2ES, to assist with patient tracking and clinical updates. **(T-3)**

4.2.1.4. Coordinate patient and mission changes with appropriate PMRC and C2 agencies. **(T-3)**

4.2.2. If clinical/mission status changes occur, the MTF/ERPS will provide an up-to-date copy of the PMRs and TRAC2ES mission manifest to the AE crew upon patient delivery. **(T-3)**

**4.3. Theater Medical Data Store.** TMDS is a theater specific data repository for clinicians to gain patient's medical information. Medical records collected from Theater Medical Information Program - Joint (TMIP-J) applications flow into the databases and are accessible worldwide through TMDS.

**4.4. Travel Authorizations.** The originating facility will provide a valid, funded travel order for all US Armed Forces and non-US Armed Forces patients and attendants (revenue reimbursable/pay patients). **(T-2)**

4.4.1. Prepare the travel order or transportation authorization:

4.4.1.1. Include a complete billing address for non-US Armed Forces patients. **(T-2)**

4.4.1.2. Attach the "Secretarial Designee" letter (if applicable) authorizing AE and specifying the reimbursable rate. **(T-2)**

4.4.1.3. Send a copy of the travel order to the TCSG/GPMRC within 5 workdays after the patient leaves the facility to **(T-2)**:

**Table 4.1. TCSG/GPMRC.**

TCSG  
Third Party Collections  
709 Ward Drive, Building 1990  
Scott AFB, IL 62225

4.4.2. Prevent patient movement delay by authorizing alternate methods of transportation for Armed Forces patients on Active Duty. Service policy/guidance will direct the members' understanding of the need for personal funds; amount limit, and means of payment (i.e., Treasury checks, money order, and cash). **(T-2)**

**4.5. Transportation.** In the absence of an ERPS, the originating facility will be required to provide appropriate patient preparation, transport, medical escort and manpower to safely load patients and transfer the patients' and attendants' baggage, records, medical equipment, supplies, medications, and valuables on and off the evacuation asset. **(T-2)** The ERPS capability will coordinate this role if assigned/postured at the location. **(T-2)**

4.5.1. Patients on folding NATO, or other approved litters, will be transferred and prepared according to patient preparation requirements. **(T-2)** The originating facility will ensure patients have flight approved equipment, clothing, and adequate levels of supplies, medications (refer to [para 8.22.5](#)) and enteral/parenteral nutrition. **(T-2)** Patients should arrive a minimum of one hour prior to scheduled take off. See [Chapter 6](#) Patient Preparation for further details.

4.5.2. The originating and destination MTF/CC will ensure the MTF has a process for:

4.5.2.1. Providing required medical attendant to and from an evacuation asset. **(T-3)**

4.5.2.2. Maintaining adequate communications with MTF personnel in case of an en route emergency. **(T-3)**

4.5.2.3. Planning and coordinating to preclude mission and patient delays on the flight line. **(T-3)**

4.5.3. MTF staff needs to plan for medication (e.g. pain, nausea, or anxiety) and oxygen administration requirements during transport between the flight line and MTF. Appropriate medical personnel will accompany the patients during transport. **(T-3)** **WARNING:** The level of clinical care required will be maintained throughout the duration of patient movement.

4.5.3.1. The MTF is responsible for providing an ACLS-credentialed staff to transport patients to and from the aircraft and the medical facility when patient condition dictates. If an ACLS-credentialed staff member is not available from the destination MTF, an ACLS-credentialed AECM will obtain/maintain custody and care of patient to the destination MTF until appropriate transfer of care can be accomplished. **(T-2)** The MTF will ensure the AECMs are returned to aircraft. **(T-2)**

4.5.3.2. For a critical care patient, the ERCC team will maintain custody and care of the patient to and from the aircraft. **(T-2)** The receiving facility will make provisions to return personnel back to the aircraft, to the Aeromedical Evacuation Operations Team (AEOT) or to lodging. **(T-2)**

4.5.3.3. Prevention of ear block at originating MTF: Evaluate risk for ear block. Brief patients on signs and symptoms, as well as techniques to prevent potential ear block (if not contraindicated), and to notify AECM immediately if difficulty in clearing ears occurs. NOTE: Blast victims should be evaluated and treated for possible infection and trapped air following ruptured tympanic membranes; tape dressing to absorb blood and fluid from the external ear canal, and assure it does not block or enter the external canal.

#### **4.6. Documentation and Transfer of Patient Records.**

4.6.1. The EHR is the primary source for patient documentation. **(T-2)** In the event the EHR is unavailable, personnel will utilize the AF Form 3899 series. **(T-2)** If a patient arrives without EHR or an AF Form 3899 and arrives with any other medical documentation information, those documents will be transcribed and attached onto an AF Form 3899 and will become a permanent part of the patient's medical record. **(T-2)**

4.6.2. The originating facility is responsible for patient documentation and transfer of comprehensive patient information. **(T-2)** Originating MTFs should initiate applicable paperwork IAW AFI 48-307 V3 for the patients entering into the AE system. (i.e., AF Form 3899 series, baggage/anti-hijacking forms, baggage tags).

4.6.3. The destination facility is responsible for assuring all patient documentation is transferred and placed in the patient's permanent medical record. All facilities will protect and securely transport medical information to and from the evacuation asset IAW DoDI 6000.14, *Patient Bill of Rights and Responsibilities in the Military Health System (MHS)*. **(T-0)**

**4.7. Mission Coordination.** The MTF coordinates mission requirements with appropriate personnel, such as patient census, launch and recovery times/staffing needs to include drivers or vehicles, appropriate clinical points of contact at other MTFs and supporting agencies. **(T-3)**

**4.8. Accountability.** All healthcare workers will ensure patient accountability is maintained at all times. **(T-0)** This can be maintained on Health Insurance Portability Accountability Act (HIPAA) compliant status boards and log sheets. TRAC2ES PM Automated Information System may be used for ITV.

**4.9. Entry Requirements.** Sending facility/patient staging units ensures patients and attendants meet passport, all visa, and immunization requirements of the country in which the receiving facility is located and ensure patients possess a military, dependent, civilian or contractor government ID card. **(T-0)**

**4.10. Patient Safety Events/Near Miss Events.** The receiving facility will ensure incidents or significant changes in patient status that occur within 24 hours of patient arrival are reported on DD Form 2852. **(T-2)** See [Chapter 9](#) for specific reporting guidelines.

**4.11. RON Patients.** At a minimum, MTF commanders will ensure their personnel complete the following tasks for all RON patients at or near their facility:

4.11.1. Medically evaluate each patient upon arrival and daily, or as medical condition requires. **(T-2)**

4.11.2. Prepare patients both clinically and administratively for further PM. **(T-2)**

4.11.3. Provide safekeeping of patient valuables. **(T-2)**

4.11.4. Ensure patients have proper nutrition, bathroom facilities, and have a place to sleep/stay. **(T-2)**

#### **4.12. MTF Support Requirements for the Co-Located ERPS.**

4.12.1. The MTF provides the supported staging facility with medical, mental health, administrative, logistical, pharmaceutical, nutritional medicine, radiology and other support services as needed. (Unless otherwise designated, the Chief of Aerospace Medicine has oversight of clinical care functions).

4.12.2. The supporting MTF provides medical materiel support for patients transiting the continuum of medical care. The MTF shall provide supplies, equipment, linen, medications, and custodial services and the subsequent accounting for such materiel IAW AFI 41-209, *Medical Logistics Support*. **(T-3)**

4.12.3. The MTF Resource Management Office will include reports from the supported staging facility as part of the MTFs' reporting requirements. **(T-2)** The MTF will assist the staging facility with personnel, funding requests, requirements and other services as needed. **(T-2)**

4.12.4. The MTF will support network and terminal connectivity to TRAC2ES. **(T-2)**

4.12.5. The MTF will ensure the staging facility has enough physical space to accommodate patient loads, infection control processes, readiness requirements and AE mission or transportation surges. **(T-2)**

4.12.6. The MTF Vehicle Control Officer (VCO)/vehicle Control Non-Commissioned Officer (VCNCO) will provide appropriate vehicles for transportation needs and will serve as the liaison to the vehicle operations flight and the staging facility VCNCO. **(T-2)**

4.12.7. The MTF will provide Commander's Support Staff services in support of disciplinary actions, career training and leave monitoring. **(T-2)**

4.12.8. The MTF will provide personnel trained in patient loading as required. **(T-2)**

4.12.9. Staging personnel provide nursing care for patients who have been transferred to the ERPS awaiting transportation. Patients on life support systems or cardiac monitors, as well as inpatient mental health patients are provided care in the adjacent MTF or local community medical facilities, as appropriate. In the event additional care/support is required for patients in the ERPS, the supporting MTF must have provisions in place to provide clinical/surgical interventions or other ancillary care as required. **(T-2)** All patients will be assessed to ensure the ERPS is capable of providing care as required. **(T-2)** Considerations and requirements that will be met to have a patient staging facility established include the following: **(T-2)**

4.12.9.1. MTF Pharmacy support is available 24 hours/day either in-house or available within one hour as deemed appropriate for scope of care by the MTF commander.

4.12.9.2. Radiology support (including: Magnetic resonance imaging, computerized axial tomography scan and ultrasound) is available within one hour, 24 hours/day.

4.12.9.3. Mental health support is available within one hour, 24 hours/day. Mental health support will be prepared to respond and assess/treat patients as needed.

- 4.12.9.4. Surgical support (to including anesthesia) is available within 2 hours, 24 hours/day. Surgical consultants is available within one hour, 24 hours/day.
- 4.12.9.5. Nutritional Medicine Support for ERPS is available 24/7. (Supporting MTF responsibility unless nutritional medicine personnel are assigned to staging facility).
- 4.12.9.6. Immediate/in house access to advanced life support services 24 hrs./day.
- 4.12.9.7. ICU support and critical care specialist is available 24 hrs./day at either the military or civilian MTF.
- 4.12.9.8. Emergency medicine support is available 24 hrs./day.
- 4.12.9.9. Ambulance support is available within 20 minutes, 24 hrs./day.
- 4.12.9.10. Staff physician support is available 24 hrs./day.
- 4.12.9.11. Laboratory services is available within one hour, 24 hours/day.

## Chapter 5

### EN ROUTE PATIENT STAGING SYSTEM (ERPSS)

#### 5.1. En Route Patient Stage (Facility) .

5.1.1. The ERPSS facility is a key healthcare component of the AE and provides temporary holding capability for patients transiting the system. All ERPSS facilities (with the exception of the tactical ERPSS 10) should be co-located with a bedded facility in order to maximize its capability to care for patients. Advanced medical/surgical and other ancillary services must be available 24 hrs./day for patients in the staging facility. **(T-2)**

5.1.2. All ERPSS facilities that are not co-located with a MTF need to identify their clinical capabilities to support en route patients and develop mitigation plans to ensure appropriate clinical care for patients which exceed the MTF/ERPSS capabilities. All staging facilities will provide their Scope of Care and written mitigation plans to the TCSG office annually or with a significant change at: [transcom.scott.tcsb.tcsb-director@mail.com](mailto:transcom.scott.tcsb.tcsb-director@mail.com). **(T-2)**

#### 5.2. Roles and Responsibilities.

5.2.1. Staging facility personnel will:

5.2.1.1. Receive regulated/unregulated patients and provide continuing and supportive medical care. **(T-3)**

5.2.1.2. Prepare and “clear patients for flight” to ensure suitability for movement under the guidance of the PMRC VFS. **(T-3)** See **Chapter 6** for patient preparation for flight. **(T-3)**

5.2.1.3. Brief patients and accomplish appropriate documentation and TRAC2ES inputs. **(T-3)**

5.2.1.4. Provide ground transportation between the staging facility and the aircraft according to flight line safety rules and regulations. **(T-3)**

5.2.1.5. Provide facility security for the protection of assets, personnel and entry control. **(T-3)**

5.2.2. The ERPS Officer in Charge (OIC), if not established as a Commander on G-Series orders through an OPORD or appointment by the supporting MTF, will be the senior officer of the team assembled regardless of AFSC. **(T-3)**

5.2.3. MTF/CC will coordinate with supporting patient staging facilities for PM operations requirements and procedures. The Medical Officer of the Day in the ERPS is responsible for patient care oversight. **(T-3)**

5.2.3.1. The Chief of Medical Staff (SGH) at the MTF has a supporting responsibility for the ERPS. The SGH is a Medical Corps officer who directly reports to the MTF/CC. The SGH is responsible for oversight of clinical provider quality and scope of care; utilization of professional resources; policies supporting medical care; and appropriate credentialing, privileging, and peer review processes as outlined in AFI 44-119. If the ERPS is not co-located with a MTF with a SGH available, a senior medical officer other than the Commander will be appointed for the above responsibilities. **(T-3)**



5.2.3.2. Chief Nurse (SGN) at the MTF has a supporting responsibility for the ERPS. The SGN is a Nurse Corps DT appointed senior nurse who reports directly to the MTF/CC. The SGN has the authority and responsibility for the delivery of nursing services. The SGN coordinates on all actions impacting nurses and maintains functional control of Air Force nursing service personnel; officers, enlisted, civilian, and contractors. The SGN plans, coordinates, and establishes practice and performance standards for all nursing personnel, ensures enlisted nursing personnel practice within the scope and to the full extent of their respective Career Field Education and Training Plan, and ensures peer review, currency and competency for nursing service personnel. If the ERPS is not co-located with a MTF with an SGN available, a senior nurse other than the commander will be appointed for the responsibilities. **(T-2)**

5.2.4. Flight Surgeon responsibilities:

5.2.4.1. The FS will review the patient's record, prescribe treatment, diet, and address any current medical complaints upon arrival with appropriate documentation on the patient's AF Form 3899 or EHR equivalent. **(T-2)** The FS will clear the patient for travel in the AE and coordinate status changes with the appropriate PMRC. **(T-3)**

5.2.4.1.1. A FS will evaluate and document the patient's condition upon arrival and every 24 hrs. **(T-3)**

5.2.4.1.2. The FS will consult with medical specialists as needed and will be available on a 24-hr basis. **(T-3)**

5.2.4.2. Will make rounds with the staging nurse at a minimum every 24 hrs. and update the AF Form 3899 or EHR equivalent. **(T-3)** In the event of a patient status change, report the change through ERPS facility leadership and/or PMRC for updating TRAC2ES. **(T-3)**

5.2.4.3. The TRAC2ES classification of inpatient or outpatient status is only one of the initial data points used for determining the appropriate location for the patient to RON. This is a clinical decision by the FS in collaboration with the PMRC validating authority. The PMRC VFS may also be consulted for patients with complicated or unusual conditions or any time further expertise is required or desirable.

5.2.5. A nurse will be appointed the Patient Safety Manager (PSM) by the ERPS Senior Nurse and will be responsible for compliance with the policies (**Chapter 9**). **(T-3)** The PSM will review all DD Form 2852s, Near Miss events, and ensure submission to the Patient Movement Quality-Report (PMQ-R) System. **(T-2)**

5.2.6. The ERPS Administrator provides oversight to staging facility/ERPS Control Center of personnel, logistics, biomedical equipment repair, facility manager, security, transportation personnel and disaster response planning and coordination.

5.2.7. Pharmacy services are the responsibility of the supporting MTF unless pharmacy personnel are assigned to the staging facility. **(T-3)**

### 5.3. Vehicles.

5.3.1. The appropriate vehicle support, personnel, and equipment UTCs must be tasked to the ERPS. **(T-2)** Fixed staging facilities must have adequate Ambulance/Ambulance Bus (AMBUS) assets assigned to support PM requirements. **(T-2)**

5.3.2. The ERPSS-10 UTC must deploy with 2 High Mobility Multipurpose Wheeled Vehicles (HMMWV) packed out with AS 903I medical equipment IAW approved pack-out guidance. **(T-2)** The ERPSS-10 should be placed very near the flight line to facilitate loading/unloading patients from the aircraft since the ERPSS-10 UTC only has 2 HMMWVs. **(T-3)**

5.3.3. The ERPS OIC will appoint a VCO/VCNCO in writing. **(T-3)** The VCO/VCNCO will manage the vehicles IAW AFI 24-301, *Vehicle Operations*, AFI 23-302, *Vehicle Management*, AF Handbook 24-320, *Guide to Vehicle Operations in an Expeditionary Environment*, and local directives. **(T-1)**

5.3.3.1. The VCO/VCNCO will ensure appropriate personnel are trained to operate assigned vehicles and will verify certification for flight line vehicle operations. **(T-3)**

5.3.3.2. The VCO/VCNCO will prepare and submit vehicle reports according to local directives. **(T-3)**

#### **5.4. Interface with MTFs/Other Agencies.**

5.4.1. The leadership element of the ERPS (OIC, Senior FS, Administrator and CN) will:

5.4.1.1. Coordinate with the supporting MTF to establish administrative, ancillary service, and clinical support requirements. **(T-3)**

5.4.1.2. Establish communications with the appropriate PMRC. **(T-3)**

5.4.1.3. Establish communications with all supported service tactical evacuation assets/units. **(T-3)**

5.4.1.4. Establish communications with all MTFs moving patients to the ERPS to ensure transportation and continuity of patient care is maintained. **(T-3)**

5.4.1.5. Establish communications with the base commander (deployed) and airfield manager. **(T-3)** The ERPS leadership team should also develop a relationship with the Air Terminal Operations Center, civil engineering, communications, transportation, dining facilities, flight safety, fire and force protection units. **(T-3)** These units should be notified of the presence of an ERPS facility on the base and the mission support requirements inherent in the patient movement system. **(T-3)**

5.4.1.6. The ERPS control center will communicate any changes to the patient manifest or patient condition directly with the ERPS OIC to ensure the most current medical information is available to the AE crew. **(T-3)**

#### **5.5. Force Protection.**

5.5.1. CE has the primary responsibility to provide facility hardening for the staging facility and ancillary structures associated with it (e.g. logistics storage, laundry, latrines, anti-hijacking areas, patient leisure areas).

5.5.2. In the event CE does not provide support, staging personnel will harden (i.e., sandbag) their own facilities. **(T-3)**

5.5.3. ERPS weapons plans, policies, procedures, and processes will be established by the ERPS senior officer upon arrival. **(T-1)** Weapons are defined as any device which may be used to inflict injury or death, to include, but not limited to, firearms, explosives,

ammunition, knives (including multi-purpose tools), aircrew knives, etc. Plans, Policies, Procedures and Processes for weapons handling and storage procedures will include:

5.5.3.1. Ensuring the proper control of weapons when temporarily stored in the facility. **(T-1)**

5.5.3.2. Outlining the proper storage and distribution procedures for weapons that are ERPS assets. **(T-1)** Establish a secure site for ERPS defensive weapons and ammunition. **(T-1)**

5.5.3.3. Establishing clear policies defining personnel authorized to carry weapons: Members of security forces or Military Police performing official duties are authorized to carry a firearm while in the ERPS facility. **(T-1)** The ERPS senior officer or Wing/CC may issue written authorization to other individuals with specific mission requirements to carry weapons into the ERPS. **(T-1)**

5.5.3.4. Determining and establishing a secure weapons storage area and activity log. **(T-1)** Ensure that persons unauthorized to carry firearms or other weapons in the facility are identified and disarmed. **(T-1)**

5.5.3.5. Positioning of the clearing barrel. Refer to AFMAN 31-229, *USAF Weapons Handling Manual*. **(T-1)**

5.5.3.6. Collection, securing and storing patient weapons to include firearms, grenades and explosives. **(T-1)** Weapons will be identified and inventoried using AF Form 1297, *Temporary Issue Receipt*. **(T-1)**

5.5.3.7. Establishing and managing the disposal of collected weapons and ammunition with security forces and/or armory. **(T-1)**

5.5.4. Plans, Policies, Procedures and Processes will be established for the temporary storing of weapons for redeploying staging personnel to include: **(T-1)**

5.5.4.1. Securing and reclaiming weapons to and from security forces. **(T-1)**

5.5.4.2. Securing weapons in approved travel case or storage area. **(T-1)**

5.5.5. Plans, policies, procedures and processes will be firmly established regarding the reissuance of previously assigned firearms to staging personnel assigned to unexploded explosive ordnance sweep teams, to include:

5.5.5.1. Number of weapons and ammunition issued to staging personnel members. **(T-1)**

5.5.5.2. Ascertaining the weapons qualification of the individual. **(T-1)**

5.5.5.3. Proper loading and clearing of weapons. **(T-1)**

5.5.6. Plans, policies, procedures and processes will be implemented relative to the establishment and supervision of entry control points (ECP) to include entry, exit and firearm management. **(T-3)** ECP policy will include: personnel identification, passwords, protective barriers, etc. **(T-3)**

## **5.6. Training.**

5.6.1. AFI 41-106 is the governing AFI for ERPSS training, unit training, and deployment requirements. **(T-1)** The staging mission is a unique role integral to the successful movement of patients. All personnel assigned to an ERPSS UTC will attend the Aeromedical Evacuation and Patient Staging Course (AEPSC). **(T-2)** Individual readiness skills verification and other AFSC-specific training requirements will be current prior to attending AEPSC training. **(T-2)** Training requirements will be current prior to deployment. **(T-2)**

5.6.2. Smaller personnel packages, supporting expeditionary operations, will require personnel to perform a variety of functions (multi-tasking) which may not be in their specific AFSC responsibilities. **(T-2)** Accordingly, training shall emphasize a breadth of talents, skills and be appropriate to the mission. **(T-2)** A flexible approach to patient care, movement, staging, administration, facility management, and security is essential for success.

## **5.7. Expeditionary Medical Logistics.**

5.7.1. The ERPSS utilizes WRM supply and equipment assets that may be pre-positioned. **(T-2)** Orders for medical materiel will flow from the deployed unit through the MTF. **(T-2)** The ERPSS-10 will deploy with an initial seven day supply and may use AF Reachback support when a mature Theater Lead Agent for medical materiel (TLAMM) is unavailable. **(T-2)** The ERPSS-50 and ERPSS-100 will deploy with a 20-day supply of expendable items. **(T-2)** Orders for ERPSS-50 and ERPSS-100 will be passed to the supporting MTF or directly to the designated TLAMM **(T-2)**

5.7.2. Once the theater has sustained operations, the TLAMM system will become the source for all joint medical supply needs. **(T-2)** ERPS will be supported by the base MTF. **(T-2)**

## **5.8. ERPS Facility Administration.**

5.8.1. Maintain, IAW AF and local directives, a comprehensive events log documenting activities, correspondence, communications and facility issues. **(T-1)** The events log provides historical documentation of all activities within the facility and should the need arise can be used to verify activities, as well as actions taken by unit personnel.

5.8.2. Maintain a status board displaying appropriate information, such as mission, estimated time of arrival (ETA), estimated time of departure, patient loads, and aircraft data. **(T-3)**

5.8.3. Verify mission information including: patient information, load data, special equipment requirements and aircraft information with appropriate agencies as directed by higher headquarters and local directives. **(T-3)** Coordinate patient and mission changes with appropriate PMRC and C2 agency to ensure airlift and crews are appropriate for mission. **(T-3)**

5.8.4. Coordinate mission requirements with appropriate personnel, such as census, launch and recovery times/staffing needs, to include drivers or vehicles, appropriate clinical points of contact at other MTFs and supporting agencies. **(T-3)**

5.8.5. Establish procedures to ensure the privileged provider physician at the originating facility initiates appropriate documentation and signs the AF Form 3899, or AF approved electronic patient documentation, recommending movement of patients and attendants. **(T-3)** The staging facility clinical staff, patient administration or medical regulating office will provide appropriate documentation from TRAC2ES to meet mission requirements, such as PMRs, patient manifest, and patient baggage list. **(T-3)** AF Form 3899 and Standard Form

600 (SF 600), *Chronological Record of Medical Care*, will be available for ongoing documentation of patient care. The FS clears the patient for movement and documents appropriately. **(T-3)** Ensure process is coordinated with local security forces to store/dispose of weapons or ammunition which cannot be returned to the patient's unit liaison officer (LNO). **(T-3)**

5.8.6. Ensure patient accountability is maintained at all times. **(T-3)** Patient accountability can be maintained on status boards or log sheets, provided they are compliant with the HIPAA and personnel are briefed on use, maintenance and compliance issues.

5.8.7. Patient death in the ERPSS. If a patient death occurs in the ERPSS, the individual remains will be transported to the sending or host MTF with all records and appropriate documentation, i.e., "Death Certificate." **(T-2)** If at an ERPSS-10, individual remains are to be transported back to the providing user service facility. See Section 10.3. **(T-2)**

**5.9. Mission Launch and Recovery.** Plans, policies, procedures and processes will be in place to include the following:

5.9.1. Management, control, and training of medical attendants, which include:

5.9.1.1. Stresses of flight. **(T-2)**

5.9.1.2. Billeting and recall. **(T-2)**

5.9.1.3. Attendant responsibilities relating to patient care. **(T-2)**

5.9.1.4. Inventory and management of special equipment. **(T-2)**

5.9.1.5. Delivery and recovery of patient to and from aircraft. **(T-2)**

5.9.1.6. Documentation of patient treatments/therapies to MCD includes medication, special diet, patient medical records, X-rays, SF 600 and AF Form 3899. **(T-2)** This is the responsibility of the MA to report to the MCD. **(T-2)**

5.9.1.7. Proper handling of litters, NATO carriers and attire. **(T-2)**

5.9.2. Management of administrative processes including:

5.9.2.1. Reviews of AF Form 3899 and TRAC2ES PMR. **(T-2)**

5.9.2.2. Preparation of baggage list provided by TRAC2ES and DD Form 600, *Patient Baggage Tag*. **(T-2)**

5.9.2.3. Anti-hijacking process and presentation. See Section 6.7. **(T-2)**

5.9.2.4. Vehicle control including drivers, configuration of AMBUS's, ambulance or opportune conveyance. **(T-2)**

5.9.2.5. Flight line authorization, chocks and approved communication devices. **(T-2)**

5.9.2.6. Vehicle mechanical and security checks. **(T-2)**

5.9.2.7. Flight line safety and security. **(T-2)**

5.9.3. Management of all documentation including:

5.9.3.1. Providing AECMs notification of patient classification changes. **(T-2)**

5.9.3.2. Completion of AF Form 3899 or EHR equivalent. **(T-2)**

5.9.3.3. Completion of AF Form 3838, *Do Not Resuscitate (DNR) Certification for Aeromedical Evacuation*, if required. **(T-2)**

5.9.4. Ensuring adequate medication supply for patient. **(T-2)**

5.9.5. Briefing of patients scheduled for departure to include:

5.9.5.1. Potential for unscheduled overnight stops. **(T-2)**

5.9.5.2. Possession of authorized/unauthorized articles. **(T-2)**

5.9.5.3. Use of restrooms. **(T-2)**

5.9.5.4. Hand-carried luggage, X-rays, medical records and medications. **(T-2)**

5.9.5.5. Sequence and order of patient loading. **(T-2)**

5.9.5.6. Procedure and patient requirements during transport to aircraft. **(T-2)**

**5.10. Reports and Communication.** All reports are submitted IAW AFI 10-206 and specific CCMD, Joint Task Force (JTF) and AFFOR guidance. **(T-2)**

5.10.1. Expeditionary (deployed) units will report IAW Component NAF guidance. **(T-1)** In-garrison medical units will report impact IAW the Operations Event/Incident Report (Matrix, Rules 13A - 13C). For further guidance, see AFI 41-106. **(T-1)**

5.10.2. The Situation Report (SITREP) will be completed by the deployed medical commander (senior officer) to provide daily medical input for inclusion in the deployed wings' SITREP. **(T-1)** Any ERPS may be required to provide information for this report. Refer to AFI 10-206, *Operational Reporting*, for further guidance. **(T-1)**

5.10.3. Intelligence reports, including medical intelligence, will be forwarded through the medical group. **(T-1)** All medical reports, such as SITREPs, are submitted IAW AFI 10-206, *Operational Reporting*, and specific CCMD, JTF, and MAJCOM directives. **(T-1)**

5.10.4. Communications/Computer Systems Support. The ERPS-50 and 100 UTCs will deploy with radio equipment, organic to the equipment UTCs, to be operated by ERPSS personnel. **(T-2)** The radio equipment will be the AF current model and type with appropriate encryption capability as defined by the CCMD. **(T-0)** Support for this radio system will be required from base and/or expeditionary combat support communication resources for initial setup as well as ongoing support for telephone, local area network, and internet and worldwide web access. **(T-3)**

## Chapter 6

### PATIENT PREPARATION

#### 6.1. Overview of patient preparation.

6.1.1. Patient preparation is critical to ensure continuity of care and safe transport. A thorough review by the PMRC of patient condition and requirements is crucial. **(T-2)** Coordinate with the MTF FS or the TVFS to ensure the patient is cleared for AE. **(T-2)**

6.1.2. A hand-off tool will assist in communication and serve as a checklist to assure correct documentation paperwork, supplies, equipment, meals, and x-rays accompany the patient. **(T-1)** Obtain accepting physician name and contact information as required and arrange for any specialized AE prior to PM. **(T-2)** See [Attachment 6 and 8](#).

6.1.3. All patients must be properly prepared; this includes but is not limited to providing the proper medications, equipment, supplies, briefings, and security measures. **(T-3)** If a patient is improperly prepared for flight, AECMs may not have time to address the issue with originating MTF or staging facility prior to take off. On-the-spot ORM should be accomplished and may include contacting the local facility, VFS, or C2 as appropriate. **NOTE:** All patient preparation shortfalls should be documented and submitted on DD Form 2852. Inform C2 if equipment is not available for flight to meet patient requirements. **(T-2)**

#### 6.2. Litters.

6.2.1. Litter patients and accompanying equipment should be delivered to the aircraft by the sending facility on folding NATO type litters. The USAF AE system does not replace litters and accompanying items in-turn.

6.2.2. Litters will be prepared with:

6.2.2.1. Mattress. **(T-3)**

6.2.2.2. Two blankets. **(T-3)**

6.2.2.3. Two sheets. **(T-3)**

6.2.2.4. One pillow and pillowcase. **(T-3)**

6.2.2.5. Two litter straps. **(T-3)**

6.2.2.6. Any additional items required for patient needs or weather. **(T-3)**

6.2.2.7. During contingency operations the minimum is a litter and 2 litter straps. **(T-3)**

#### 6.3. Clothing the Patient.

6.3.1. The originating MTF must ensure:

6.3.1.1. Litter patients who do not wear hospital pajamas should wear appropriate conservative seasonal attire. **(T-0)**

6.3.1.2. Ambulatory patients will wear the appropriate service uniform or civilian clothes to include closed-toe shoes. **(T-2)**

6.3.1.3. Patients will have appropriate attire per patient classification outlined in section 3.7. (T-2)

6.3.2. These clothing requirements do not apply during field maneuvers, field exercises, or other unusual circumstances. (T-2)

#### 6.4. Equipment and Supplies.

6.4.1. Patient movement items. PMI will remain with the patient to destination MTF, whether it is an intra- or inter-theater transfer. (T-2) Receiving facilities/ERPS are responsible for ensuring PMIs continue with the patient for onward movement or recycled into the PMI system if the receiving facility is the patient's final destination. (T-2) Only AE approved equipment will be used. (T-2) For non-standard/non-certified equipment, the sending facility must begin the waiver process according to AFI 11-2AE V3, AFI 10-2909, *Aeromedical Evacuation Equipment Standards*. (T-2)

6.4.1.1. Contact the governing PMRC for non-standard/non-certified equipment. (T-2)

6.4.1.2. For a complete and comprehensive listing of approved medical equipment, refer to the Air Force Research Laboratory web site posted on the Air Force Medical Logistics Office web site, <https://medlog.us.af.mil/>. A MEDLOG account is required to access data on this site.

6.4.2. Crutches and canes must accompany patients who require such items. (T-2)

6.4.2.1. Patients may be allowed to use canes, crutches, or walkers for enplaning at the discretion of the MCD/FN IAW AFI 11-2AE V3.

6.4.2.2. Patients with crutches or full leg casts, or whose condition prevents them from using seats, will be classified and transported as litter patients. (T-2) If they are unable to walk without the use of crutches, they may be enplaned via litters. (T-3) See Section 3.7.

#### 6.5. General considerations for attendants (NMA and MA).

6.5.1. The attendant is prohibited from having knives or weapons, unless attendant is a guard of a prisoner patient. (T-3)

6.5.2. The attendant will maintain line of sight on the patient at all times unless relieved by an AECM/ERPS/MTF staff. (T-3)

6.5.3. At the originating facility, all attendants will be provided with a duty responsibility handout along with verbal instructions. (T-3) See [Attachments 3-5](#).

6.5.3.1. Recommend AECM carry copies of [Attachments 3-5](#) in the mission package. The MCD will work closely with onboard MAs, special medical personnel/teams, non-medical attendants, and the aircraft commander to ensure the safety of all patients, passengers and crew in addition to proper care for patients. (T-3)

6.5.3.2. AE system is not responsible for returning attendants to their originating location. Attendants will be on orders to ensure return through the passenger transportation system in IAW DoD 4515.13R. (T-0)

6.5.4. Non-medical attendants – Military. The attending physician may authorize one (or more if necessary) adult attendant (i.e., battle buddy). The PMRC director is the approval authority. NMAs have the following responsibilities: See [Attachment 5](#).



6.5.4.1. Provide moral/emotional support. **(T-3)**

6.5.4.2. Help with the activities of daily living (ADL). **(T-3)**

6.5.4.3. Coordinate breaks with the AECM/Staging facility/MTF staff. **(T-3)**

6.5.5. Non-medical attendants – Family, non-military, or military. One able-bodied adult member of immediate family or friend may also be provided DoD-sponsored transportation as a NMA and authorized to accompany patient when competent medical authority determines family member's, or friend's presence is necessary to patient's health and welfare, IAW DoD 4515.13-R and DoDI 6000.11. See [Attachment 3](#).

6.5.5.1. Additional family members may be authorized to accompany patient, as exception to policy, when necessary to patient's health and welfare after approval by commander, MTF director, and concurrence of director of applicable PMRC.

6.5.5.2. If an immediate family member is not available, another adult may accompany patient in NMA status on determination of need and written justification. NMAs shall be issued appropriate travel orders authorizing same category of movement as patient. **(T-2)**

6.5.5.3. Any family member not authorized travel, who chose to accompany the patient will be responsible for all costs associated with travel and lodging. **(T-2) NOTE:** The originating MTF must clearly convey this to the family and/or non-medical attendant prior to movement and a statement of understanding will be annotated in the PMR. **(T-2)**

6.5.6. Medical attendants. MAs are required for patients whose needs exceed the capabilities of the medical crew or who require special attention en route. The supporting PMRC identifies the requirement for a MA that possesses the appropriate skill level and coordinates with the referring MTF. The referring MTF will provide the required MAs, except during contingencies. **(T-2)** In some instances, MAs may be additional AECMs with coordination of C2 and AES Chief Nurse. A Physician Medical Attendant can be a MA with the provision that they may be called upon to consult on other patients. MAs responsibilities include: **(T-2)** See [Attachment 4](#).

6.5.6.1. Provide and coordinate patient care requirements with the MCD/FN.

6.5.6.2. Familiarize themselves with the patient and serve as the clinical authority for their patient's care.

6.5.6.3. May, upon request, evaluate or help care for other patients on the AE flight as needed.

6.5.6.4. Provide and document care including administering medications in-flight.

6.5.6.5. Remain with the patient and coordinate breaks with the medical crew.

6.5.6.6. At RON stops, MAs will brief personnel providing direct patient care assigned to their patient(s) during rest periods and will remain available for consultations. **(T-3)**

6.5.6.7. The MA will accompany the patient to the MTF or may be relieved by the same level care provider from the receiving MTF at the flight line. **(T-3)**

6.5.6.8. To the extent possible, all severe psychiatric patients (1A or 1B) requiring ongoing supervision will have a MA of the same gender, and when necessary a MA of

commensurate rank during movement between the originating and the destination facility, unless otherwise ordered. **(T-3)**

6.5.6.9. Attendants who have completed their attendant duties may return to their originating location as duty passengers through the normal duty passenger movement process IAW DoD 4515.13R.

## **6.6. Baggage.**

6.6.1. Inform all patients and passengers regarding baggage restrictions and prohibitions, to include the current Federal Aviation Administration (FAA) provisions on liquids, and the general prohibition on bringing weapons and explosives onboard the aircraft.

6.6.2. Patients and passengers are authorized two pieces of checked baggage. Each passenger also may hand-carry one article (e.g., small luggage, garment bags, backpack) and one personal item (e.g., cosmetic case, purse, small boxes, packages) for storage in the cabin area. Checked baggage may not exceed 62 linear inches (length plus width plus height) or 70 pounds for each piece. Carry-on baggage must fit under the seat and may not exceed 45 linear inches. Any duffel bag, sea bag, B-4 bag, flyers kit bag, or diver's traveling bag that exceeds 62 linear inches but does not exceed 100 pounds may be substituted for one of the checked baggage items. For small aircraft such as the C-21, bags are limited to one small bag not to exceed 30lbs. **NOTE:** This does not include A/B/C bags or Individual Battle Attire Equipment. Every effort should be made to keep this equipment with the patient. If necessary, the A/B/C bags and excess gear may be moved as unaccompanied baggage through travel management office (TMO) to home unit of record.

6.6.3. Patient's unit must ship personal baggage in excess to the standard baggage allowance as unaccompanied baggage in accordance with applicable service directives. **(T-2)**

6.6.4. The MTF will:

6.6.4.1. Attach DD Form 600, *Patient's Baggage Tag*, to each piece of patient baggage to be stowed. **(T-1)** **NOTE:** Baggage information should be loaded and updated into TRAC2ES. **(T-1)**

6.6.4.2. Deliver the TRAC2ES baggage manifest or AF Form 3851, *Patient's Baggage Data*, to the designated AE representative at the time of patient transport. **(T-3)**

6.6.4.3. Place a copy of the temporary duty (TDY) travel order or travel authorization in each piece of stowed and hand-carried baggage. **(T-3)**

6.6.5. Hand-carried bags. The patient may bring a small hand-carried bag for personal items for use during travel (including over-night stops). If a patient is self-medicating, the staging facility or AECM will ensure the patient's medications are in his/her hand-carried baggage. **(T-3)** Hand-carried bags will be labeled with the patient's name and contact information, but will not be tagged with a DD Form 600, *Patient's Baggage Tag*. **(T-2)**

6.6.5.1. Screened/anti-hijacked. All baggage must be screened and anti-hijacked, including carry-on bags. See section 6.7. **(T-1)**

6.6.5.2. Litter patient's small bags may be secured on the litter with the patient with the approval of the charge medical technician IAW AFI 11-2AE V3.

6.6.5.3. Ambulatory patients or attendants carry-on baggage must fit under the aircraft seat. **(T-2)**

6.6.5.4. If a patient's baggage or valuables are lost and the MTF cannot determine exactly where and how the loss occurred, the MTF or agency should follow the chain of custody and inform the appropriate theater AECT of the incident and include enough information in the inquiry to allow the AECT to trace the items. **Exception:** These procedures do not apply to valuables the MTF/Originating facility has sent by registered mail.

6.6.6. Patient/attendants unaccompanied or untagged baggage will not be transported onboard AE aircraft. **(T-1)** Unaccompanied or untagged baggage will be transferred to TMO for disposition by the sending facility. **(T-2)**

6.6.7. No show patients/attendants baggage will be removed from the flight prior to departure. **(T-2)**

## 6.7. Anti-hijacking.

6.7.1. Anti-hijacking procedures should be conducted before departing for the flight line.

6.7.1.1. Conduct screening procedures IAW AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)* and FAA directives on all patients, medical and non-medical attendants, and /or baggage. Prepare the certificate for the MCD with names of the individuals searched and completion of anti-hijacking procedures. If a patient or attendant refuses to comply with the requirements, do not transport this individual to the aircraft. **(T-2)**

6.7.1.2. Patient identification will be conducted during anti-hijacking procedures. **(T-1)** See Section 6.9.

6.7.1.3. Inspect all hand-carried items.

6.7.1.4. Inspect patients and attendants either with a hand held or walk-through metal detector, x-ray machine or by a physical check.

6.7.1.5. Identify any patient or attendant showing suspicious behavior.

6.7.1.6. Honor requests for visual inspection instead of using x-ray or metal detectors.

6.7.1.7. Conduct all screening procedures with the highest standard of military courtesy.

6.7.2. Follow OPORD during contingencies if Kevlar® helmet, flak vest and other protective gear is needed while performing anti-hijacking procedures. When possible, anti-hijacking should be accomplished in an area away from the flight line.

6.7.3. Check each inpatient traveling to seek mental health treatment to ensure patient is not carrying objects that could inflict harm to self or others.

6.7.4. Use alternate anti-hijacking procedures for patients and passengers with implantable cardiac pacemakers and defibrillators. **WARNING:** Electromagnetic interference from handheld and stationary surveillance systems interferes with these medical devices. Changes in pacing rates, shock, and possible cardiac arrest may occur.

6.7.5. Notify local law enforcement agencies if suspicious items are found. Unauthorized items will be confiscated for return to the unit LNO and documented on AF Form 1297. Unauthorized items include: firearms, ammunitions, knives, etc. **(T-2)** Weapons and ammunition, whenever possible, should be given to the patient's unit LNO for storage and/or return to home station, with appropriate documentation in the Events Log or on an AF Form 1297. **(T-2)**

6.7.6. Restrict inspected patients and attendants to a holding area. Rescreen individuals who leave the holding area.

6.7.7. This statement will be accomplished IAW AFI 13-207 and documented on the last page of the Patient Baggage Data (AF Form 3851): "Anti-Hijacking of all patients and bags completed IAW AFI 13-207." **(T-1)** Followed by the printed name and signature of person performing the check. **(T-1)**

6.7.8. Escort guards for prisoner patients are military NMA, and the same policies and procedures apply. An escort guard is required to ensure order and prisoner patient security. (See 11-2AE V3). Guards will accompany prisoner patients to their destination. **(T-2)**

6.7.9. Classified materials held by official couriers are exempt from anti-hijacking procedures.

## **6.8. Valuables.**

6.8.1. Patients should be encouraged not to carry valuables (e.g. large amounts of cash, checks, and jewelry) while in the AE system.

6.8.2. The originating MTF will conduct an inventory of all patient valuables:

6.8.2.1. For unconscious patients, the AF Form 1053, *Record of Patients Storing Valuables*, is used to inventory their valuables and personal items. **(T-1)**

6.8.2.2. Coordinate with the next-of-kin, if available, to take valuables belonging to unconscious or incompetent patients, who originate from military or other Government hospitals, or send the valuables by registered mail to the patient's destination facility. **(T-3)**

6.8.2.3. If the patient has more than \$50 in cash, contact the Patient Administration section for assistance. **(T-3)**

6.8.2.4. A container will be provided for each patient's valuables. **(T-3)** Place a copy of their TDY orders in the bags and inside the container. **(T-3)** The container must be labeled showing patient's full name, grade, cite number, service, and originating and destination MTF. **(T-3)**

6.8.3. The AECMs are not required to accept patient valuables unless the patient is physically present for the flight. **(T-3)**

6.8.4. The entire processing of valuables should be witnessed and attested to by a disinterested officer whenever possible. **(T-3)**

## **6.9. Patient Identification.**

6.9.1. All patients and attendants including: active duty, dependents, retirees, and others will have an identification (DoD identification card, passport, driver's license, Common Access

Card), copy of their Travel Order (DD 1610 or equivalent), and patients and attendants will have an ID wristband while in the AE system. **(T-2) NOTE:** There may be times when patients/attendants arrive to aircraft without ID bands (civilian transport, MASCAL, etc.).

6.9.1.1. The patient wristband will include patient's last name, first name, original MTF, destination MTF, rank, date of birth, patient status, blood type, allergy indicator, bar code, and TRAC2ES cite number. **(T-2)** All attendants, both medical and non-medical, excluding specialty teams, are listed above the patient's name.

6.9.1.2. All patients with allergies should have a separate band listing out specific allergies including: medications, foods, and latex.

6.9.2. The attendant's wristband will included the word "ATTENDANT" then the attendant's last name, first name, attendant status, patient last name, patient first name, patient origin MTF, patient destination MTF, bar code, and TRAC2ES cite number. **(T-2)** Specialty teams such as Critical Care Air Transport Team (CCATT) or TCCET as discussed in AFI 48-307 V2, are not required to have an ID wristband.

## **6.10. Weapons.**

6.10.1. Patients should not normally travel with weapons. Notify aircrew if authorized weapons are carried onboard.

6.10.2. Whenever possible, weapons and ammunition will be given to the patient's unit LNO or security forces for storage and/or return to home station, with appropriate documentation in the Events Log or on an AF Form 1297. **(T-2)**

6.10.3. Weapons arriving at the aircraft with patients will be cleared and returned to the patient's unit or secured by the loadmaster and turned over to the appropriate agency at the destination airfield. **(T-2)**

## **6.11. Nutrition and meals** (Refer to AFI 48-116, *Food Safety Program* and AFMAN 44-114, *Nutritional Medicine* for more information)

### **6.11.1. Patient care guidelines**

6.11.1.1. Assess and document nutritional status (intake patterns, appetite, ability to chew/swallow, and digest), time of last meal, food allergies, and fluid intake.

6.11.1.2. Evaluate and document gastrointestinal (GI) status and/or symptoms, especially for patients receiving pain medication and patients in the PM system for more than 24 hrs.

6.11.1.3. Assist patients with preparation, positioning and eating as necessary. If not clinically contraindicated, elevate head or adjust them to an upright sitting position.

6.11.1.4. Check for food item accuracy, food allergies, and verify diet order before administering patient meals, snacks, and beverages.

6.11.1.5. Provide fluids at least every 2 hrs. for those not on fluid restrictions.

6.11.1.6. Administer meals and snacks as close to normal mealtimes as possible. Special diets should be served first. Times may be adjusted to the destination time zone if there are no contraindications.

6.11.1.7. Time between the evening and breakfast meals will not exceed 15 hrs. **(T-2)**

6.11.1.8. When operationally feasible, patients will be fed prior to patient care hand-offs, ground/aircraft departure and arrival, and if delay in feeding is anticipated due to operational constraints. **(T-2)**

6.11.1.9. Dietitians and/or diet therapy technicians may not be available to monitor all aspects of dietetic/nutritional support and food safety. In this instance, local nursing personnel, Public Health Officer (PHO), and/or FS will be required to provide support, oversight, and meals. **(T-2)**

6.11.1.10. Notify the supporting C2 of significant impact/delays due to inadequate dietetic support and/or food safety issues. Complete DD Form 2852. **(T-2)** Provide detailed information on AF Form 3829, if indicated.

#### 6.11.2. Packing meals

6.11.2.1. Keep the entire meal as small as possible due to limited storage space aboard the aircraft and other transportation assets.

6.11.2.2. Label the box containing the meal and snack with the following information: name, diet, flight number, station enplaned, preparation date, and time.

6.11.2.3. Pack diabetic snacks separately, sealed in a bag. These may be placed in the same box with the meal, however, clearly label these packages as snacks and indicate the time they should be eaten.

#### 6.11.3. Planning En Route meal requirements

6.11.3.1. Patient Diet Information can be obtained from TRAC2ES by pulling a Mission Manifest Report for the mission and then selecting the “Patient Special Diet Information” report which will list the number and type of meals needed for that mission. **(T-3)**

6.11.3.2. Originating MTF Patient administration desk (PAD)/AE Clerk will assure diet orders are recorded in the PMR through TRAC2ES IAW Theater OPOD and/or local directives. **(T-3)**

6.11.3.3. Origination and/or en route joint Base Operating Support (BOS) and contracting food services, flight kitchens, staging facilities and MTFs provide patient and attendant regular diets, snacks, beverages, and bulk food, and may fill special diet requirements under the direction of dietetic/nutritional medicine/nursing personnel.

6.11.3.4. The small aircraft food refrigerators may be used for patient nourishment items, with coordination and approval from the loadmaster/boom operator and/or PIC. Use **Table 6.1.** and **Table 6.2.** Patient meal planning.

**Table 6.1. Aircraft Refrigeration and Heating Capability.**

Aircraft	Refrigeration	Heating
C-130	Aircrew Meals	Aircrew Meals
C-17	Patient and Aircrew Meals*	Patient and Aircrew Meals*

KC-135	Aircrew Meals	Aircrew Meals
KC-10	Patient and Aircrew Meals	Patient and Aircrew Meals
C-21	Not Available	Not Available
*Comfort pallet must be on-board <b>NOTE:</b> For C-130 and KC-135, coolers must be added by AE Crew for refrigeration capability.		

**Table 6.2. Planning Patient Meals and Snacks.**

Flight Time	Refrigerator Available	No Refrigerator Available
Less than 4 hours	-Snacks and beverages(1) if not over meal time -Box lunch (2) or frozen entree meal and beverages (1)	-Snacks and beverage is not over meal time -Box lunch (2) or MRE (3) and beverages
More than 8 hours	-2 meals -1 box lunch (2) and 1 frozen meal and beverages (1)	-2 meals -1 box lunch (2) and 1MRE (3) and beverages (1)
	OR	OR
	-2 frozen meals and beverages	-1 MRE (3) and snacks and beverages (1)
Each additional 4 hours	Add additional frozen meal and beverages (1)	Add additional snacks and beverages (1)
<b>NOTES:</b> 1. Shelf stable and does not require refrigeration. 2. Includes sandwiches. Considered “safe” to consume within 4 hours of issue from a food service facility if not stored in a refrigerator at or below 41° F. Avoid using mayonnaise. 3. Only when no other shelf-stable food is available. MRE heaters will not be used in-flight. <b>(T-3)</b>		

## 6.11.4. Patient diet orders

6.11.4.1. Orders for in-flight meals for patients with regular diets, received from the PMRC, AE element, and/or staging personnel, will be filled by food services and MTFs at installations where flights originate. **(T-2)**

6.11.4.2. Request infant/child meal food items by specifying the child’s age on the diet order request. Pediatric nutrition needs assessment/screening criteria should include an assessment of weight for age, weight loss, special dietary needs, food allergies, chronic illnesses, and nutrition education needs.

6.11.4.3. The originating, or en route privileged provider, writes diet orders including tube feedings on AF Form 3899 or EHR equivalent.

## 6.11.5. Special diets and total parenteral nutrition

6.11.5.1. Document special diet orders on AF Form 3899 or EHR equivalent.

6.11.5.2. Total Parenteral Nutrition (TPN) infusions may continue until complete then switch to 10% Detrose in Water.

6.11.6. Food safety. See Section 8.25.

6.11.6.1. At operationally feasible locations, potentially hazardous/non-shelf stable foods (meat, eggs and milk products) will be maintained either below 41° F or above 140° F in order to remain safe. **(T-2)**

6.11.6.2. Use commercially prepared shelf-stable food available through local prime vendor source whenever possible. MREs are used if other shelf-stable food is unavailable.

6.11.6.3. Depending on the location, water and ice sources may not be adequate, so bottled water may be required. Follow commander's OPORD and/or local directives.

6.11.6.4. Staging facilities, ground transportation vehicles, and aircraft may lack adequate equipment to store food at safe temperatures.

6.11.6.5. Food-borne illnesses are a threat to the health of all personnel. Patients who are compromised have an increased risk of food-borne illness. Personal hygiene, food safety, and sanitation practices are critical for all personnel responsible for patient feeding. Follow safe food handling practices and limit access to food preparation areas. Personnel handling and preparing food items will wash hands with soap and water or use hand sanitizer prior to contact with any food items. Patients should also wash their hands. **(T-1)** See Section 8.25.

6.11.6.6. Consume meals or discard non-processed patient food items within 4 hrs.

6.11.6.7. After meals are consumed, and before leaving the patient care area, all nursing personnel will check used box lunches/patient trays for possible contamination (i.e., syringes, wound dressings, body fluids) before disposal and/or cleaning. **(T-2)**

6.11.7. Insulated Containers/Coolers.

6.11.7.1. If operationally feasible and available, pack patient meals/special diets in insulated containers, with ice, and deliver to the patient departure point for loading onto the aircraft or transportation asset.

6.11.7.2. Unsealed food items, medications, and blood products are prohibited in food refrigerators and food items are not permitted in biomedical refrigerators.

6.11.7.3. Usually there is no temperature reading device or power associated with these units, and temperatures are not evenly distributed. Temperature ranges are 34° to 40° F for the food refrigerators.

6.11.7.4. Monitor ground UTC internal refrigerator temperatures at least three times a day with a refrigerator thermometer and record on a locally developed temperature chart.

6.11.7.5. Fleet services clean aircraft refrigerators used for patient food pre and post-mission. **(T-2)**

6.11.8. PMRC

6.11.8.1. Provide diet information to the ERPS or the originating MTF.



6.11.8.2. Submit PM/AE diet orders and bulk food requirements to MTF dietetic/nutritional and/or BOS food support personnel at locations without an ERPS.

6.11.8.3. Complete diet order request and fax diet orders to the appropriate MTF according to patient's special diet requirements identified in TRAC2ES.

6.11.9. ERPS or originating facility

6.11.9.1. Each MTF/ERPS contacts their designated PAD/AE clerk or AELT to coordinate ground and aircraft arrivals and departures for meal delivery.

6.11.9.2. If a staging facility is in place, the staging facility charge nurse ensures patient meals are ordered on AF Form 1094, *Diet Order*. If available, Nutritional Medicine coordinates patient feeding requirements with BOS elements. If there is not a staging facility, the AEOT Senior Nurse, or MCD, ensures patient meals are ordered.

6.11.9.3. Update TRAC2ES diet orders/requirements as required. In the event of altered transportation plans, the origination MTF or ERPS shall obtain adequate nutritional provisions for patients and provide 1-day tube feeding supply for intra-theater PM and 3-day supply for inter-theater PM. **(T-2)**

6.11.9.4. Submit diet and bulk food orders to dietetic/nutritional support personnel at least 4 hrs. before aircraft departure time or IAW local directives.

6.11.9.5. Deliver patient meals to patient care areas and aircraft in coordination with local PHO and/or FS if applicable.

6.11.9.6. Clean/disinfect refrigerators used to store patient nourishments after each use. Clean/disinfect insulated transportation containers/coolers, and return to supporting food service agency. See Section 8.25.

6.11.10. AECMs

6.11.10.1. Check that meals are available and received.

6.11.10.2. Coordinate meal storage requirements and feeding times with PIC and/or loadmaster/boom operator.

**6.12. Patient Briefings.**

6.12.1. The sending facility, ERPS, and AE crews (AECMs IAW AFI 11-2AE V3) ensure each patient/attendant receives an informational briefing explaining what the patient can expect during their flight. **(T-2)** These briefings are customized for each theater of operations (e.g. USAFE, PACAF, CONUS) to provide essential information. Thorough preflight briefings should be completed prior to take off to reduce stress. See [attachments 3, 4, & 5](#). **NOTE:** This requirement may be impractical during contingency operations.

6.12.2. ERPS or Origination Facilities Briefings. Brief patients and attendants during routine operations on AE and staging policies and procedures to include the following: **(T-2)**

6.12.2.1. Force protection issues.

6.12.2.2. Unauthorized items in the facility and on aircraft will be confiscated. **(T-1)**

6.12.2.3. Anti-hijacking requirements.

6.12.2.4. Route of evacuation, including the *estimated* time and the number of *planned* stops (when known). Notifying patients and attendants that the itinerary is subject to change.

6.12.2.5. Potential for unscheduled overnight stops.

6.12.2.6. Baggage limitation, including weight and size according to the baggage section, or exceptions, must be annotated on the patients' travel orders. **(T-1)**

6.12.2.7. Place a copy of the TDY travel order or travel authorization in each piece of stowed and hand-carried luggage.

6.12.2.8. The need for personal funds, medical supplies, medications, and appropriate dress.

6.12.2.9. U.S. Department of Agriculture and Customs inspections procedures.

6.12.2.10. Use of restrooms prior to departing for the flight line.

6.12.2.11. Do not place the following items in checked bags; x-rays, medical records and medications (if authorized to "self-medicate"). These items should be hand-carried.

6.12.2.12. Procedures and patient requirements during transport to aircraft.

### **6.13. Mission and Patient Documentation Requirements.**

6.13.1. Documentation requirements are defined in AFI 48-307 V3. Send all pertinent records, X-rays, lab results, etc. with the patient. **(T-2)** The documents sent will be the only information available to the physicians and nurses caring for the patient en route and at the destination if the information is not entered into the EHR. Consider both the care needed in the air and at interim stops. Documentation is required (at a minimum) upon admission, once per shift, and upon discharge from RON location, ERPS, or MTFs at a minimum. **(T-2)** Triage starts with review of the patient manifest, PMR, and continues throughout the patient's arrival to facility and nursing hand-off. The FS, with assistance of the ERPS nurse, determines whether each patient can remain in the ERPS or must be transferred to the MTF for medical care. **(T-3)**

6.13.2. When preparing patients for departure from the ERPS or MTF nurse will include the Patient Preparation Checklist. **(T-2)** See [Attachment 6](#).

6.13.3. Place all provided medical records (clinical records, outpatient treatment records, X-rays, and any other pertinent patient information) in an envelope/bag. The following information will be printed on the outside of each envelope/bag:

6.13.3.1. Patient full name. **(T-3)**

6.13.3.2. Rank or status. **(T-3)**

6.13.3.3. TRAC2ES assigned cite number (last 5 numbers of Social Security Number (SSN) for patient without assigned cite number). **(T-3)**

6.13.3.4. Nationality (if not a U.S. citizen). **(T-3)**

6.13.3.5. Origination facility/station. **(T-3)**

6.13.3.6. Organization. **(T-3)**

6.13.3.7. Date of departure. **(T-3)**

6.13.3.8. Destination facility/station. **(T-3)**

6.13.4. All medical records, X-rays, medications and supplies will be placed in a secure records container and transported to/from the aircraft by medical personnel. **(T-3)** The medical personnel will transfer the envelope/bag to the MCD or FN during patient hand off at the beginning of the mission. **(T-3)** The MCD/FN will transfer the envelope/bag to the appropriate medical ground personnel during patient hand off at patient's point of debarkation. **(T-3)** All information regarding patient information must follow AFI 33-332, *Air Force Privacy and Civil Liberties Program*. **(T-1)**

#### **6.14. Hand-off Identify, Situation, Background, Assessment, and Recommendation (I-SBAR) AE/ERPS.**

6.14.1. Definition. Hand-off communication is an interactive process of effectively relaying current patient-specific information from one caregiver to another to ensure the continuity of patient care. Responsibility for the care of the patient is transferred through the hand-off process between all clinicians (Physician, Nurse, MA, etc.). A structured communication technique or I-SBAR type hand-off brief will be used by all clinicians (Physician, Nurse, and MA). **(T-2)** **NOTE:** as time allows in a contingency. See [attachment 7 & 8](#).

6.14.2. During the exchange of patient information, limit interruptions and distractions, allow time for questions and responses, and provide the opportunity to review relevant patient data. Critical information is verified by read back of the critical information.

6.14.3. A verbal report will include, but is not limited to: **(T-2)**

6.14.3.1. Patient's current condition, ongoing treatment, recent changes in condition, and any possible changes or complications to anticipate while the patient is in the AE system.

6.14.3.2. Include the type and amount of IV fluids/medication ordered, intake/output, current settings of medical devices including Patient Controlled Analgesia (PCA) pumps. Include date/time IV fluids/medication were given.

6.14.3.3. AE/patient staging personnel will ensure the AF Form 3899 series or EHR equivalent is complete and supports transfer of care communications between AE personnel and the clinical representative assuming responsibility of care. **(T-2)**

6.14.4. I-SBAR is a mnemonic for Identify, Situation, Background, Assessment, and Recommendation.

6.14.4.1. I = Identify: Identify the patient by name, age, sex, reason for admission/transport.

6.14.4.2. S = Situation: Briefly state the problem or chief complaint. Include when chief complaint began and the severity. Identify what is going on with the patient (chest pain, nausea, etc.).

6.14.4.3. B = Background: Pertinent background information related to the situation such as: admitting diagnosis, list of current medications, allergies, intravenous fluids (IVF), most recent VS, lab results, and code status.

6.14.4.4. A = Assessment: What is the nurse assessment of the situation?

6.14.4.5. R = Recommendation: What is the recommendation or what does clinician want?

6.14.5. The hand-off checklists (see [attachments 7 & 8](#)) provide a structured I-SBAR framework for giving a hand-off report in a concise and comprehensive manner. Other tools may be used in specific areas requiring certain types of information. This form is not a part of the patient's permanent medical record. On the reverse side is a checklist to ensure the medication supply, equipment, supplies and documentation is complete and accompany the patient. When a patient is transferred, the transferring clinician should start and/or update, sign and give the Hand-off Checklist tool to the receiving clinician.

## Chapter 7

### FLIGHT PHYSIOLOGY AND STRESSES OF FLIGHT

**7.1. Flight Environment.** AE occurs in a physically constrained, relatively hypoxic, hypobaric, noisy, vibrating, unclean environment with wide temperature shifts differing significantly from the MTF. Physical stresses during flight affect not only every patient's physiology and psychology, but can impair medical providers' abilities to assess and deliver care while airborne. Patients in the AE environment are susceptible to physiologic stresses encountered at altitude.

#### 7.2. Gas Laws .

7.2.1. Dalton's Law: The law of partial pressure. Dalton's gas law states the total pressure of a mixture of gases is equal to the sum of the partial pressures of each gas within the mixture. Barometric/atmospheric pressure is the pressure exerted against an object by the atmosphere. Therefore, as altitude increases and barometric pressure decreases and there is a corresponding decrease in the partial pressure of inspired oxygen, even for patients on ventilators with 100% O<sub>2</sub>. Oxygen concentration remains 21% regardless of altitude. Barometric pressure multiplied by the concentration of gas is equal to the partial pressure of the gas. As altitude increases, the partial pressure of a gas decreases. The actual available oxygen decreases with altitude because oxygen molecules move farther apart, possibly resulting in hypoxia. As pressure decreases, O<sub>2</sub> has a harder time crossing into the blood stream, resulting in a decreased O<sub>2</sub> saturation (SpO<sub>2</sub>) of the blood. For example, at an altitude of 10,000 ft., partial pressure of oxygen in arterial blood (PaO<sub>2</sub>) would measure approximately 51mmHg, yielding a SpO<sub>2</sub> of approximately 84% in a healthy individual.

7.2.2. Charles' Law: When the pressure is constant, the volume of gas is proportional to its temperature. Likewise, if volume remains constant, the pressure on the gas varies directly with temperature. During flight, temperature decreases an average of 3.5 Fahrenheit or 2 Celsius per 1000 ft., therefore, ambient temperature for an aircraft flying at 35,000 ft. can be expected to be near -57F. Such a reduction in temperature will result in a significant drop in oxygen tank pressure if exposed; conversely oxygen tank pressure can be expected to rise with significant increases in ambient temperature.

7.2.3. Henry's Law: The principle of evolved gas disorders. The solubility of gases in liquids: The quantity of gas dissolved in 1 milliliter (ml) of a liquid is proportional to the partial pressure of gas in contact with the liquid. The weight of gas dissolved in a liquid is directly proportional to the weight of the gas above the liquid. An example is shaking a can of soda and opening it immediately. The balance of pressure is altered, releasing the bubbles of gas in the soda. During a rapid decompression the same principle applies where nitrogen bubbles are released into the blood following the dramatic changes in aircraft pressurization. This relationship explains why dissolved nitrogen transitions to a gas phase in blood and tissues during decompressions.

7.2.4. Boyle's Law: The principle of gas expansion. Boyle's Law states at a constant temperature, the volume of gas is inversely proportional to the pressure. During ascent (decompression), gasses expand and during descent (recompression), gasses contract. For instance, a climb to flight level 180 from sea level (SL) results in a 50% reduction in total barometric pressure accompanied by a 50% increase in gas volume. However, the constant

pressure (47 millimeter of Mercury [mmHg]) of water vapor within the body contributes to physiological gasses expanding at a slightly greater rate than atmospheric gasses therefore resulting in a 50% increase in gas volume at 16,500 feet (1,500 feet. lower than atmospheric gasses). One example is the volume of gas in a balloon will expand at altitude.

7.2.5. Graham's Law: The law of gaseous diffusion. Gases flow from higher pressure (or concentration) to a region of lower pressure (or concentration). Simple diffusion or gas exchange at the cellular level is an example.

**7.3. Physiological Stressors of Flight.** The stressors of flight can be broadly categorized into 2 classes: those which can quickly incapacitate the patient and crew and those which can aggravate medical conditions. In certain age groups, (e.g., neonates) irritant stressors, such as extreme cold, can be life threatening. The patients' ability to withstand the physiologic effects of flight stressors will vary depending upon their underlying disease processes and their age. Patients are exposed to barometric pressure changes, decreased partial pressure of oxygen, decreased humidity, temperature variations, high noise levels, vibration, travel fatigue and gravitational-forces.

7.3.1. Barometric Pressure Changes (Boyle's Law). Gas volume changes are physiologically significant in AE. The mechanical effects of expansion and contraction can exert a differential pressure on the surrounding tissues, which can cause severe, potentially disabling pain and potential physical damage to tissues (e.g. ear, sinus, GI tract, and lungs).

7.3.1.1. A cabin de-pressurization may result in decompression sickness.

7.3.1.2. If a patient experiences adverse symptoms related to barometric pressure changes, the clinician should document the maximum cabin altitude (MCA) at the time of the incident.

7.3.2. Decreased Partial Pressure of Oxygen (Dalton's Law). Dalton's Law more significantly affects patients with cardiac disease, pulmonary disease, anemia, trauma, and increased intracranial pressure. These patients may quickly experience vital end-organ dysfunction when exposed to altitude hypoxia, and will require supplemental oxygen therapy as ordered.

7.3.2.1. Increased oxygen or delivery pressures may be required when at altitude.

7.3.2.2. If a PRN order for oxygen is not in place and supplemental oxygen is needed, begin supplemental oxygen, call C2 and the PMRC to obtain an order as soon as possible and initiate a DD Form 2852. **(T-2)** If an ERCC team doctor is on board, they can write the order but also notify C2. **(T-2) NOTE:** A pulse oximeter is available on board AE aircraft, but referring privileged providers must recognize these devices can give erroneously higher readings under certain physiologic conditions (i.e., carbon monoxide poisoning, dehydration, anemia, impaired peripheral circulation, and high or low cardiac output states). **NOTE:** A cabin altitude restriction is sometimes required in addition to supplemental oxygen therapy. **NOTE:** Flying at lower altitudes may decrease speed and increase fuel consumption; however, rapid transportation to definitive care takes precedence. See **Chapter 8** for additional cabin altitude restrictions and **AE Clinical Protocol – Emergency Oxygen**.

7.3.3. Decreased Humidity. The partial pressure of water (i.e., humidity) of cabin air decreases as altitude increases. When air is cooled, it loses its ability to hold moisture. Air at altitude is cold, possessing very little moisture (i.e. the higher the altitude, the colder and drier the air is). The fresh air supply is drawn into the aircraft cabin from a very dry atmosphere. Extended flying time magnifies the drying effects of exposure to altitude.

7.3.3.1. Cabin humidity can be less than three percent (3%) toward the end of a long mission. Resulting dehydration and thickened secretions can affect pulmonary patients. Use humidification bottles for all patients receiving oxygen to keep the secretions loose in the lower respiratory tract.

7.3.3.2. Patients with fluid balance problems, (e.g. patients with renal and cardiac diseases or respiratory compromise), are at significant risk and should have strict intake and outputs ordered (oral or IV). Plan to provide hydration to all patients as required.

7.3.3.3. Wounds requiring moist packing may dry out quickly during airlift. Treatment orders need to specify wound care objectives such as reinforcing dressings and providing additional solutions to the wound.

7.3.3.4. Nothing by mouth (NPO) patients must have more attention paid to hydration status via IVF. **(T-3)** Their IVF rates would need to be slightly increased, compared to usual MTF rates. **(T-3)**

7.3.4. Temperature Variations. An increase in altitude results in a decrease in ambient temperature. Aircraft cabin temperature fluctuates considerably depending on the temperature outside the aircraft. Temperature fluctuations on the flight line and in the aircraft can be extreme.

7.3.4.1. Patients with burns/skin-damage, who are critically ill, sedated, mentally altered, elderly, or infants can succumb to hypothermic conditions that may often occur on military aircraft.

7.3.4.2. An air worthy certified incubator can be used to provide warmth for infants under 10 pounds.

7.3.4.3. Blankets and warm clothing should be available in flight. Prior to the flight, the originating facility should ensure the patients are dressed and covered for warmth while in-flight.

7.3.4.4. When traveling at extreme temperatures, monitor portable oxygen source pressures.

7.3.5. High Noise Levels. Noise is a problem in all aircraft. To reduce gross weight and thus maximize fuel savings, military aircraft are not equipped with noise shielding materials found on modern civilian commercial aircraft.

7.3.5.1. Noise interferes with the ability of providers to assess VS, auscultate and communicate with patients including deescalating /monitoring psychiatric patients, and detecting equipment alarms while on board the aircraft.

7.3.5.2. Patients, passengers, crews, and attendants will be provided hearing protection prior to flight. **(T-3)** Alternate methods of communication may be required.

7.3.6. Vibration. When the human body is in direct contact with a source of vibration, mechanical energy is transferred, which is degraded into heat within those tissues that have dampening properties. The response to whole body vibration is an increase in muscle activity both to maintain posture and to reduce the resonant amplification of body structures. This is reflected in an increase in metabolic rate, a redistribution of blood flow with peripheral vasoconstriction, and increased oxygen requirements. The increase in metabolic rate during vibration is comparable to that seen in gentle exercise, and respirations are increased to achieve the necessary elimination of increased carbon dioxide. Additionally, disturbances in visual acuity, speech, and fine-muscle coordination result from vibration exposure.

7.3.6.1. Vibration may cause increased pain for orthopedic fracture patients and many painful disorders. Orthopedic patients often benefit from pain medication administered during preflight, before exposure to vibration. Additional padding/cushioning of stabilizing devices (i.e. casts, external fixators, braces) and supportive techniques can help relieve discomfort from vibration.

7.3.6.2. Equipment can be affected by vibration and settings require close monitoring.

7.3.6.3. Originating privileged providers should provide a pain control regime to include PRN orders.

7.3.7. Turbulence. Turbulence can be produced by high and low temperature changes in the outside air. Turbulence increases stress during flight by promoting fatigue and increasing susceptibility to motion sickness and disorientation.

7.3.7.1. Turbulence may easily overwhelm and incapacitate someone suffering from other medical conditions, (e.g. chemotherapy patients, pregnant patients experiencing nausea and vomiting, or patients prone to motion sickness). PRN anti-emetic order is recommended. In the event nausea and vomiting are already preset, the patient will be medicated prior to arrival at the aircraft and have PRN orders written.

7.3.7.2. All patients, equipment, and supplies should be secured IAW AFI 11-2AE V3 and AFI 10-2909.

7.3.8. G-Forces. The effects of G-Forces involve an understanding of the concepts of exerted forces. Speed, velocity, weight, mass and the laws of motion are among those considerations. Specific perils from the effects of G-Forces can include deterioration of vision and disturbances of consciousness related to high-performance aircraft. Newton's First Law of Motion states unless acted upon by a force, a body at rest will remain at rest, and a body in motion will move at constant speed in a straight line.

7.3.8.1. Findings, such as increased intracranial pressure (ICP), pregnancy, unstable fractures and blood pooling are conditions to consider when examining effects of G-Forces in AE. To reduce the effects of G-forces, extra padding may be used on the abdomen and seat belt for small children, pregnant women, and patients with abdominal surgery. Patients with head injuries may be loaded head forward and facing aft at the discretion of the VFS or ERCC team physician when applicable.

7.3.9. Fatigue. All the stresses of flight induce fatigue to some degree and are an inherent stress in the AE environment. Erratic schedules, multiple platforms over several days,



hypoxic environment, noise, vibration, and imperfect environmental systems will eventually take their toll.

7.3.9.1. Travel through multiple time zones may cause bodily circadian rhythm disruption or jet lag, also characterized by symptoms of fatigue and irritability. Order "litter for comfort" for patients who cannot tolerate prolonged sitting.

7.3.9.2. Consider the following human systems factors which may lead to stress/fatigue. The acronym DEATH may assist in remembering the factors.

7.3.9.2.1. **D** rugs. Use of over-the-counter (OTC) medications, misuse of prescription medications, and use of stimulants such as caffeine can cause insomnia, tremors, indigestion, and nervousness.

7.3.9.2.2. **E** xhaustion. Exhaustion can lead to judgment errors, limited response, falling asleep, channeled attention, and changes in circadian rhythm.

7.3.9.2.3. **A** lcohol. Using alcohol may cause histotoxic hypoxia, which is a deficiency of oxygen reaching the bodily tissues due to impairment of cellular respiration especially by a toxic agent such as alcohol. Histotoxic hypoxia affects efficiency of cells to utilize oxygen, interferes with metabolic activity, and can result in a hangover.

7.3.9.2.4. **T** obacco. Besides exposing the body to tar, nicotine and carcinogens, the average smoker will normally have 5 to 10 % hemoglobin involved as carboxyhemoglobin. This results in hypemic hypoxia (reduces the oxygen carrying capacity of the blood) and lowers altitude tolerance. Flying at a cabin altitude of 10,000 ft. with 10% carboxyhemoglobin is physiologically equivalent to 15,000 ft.

7.3.9.2.5. **H** ypoglycemia. Poor dietary intake can cause nausea, headache, dizziness and judgment errors.

## Chapter 8

### PATIENT CARE RESPONSIBILITIES

#### 8.1. Aeromedical Evacuation Clinical Protocols.

8.1.1. Standing orders are signed by AMC/SGKC (En-route Care Medical Director). (T-1)

8.1.2. Consult an ERCC team doctor in-flight, if available, for any clinical situations that may arise. (T-3)

8.1.3. Will be maintained on the EFB and the AMC/A3/SG site, <https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx>. (T-2)  
Refer to **Attachment 2, A2.1.1.**

8.1.4. The AECM will document the use of any AE Clinical Protocol in the AF Form 3899 series or the EHR equivalent if one is available. (T-2) All documentation will include the statement “IAW AE Clinical Protocol - XXX”. (T-2) In addition, the AECM will complete the DD Form 2852. (T-2) Documentation and process improvement requirements specific to the AE Clinical Protocol are included in the applicable section of this AFI.

**8.2. Preflight Assessment and Report.** Patient acuity, mission requirements, and the setting will determine how extensive this process will be. Tactical and peacetime patient information flow is variable. Obtain as much history as possible from the patient, PMR, and patient records using the I-SBAR format found in **Attachment 7 & 8. (T-2)**

8.2.1. In the AE environment, the primary assessment skills are inspection, auscultation, and palpation. Primary and secondary trauma assessment skills are used to quickly identify and treat life-threatening conditions. **NOTE:** Auscultation is not reliable during in-flight assessments.

8.2.1.1. During flights shorter than 45 minutes, as appropriate and per diagnosis, or if the patient has restraints/constrictive devices, clinicians will do the following: assess for food/medication allergies, immediate patient concerns/interventions required, suicidal ideations/homicidal ideations, VS, pain level, sedation score (refer to Table 8.9.), circulation, motor and sensory function. (T-3) **NOTE:** Operational constraints may limit completion of these tasks. (T-1)

8.2.1.1.1. Clinicians will assess patients for abnormal respiratory findings to include respiratory adjuncts. (T-1)

8.2.1.1.2. Clinicians will assess patient's ability or inability to self-medicate, and any other clinical findings suggesting a decreased sensorium and/or altered judgment. (T-1)

8.2.2. Primary Survey. Accomplished when the patient is initially seen by medical personnel, such as at a first aid station, MTF, ERPS or at the flight line. Life threatening conditions are identified and management begins. Ensure this is done prior to flight. Reassessment of circulation, airway, and breathing is ongoing.

8.2.2.1. Circulation.

8.2.2.2. Airway.

8.2.2.3. Breathing: Ventilation and oxygenation.

8.2.2.4. Disability: Brief neurologic examination.

8.2.2.4.1. Level of consciousness (LOC).

8.2.2.4.1.1. The following is a MNEMONIC for differentiating the causes and treatment coma/unresponsiveness:

8.2.2.4.1.1.1. U – Units of Insulin

8.2.2.4.1.1.2. N – Narcotics

8.2.2.4.1.1.3. C – Convulsions

8.2.2.4.1.1.4. O – Oxygen

8.2.2.4.1.1.5. N – Non-Organic

8.2.2.4.1.1.6. S – Stroke

8.2.2.4.1.1.7. C – Cocktails

8.2.2.4.1.1.8. I – Intracranial Pressure

8.2.2.4.1.1.9. O – Organism

8.2.2.4.1.1.10. U - Urea

8.2.2.4.1.1.11. S - Shock

8.2.2.5. Exposure/environment: If condition and situation warrants, completely undress the patient. Prevent hypothermia, if possible.

8.2.3. General appearance:

8.2.3.1. The patient's body position noting posture and any guarding or self-protection movements.

8.2.3.2. Observe for stiffness, rigidity, or flaccid muscles.

8.2.3.3. Observe unusual odors such as alcohol, gasoline, chemical, vomitus, urine or feces.

8.2.4. Secondary survey. This assessment is a brief, systematic process to identify ALL injuries, obtain history and mechanism of injury as well as maintaining core body temperature, obtaining a complete set of VS, temperature, pulse oximetry, and the insertion of adjuncts such as a urinary catheter and nasogastric tube, as required.

8.2.4.1. Full VS (blood pressure [BP], pulse, respirations, pulse oximetry, temperature), pain level, history, cardiac monitor and pulse oximeter applied as necessary.

8.2.4.2. Give comfort measures (verbal reassurance, pain assessment, and pharmacologic/non pharmacologic).

8.2.4.3. History and head-toe assessment (if condition and situation warrants).

8.2.4.4. Include face, neck, chest, pelvis/abdomen, extremities.

8.2.4.5. Inspect back and posterior surfaces.

8.2.4.6. Refer to current Trauma Nurse Core Course (TNCC) if available and current AHA ACLS guidelines for more in-depth information on practices and assessment skills.

8.2.5. Ongoing assessment/re-assessment. Reevaluate the patient noting, reporting, and documenting any changes in the patient's condition and responses to resuscitative efforts. Time, personnel and environment will determine this re-evaluation process.

### 8.3. General Nursing Care.

8.3.1. A plan of nursing care is developed or modified using the patient's chart and other information, to assure continuity of care. The patient should be observed throughout all phases in the AE system. An appropriate level and type of medical and psychological care measures should be rendered as described in each medical system.

8.3.2. Maintain strict patient confidentiality (on a need-to-know basis), as related to HIPAA rules and regulations, in reviewing or releasing any medical information.

8.3.3. **Patient comfort** . If the ambient temperature exceeds a comfortable level, the MCD will speak with the PIC and or the Loadmaster/Boom Operator to correct the temperature. **(T-0)**

8.3.3.1. Latrine facilities. Inform litter patients that urinals, bedpans, and modesty curtains are available. Ensure patients have the opportunity to use the restroom before being transported to the aircraft and prior to critical phases of flight.

8.3.4. **Oral hygiene** . Dried secretions that accumulate on the tongue and palate reduce oral sensitivity and promote bacterial growth. Mouth care, especially for debilitated patients, is essential because of the reduced humidity in the aircraft cabin. Comatose, paralyzed, and other patients at risk should have mouth care at least every 2 hrs. **NOTE:** When a toothbrush and toothpaste is contraindicated, disposable foam swabs make an acceptable substitution. Patients who are NPO may be given mouthwash for swish and spit and mouth/ lip moisturizer.

8.3.5. **Position changes** . Any position, even the most comfortable one, may have an adverse effect on a patient over time. A patient's movements may be limited by disease, injury, or helplessness. Position changes promote comfort and relaxation, prevent skin breakdown, and improve gastrointestinal and respiratory function.

8.3.5.1. Position changes should be done at least every 2 hrs. Straps/stanchion arms can be adjusted 2 inches up or down to allow for position changes to reduce pressure points on litter patients. A blanket roll, lift sheets or backrest may also assist in shifting the patient's weight and keeping heels off the litter to relieve pressure.

8.3.5.2. Range of motion exercises should be utilized whenever possible.

8.3.6. The Braden Scale is used throughout the DoD Medical Service to identify patients at risk for developing skin breakdown or pressure ulcers. Factors predisposing a patient to develop pressure ulcers include: decreased mobility, activity, and sensory perception; increased moisture, friction, and shear forces; and intrinsic factors influencing tissue tolerance associated with age, nutrition, and tissue perfusion. The Braden Scale uses these factors to provide a score 6-23. AECMs and ERPS staff will be familiar with these scores for purposes of awareness and documentation during hand-offs from MTFs and the need for

intervention to minimize pressure ulcer development or worsening during flight. (T-3) See [Attachment 9](#).

8.3.7. Patient ambulation. Encourage ambulation every 2 hours to prevent VTE for patients whose condition allows. Ambulatory patients should be encouraged to stand up and stretch to promote circulation to the extremities. Litter patients should ambulate, if possible, assisted to the lavatory and allowed to sit in a seat. Ensure adequate pain control. Any complaints of calf tenderness or new posterior leg pain must be evaluated for VTE pre/post transport. (T-1) See Section 8.6.

8.3.8. Reduce fatigue. All patients are susceptible to the effects of fatigue. Litter patients require special planning and care to reduce fatigue. **NOTE:** Nursing interventions can be accomplished to counter these stresses of flight. Provide ear plugs, blankets and pillows. Dimming the lights in-flight provides an atmosphere for sleep and relaxation. An uncomfortable position may hinder sleep more than the vibration and noise of the engines.

8.3.9. Skin care. Disposable washcloths are available and can be placed in a plastic bag, dampened with hot or cold water, and distributed to the patients. Antiseptic towelettes or liquid hand sanitizer are made available and offered before meals and after a patient uses a urinal, bedpan or latrine.

8.3.10. Monitor I&O as condition warrants.

8.3.10.1. Intake: All those fluids entering the patient's body such as oral fluids, ice chips, parenteral, intravenous fluids, feeding tubes, irrigation and blood transfusion.

8.3.10.2. Output: All fluid that leaves the client's body such as: urine, diarrhea, vomiting, and, drainage from all tubes and bleeding.

## **8.4. Airway and Respiratory Management.**

8.4.1. Stresses of flight affecting airway and respiratory management.

8.4.1.1. Decreased partial pressure of oxygen: Exacerbates possible oxygenation deficiencies due to a compromised respiratory system and diminished ciliary action.

8.4.1.2. Barometric pressure changes: May cause spontaneous pneumothorax in a trauma patient with significant respiratory compromise. GI gas expansion may cause diaphragmatic crowding leading to lower tidal volumes.

8.4.1.3. Thermal: Both an increase or decrease in body temperature increases the metabolic rate and O<sub>2</sub> demand on the body (particularly true in ventilator dependent patients).

8.4.1.4. Decreased humidity: The effectiveness of ciliary action is decreased, resulting in thickened secretions.

8.4.1.5. Fatigue: Most patients with respiratory disorders are already fatigued from the added workload of breathing. The overall effect of the previously mentioned stresses of flight and the total length of time in the AE system may increase fatigue and exacerbate the patient's condition.

8.4.1.6. Gravitational Forces: The positive gravitational forces generated on takeoff/ascent may cause diaphragmatic crowding, fatigue and exacerbate the patient's condition.

8.4.2. Assessment of respiratory status:

8.4.2.1. Determine the mechanism of injury or disease. Look, listen and feel for indicators requiring possible intervention. The flight environment may preclude auscultation. If appropriate, obtain a baseline oxygen saturation.

8.4.2.2. Assess and document the following as dictated by the patient's condition:

8.4.2.2.1. Respiratory rate, depth, symmetry, oxygen saturation and MCA.

8.4.2.2.2. Document if any of the following abnormal findings are present:

8.4.2.2.2.1. Any use of accessory muscles, intercostal and substernal retractions, stridor, nasal flaring, pursed lip breathing, prolonged expiration, skin color and position of patient.

8.4.2.2.2.2. Tongue obstructing the airway in an unconscious victim.

8.4.2.2.2.3. Loose teeth and/or other foreign objects.

8.4.2.2.2.4. Facial and/or oral bleeding.

8.4.2.2.2.5. Facial fractures resulting in loss of maxillary and mandibular structural integrity.

8.4.2.2.2.6. Inhalation injury or nasal/mucosal charring.

8.4.2.2.2.7. Tracheal edema.

8.4.2.2.2.8. Hematomas, bruising, wounds, and crepitus of the neck and upper chest.

8.4.2.2.2.9. Position of trachea (midline or deviated).

8.4.2.2.3. Glasgow Coma Scale (GCS): A score of less than 8 may suggest concurrent findings of hypoxia and require intubation.

8.4.2.2.3.1. GCS – Best eye opening

8.4.2.2.3.1.1. Spontaneous = 4

8.4.2.2.3.1.2. To speech = 3

8.4.2.2.3.1.3. To pain = 2

8.4.2.2.3.1.4. No response = 1

8.4.2.2.3.2. GCS – Best verbal response

8.4.2.2.3.2.1. Oriented = 5

8.4.2.2.3.2.2. Confused conversation = 4

8.4.2.2.3.2.3. Inappropriate words = 3

8.4.2.2.3.2.4. Incomprehensible sounds = 2

8.4.2.2.3.2.5. No response = 1

8.4.2.2.3.3. GCS – Best motor response

8.4.2.2.3.3.1. Obeys commands = 6

8.4.2.2.3.3.2. Localizes to pain = 5

8.4.2.2.3.3.3. Withdrawal (normal flexion) = 4

8.4.2.2.3.3.4. Abnormal flexion (decorticate) = 3

8.4.2.2.3.3.5. Extension (decerebrate) = 2

8.4.2.2.3.3.6. No response = 1

8.4.2.2.4. Severe respiratory distress or status epilepticus may require sedation or paralyzing agents to secure airway. **NOTE:** The AE in-flight kit does not contain paralytic drugs.

8.4.3. Preflight/in-flight considerations and care for respiratory patients.

8.4.3.1. Assure sufficient O<sub>2</sub> is available in all phases of transport (including portable for ground transport if required). **NOTE:** See AFI 10-2909, *Aeromedical Evacuation Equipment Standards* for oxygen calculations and planning factors.

8.4.3.2. Maintain a patent airway with positioning, suctioning, and adequate humidified oxygen. **NOTE:** Administer oxygen for any signs of hypoxia and respiratory distress or significant change from original assessment.

8.4.3.3. Respiratory disease pathologies may require additional preflight evaluation and possible cabin altitude restriction. Some of the more common diagnoses include, but are not limited to:

8.4.3.3.1. Chronic obstructive pulmonary disease (COPD). COPD includes pulmonary emphysema, chronic bronchitis, and status asthmaticus.

8.4.3.3.2. Restrictive lung disease: Extensive pneumonic consolidation, aspiration pneumonia, pulmonary atelectasis and infarction, pulmonary contusions, acute respiratory distress syndrome (ARDS), pulmonary edema, and hemothorax and/or pneumothorax.

8.4.3.3.3. Any disease or physiological process dependent upon oxygen delivery such as extensive tumors, granulomatous processes, lymphatic spread of carcinoma, diffuse parenchymatous diseases, alveolar proteinosis, sarcoidosis, interstitial fibrosis, shock, cardiac disease and traumatic brain injury (TBI).

8.4.3.4. Cabin altitude restriction and supplemental oxygen: The decision for cabin altitude restriction or supplemental oxygen will be based on individual patient needs, the VFS orders, and the following considerations (**T-2**):

8.4.3.4.1. Most AE aircraft (C-17 and KC-135) cruise with a cabin altitude of 6,000 – 8,000 ft. At a 7,000 ft. (**T-2**) altitude, a healthy person's PaO<sub>2</sub> is 60 mmHg or about 90 percent saturation. (**T-2**) Patients with a sea level PaO<sub>2</sub> below 60 mmHg (90 percent saturation) will potentially have difficulty with hypoxic hypoxia while in-flight. (**T-2**)

8.4.3.4.2. Patients with COPD should be administered low flow oxygen therapy (1 to 2 liters per minute via nasal cannula [NC] or Venturi mask) to avoid suppression of their hypoxic drive. **(T-0)** Closely monitor respiratory rate if receiving higher concentrations of O<sub>2</sub>. **(T-0)** Request lower cabin altitude if unresponsive to high flow O<sub>2</sub> and operationally feasible. **(T-0)** Complete DD Form 2852. **(T-2)**

#### 8.4.4. Urgent airway management.

##### 8.4.4.1. Airway obstructed or partially obstructed:

8.4.4.1.1. Position patient to allow for maximum ventilation. Consider a backrest if not contraindicated.

8.4.4.1.2. Open and clear the airway (use airway adjuncts IAW current AHA BLS and ACLS standards).

8.4.4.1.3. Suctioning (do not invoke a gag reflex).

8.4.4.2. Advanced airway treatment/management: In general, advanced airway procedures such as oral/nasal intubation, cricothyrotomy, and tracheostomy procedures will not normally be performed by AECMs. Specially trained healthcare professionals, working within their AFSC scope of practice, may perform those procedures. The specially trained healthcare professional will be aware of the indications, risks, and potential complications prior to performing the procedure in the AE environment. **(T-0)** The benefits of the procedure must outweigh the risks of not performing the procedure in the AE system. Any change in a patient's status will be reported to C2 for further guidance. **(T-1)** DD Form 2852 will be submitted. **(T-1)**

#### 8.4.5. General clinical guidelines for all respiratory patients.

8.4.5.1. Refer to **Table 8.1.** for O<sub>2</sub> delivery methods.

**Table 8.1. O<sub>2</sub> Delivery Methods.**

(American Heart Association [AHA], ACLS Provider Manual, Current Edition ).		
METHOD	Liters Per Minute (LPM)	O <sub>2</sub> %
NC Low flow-O <sub>2</sub> delivery mixes with ambient gas. Inspired O <sub>2</sub> concentration depends on the flow rate and the patient's tidal volume.	Increasing O <sub>2</sub> flow by 1 LPM increases inspired O <sub>2</sub> concentration by approximately 4 %.	
	1	24
	2	28
	3	32
	4	36
	5	40
	6	44
Face Mask-Administer 6 to 10 LPM	10	60



Non-rebreather mask with O <sub>2</sub> reservoir (constant flow of O <sub>2</sub> enters the attached reservoir). Administer 10-15 LPM via a tight-fitting mask for patients who require a rapid clinical effect/high-flow O <sub>2</sub> .  <b>NOTE:</b> Requires close monitoring for nausea and vomiting. Suction should be readily available.	10 -15 LPM	> 90%
Venturi Mask Use for patients who retain CO <sub>2</sub> . Initially use 24%, unless otherwise ordered, and observe for respiratory depression.	IAW manufacturer's guidelines.	24 28 35 40

8.4.5.2. In the most serious cases, give high flow O<sub>2</sub> @ 100% via non-rebreather mask or BVM.

8.4.5.3. Deliver humidified O<sub>2</sub> whenever possible. Monitor sterile water levels in humidification bottles.

8.4.5.4. Monitor pulse oximetry (O<sub>2</sub> saturation) and titrate O<sub>2</sub> up or down accordingly to maintain at least 92%.

8.4.5.5. In patients with low hemoglobin states, supplemental O<sub>2</sub> should be ordered per **Table 8.2**.

**Table 8.2. Oxygen Requirements for Low Hemoglobin States.**

PATIENT'S CONDITION	IN-FLIGHT O <sub>2</sub> REQUIREMENTS
Chronic low hemoglobin states	
8.5 – 10 7.0 – 8.5 Below 7.0	Oxygen Available Oxygen 2L for flight As directed by the AE Validating FS
Post-Operative low hemoglobin states	
9.0 - 10.0 8.0 – 9.0 Below 8.0	Oxygen Available Oxygen 2L for flight As directed by the AE Validating FS

**Table 8.3. Conversion for In-flight Oxygen Administration.**

<b>Altitude</b>	<b>Oxygen Percentage</b>															
10,000	30	36	44	51	58	65	73	80	87	94	100*					
9,000	29	35	42	49	56	63	70	77	84	91	98	100*				
8,000	28	34	40	46	54	61	67	74	81	87	93	100*				
7,000	27	32	39	45	52	58	65	71	78	84	91	97	100*			
<u>6,000</u>	<u>26</u>	<u>31</u>	<u>37</u>	<u>44</u>	<u>50</u>	<u>56</u>	<u>62</u>	<u>69</u>	<u>75</u>	<u>81</u>	<u>87</u>	<u>94</u>	<u>100*</u>			
<u>5,000</u>	<u>25</u>	<u>30</u>	<u>36</u>	<u>42</u>	<u>48</u>	<u>54</u>	<u>60</u>	<u>66</u>	<u>72</u>	<u>78</u>	<u>84</u>	<u>90</u>	<u>96</u>	<u>100</u>		
<u>4,000</u>	<u>24</u>	<u>29</u>	<u>35</u>	<u>41</u>	<u>46</u>	<u>52</u>	<u>57</u>	<u>64</u>	<u>70</u>	<u>75</u>	<u>81</u>	<u>87</u>	<u>93</u>	<u>97</u>	<u>100*</u>	
<u>3,000</u>	<u>23</u>	<u>28</u>	<u>33</u>	<u>39</u>	<u>45</u>	<u>50</u>	<u>56</u>	<u>61</u>	<u>67</u>	<u>73</u>	<u>78</u>	<u>84</u>	<u>89</u>	<u>95</u>	<u>100*</u>	
<u>2,000</u>	<u>23</u>	<u>27</u>	<u>32</u>	<u>38</u>	<u>43</u>	<u>48</u>	<u>54</u>	<u>59</u>	<u>64</u>	<u>70</u>	<u>75</u>	<u>81</u>	<u>86</u>	<u>91</u>	<u>97</u>	<u>100*</u>
<u>1,000</u>	<u>22</u>	<u>26</u>	<u>31</u>	<u>38</u>	<u>41</u>	<u>47</u>	<u>52</u>	<u>57</u>	<u>62</u>	<u>67</u>	<u>73</u>	<u>78</u>	<u>83</u>	<u>88</u>	<u>93</u>	<u>98</u>
<u>FiO<sub>2</sub></u>	<u>21</u>	<u>25</u>	<u>30</u>	<u>35</u>	<u>40</u>	<u>45</u>	<u>50</u>	<u>55</u>	<u>60</u>	<u>65</u>	<u>70</u>	<u>75</u>	<u>80</u>	<u>85</u>	<u>90</u>	<u>95</u>

**Desired Sea Level Equivalent Oxygen Percentage**

\*Even though the delivered O<sub>2</sub> may be at 100%, the partial pressure of oxygen necessary to deliver 100% SLE cannot be obtained (ex: 100% O<sub>2</sub> @ 8,000 feet only provides 75%  
**EXAMPLE:** A patient receiving a fraction of inspired oxygen (FiO<sub>2</sub>) of 30% while on the ground, who will be flying at a cabin altitude of 8,000 feet, will need to have the FiO<sub>2</sub> increased to 40% to deliver the same partial pressure of oxygen as the patient was receiving on the ground.

8.4.5.6.1. These parameters are based on hemoglobin because hematocrit may be decreased or elevated in dehydration or fluid overload.

8.4.5.6.2. If not contraindicated, push oral fluids to prevent dehydration.

8.4.5.7. Pulmonary hygiene measures.

8.4.5.7.1. Assist into sitting position (if not contraindicated); position on a backrest (if available).

8.4.5.7.2. Turn, cough, and deep breathe every 2 hrs., and note color, amount and consistency of secretions (i.e., soot, blood streaks, and clots).

8.4.5.7.3. Incentive spirometry if available every 1-2 hrs. while awake.

8.4.5.7.4. Use a pillow for abdominal/thoracic splinting when coughing.

8.4.5.7.5. If breathing is ineffective or absent, follow current AHA ACLS and BLS guidelines.

8.4.6. Hyperventilation.

8.4.6.1. An abnormal increase in the rate and depth of breathing. Although unrelated in cause, the symptoms of hyperventilation and hypoxia are similar and often result in confusion and inappropriate corrective procedures. Contributing factors can be related to psychological stress, medications, physiological changes, and stresses of flight.

8.4.6.2. Treatment for hyperventilation:

8.4.6.2.1. At altitude, the treatment of hyperventilation and hypoxia for the AE patient is similar. Refer to **AE Clinical Protocol – Emergency Oxygen** and encourage deep breathing. Refer to [Attachment 2, A2.1.1](#).

8.4.6.2.2. When a patient is hyperventilating from anxiety, putting on a mask to administer oxygen may heighten anxiety.

8.4.6.2.3. Methods to reduce the patient's respiratory rate include counting to 5 slowly while exhaling, working with the patient to control inhalations and exhalations to only 10 times a minute. Give the patient a watch with a second hand, or a cell phone with a stop watch, and instruct them to maintain a respiratory rate between 10 and 12 breaths per minute.

8.4.7. Hypercapnia:

8.4.7.1. Refers to increased amounts of CO<sub>2</sub> in the blood. CO<sub>2</sub> accumulates in the blood due to poor alveolar ventilation. As the O<sub>2</sub> in the blood is lowered, the CO<sub>2</sub> is raised. Altitude can exacerbate hypercapnia. The increased CO<sub>2</sub> stimulates the respiratory center in the brain stem. Elevated CO<sub>2</sub> is a powerful vasodilator, producing both peripheral and cranial vasodilatation. Any condition causing poor alveolar ventilation can result in hypercapnia.

8.4.7.2. Signs/symptoms of hypercapnia: Headache, vertigo, hypertension. Late symptoms include; hypotension, coma, and cardiac failure.

8.4.7.3. Pathological states primarily producing hypercapnia:

8.4.7.3.1. Central nervous system. Pharmacological depression (barbiturates, narcotics, alcohol, and tranquilizers), cerebrovascular accident, meningitis and encephalitis, severe intracranial hypertension associated with trauma, and tumors.

8.4.7.3.2. Diseases of nerves and muscles: Guillain-Barre' syndrome, muscular dystrophy, myasthenia gravis, insecticide poisoning, tetanus, chronic progressive polyneuropathy, diphtheritic polyneuritis, iatrogenic hemidiaphragmatic paralysis from indwelling interscalene pain catheters, and poliomyelitis.

8.4.7.3.3. Diseases of the chest wall: Flail chest and kyphoscoliosis.

8.4.7.3.4. Metabolic diseases: Severe hypothyroidism, starvation, obesity, and electrolyte imbalance.

8.4.7.3.5. Pulmonary causes: Chronic obstructive pulmonary disease (emphysema and chronic bronchitis); acute obstructive disease; severe asthmatic disease; acute bronchiolitis; mechanical obstruction such as blood; water; pus; pulmonary edema; massive parenchymal lung disease; restrictive disease of the pleura; severe pain or diaphragmatic embarrassment after surgery; mechanical obstruction of large airways;

upper respiratory obstruction; abdominal compartment syndrome; and obstruction of trachea or large bronchi.

#### 8.4.8. Care/management of endotracheal (ETT) tube and tracheostomy patients.

8.4.8.1. Patients requiring artificial airway management should have extra airways with them.

8.4.8.2. Attach an approved end-tidal CO<sub>2</sub> monitoring device or an in-line CO<sub>2</sub> indicator to the ET or tracheostomy tube.

8.4.8.3. The ERCC team may elect to fill endotracheal and tracheostomy tube cuffs with air and then attach to a cuff pressure monitor to minimize tissue trauma and the complications of re-intubation.

8.4.8.3.1. Cuff pressure is usually maintained between 15-20 cm, and will be checked preflight, at cruise and hourly, on descent, and prior to deplaning. Document cuff pressures on patients medical record. **(T-1)**

8.4.8.3.2. If an ERCC team is unavailable and an ETT or tracheostomy tube cuff requires inflation for flight, ensure it is inflated with air. Use minimal occlusion volume/minimal leak technique in an effort to permit adequate ventilation and avoid tissue trauma. **WARNING:** Excessive pressure in the endotracheal or tracheostomy cuffs may decrease blood flow to tissue causing airway damage, while under inflation may permit air leak/ineffective ventilation and increased potential for aspiration of upper airway secretions. 8.4.8.4. Tracheostomy patients may require warmed humidification during AE.

#### 8.4.9. Ventilator patients.

8.4.9.1. Only approved or waived ventilators will be used for AE missions. **(T-1)** AECMs are responsible for ensuring the ventilator interfaces with aircraft systems and a dedicated regulator/oxygen line is available to operate ventilators.

8.4.9.2. Assure adequate portable oxygen is available for all phases of transport including enplaning and deplaning.

8.4.9.3. Set up for ventilated patients:

8.4.9.3.1. During transport an emergency oxygen line for any vented patient is attached to a personal bag valve mask (BVM). The BVM will be kept on the litter (normally under/behind backrest) connected to the oxygen unless using the oxygen line for an in-line respiratory treatment. **(T-1)**

8.4.9.3.2. Cardiac monitor.

8.4.9.3.3. Pulse oximetry.

8.4.9.3.4. CO<sub>2</sub> monitor.

8.4.9.4. General nursing care for ventilated patients.

8.4.9.4.1. Ventilator-associated pneumonia (VAP) is any pneumonia occurring in the patient who is intubated or who was extubated within the past 48 hrs. Follow the current clinical practice guidelines to prevent and mitigate VAP.

8.4.9.4.2. VS at least q 2 hrs.

8.4.9.4.3. Oral care q 2 hrs.

8.4.9.4.4. Nasogastric/oral gastric (NG/OG) tube inserted.

8.4.9.4.5. Raise head-of-bed 30 degrees, unless contraindicated.

8.4.9.4.6. Soft wrist restraints in place to prevent extubation or inadvertent removal of vital therapeutic devices.

8.4.9.4.6.1. Every 1 hr. restraint assessment and circulation will be documented.  
**(T-1)**

8.4.9.4.6.2. Reevaluate the patient and ventilator settings at altitude; changes at altitude may require ventilator-setting adjustments.

8.4.9.4.6.3. Positive end-expiratory pressure (PEEP) settings will typically remain constant at altitude.

8.4.9.4.7. Administer pain and sedation medication, as ordered, for patient comfort.

#### 8.4.10. Chest tubes.

8.4.10.1. Chest tubes may be left in position for AE. Either a chest drainage unit with an integral one-way valve (e.g. Atrium Express 4050) or a Heimlich valve will be in place prior to patient transfer to the flight line. **(T-0)** The Heimlich valve may be utilized with a chest drainage system without a one-way valve system. Glass chest tube drainage bottles will not be used in-flight. **(T-1) WARNING:** Use of the Heimlich valve with the Atrium Express could cause great risk to a patient during rapid decompression. Do not obstruct the positive pressure relief valve.

8.4.10.2. Chest drainage units listed in the current AE Equipment Standards are approved for use in-flight; ensure familiarity with conditions for use. Other drainage units may be encountered in the AE system and may be acceptable if a one-way valve system is present, conditions for use are followed, and a waiver is obtained IAW AFI 10-2909 and 11-2AE V3. A DD Form 2852 is completed on all equipment requiring a waiver. **(T-2)**

8.4.10.3. Patients may be airlifted 24 hrs. after chest tube removal.

8.4.10.3.1. A chest x-ray, anterior/posterior and lateral, with interpretation, will be completed post chest tube removal and documented in the patient's medical records.  
**(T-0)**

8.4.10.3.2. Patients requiring AE before 24 hrs. will be approved by the referring provider and the TVFS. **(T-2)**

8.4.10.3.3. Occlusive dressing is applied to the site where the chest tube was removed.

8.4.10.4. Preflight/in-flight considerations and care for chest tube patients.

8.4.10.4.1. Patient assessment will include; assessing breath sounds, VS with pulse oximetry, and inspection of the chest tube site to ensure intact dressing and connections for any leaks or kinks. **(T-0)** Assess tidal volume in the chest drainage device.

In a patient with a pleural chest tube, tidaling is normal. Oscillations are more apparent when suction is momentarily turned off. If there is no tidaling, consider 1) an occlusion somewhere between the pleural cavity and the water seal, 2) a full expansion of the lung where suction has drawn the lung up against the holes in the chest tubes, or 3) PEEP, which can dampen oscillation. **WARNING:** Check chest tubing for occlusion and assess patient for bilateral rise and fall of chest wall.

8.4.10.4.2. Ensure all connections are taped, tubing is not looped or kinked or hanging below the drainage system.

8.4.10.4.3. Mark level of collection chamber.

8.4.10.4.4. Document presence or absence of an air leak in the water seal (bubbling indicates free air in the pleural cavity).

8.4.10.4.5. Do not allow the chest drainage system to be above the level of the chest.

8.4.10.4.6. Position patient mid-tier or above to facilitate drainage. Patients with chest tubes should not be floor-loaded.

8.4.10.4.7. The chest tube will only be clamped when changing the chest tube drainage unit or discontinuing the chest tube unless directed by a privileged provider. **(T-0)** If directed by the privileged provider, a Kelly clamp will accompany the patient while in the AE. **(T-0)**

8.4.10.4.8. Maintain and document I&O on each leg of the mission on the AF Form 3899E or EHR equivalent and as required.

8.4.10.4.9. Check the suction control frequently and adjust the suction control to maintain the appropriate amount of suction according to the physician's order. If the chest drainage system uses water to maintain suction, adjust suction control for minimal bubbling according to manufacturer's recommendations.

8.4.10.4.9.1. Ensure patient is utilizing an incentive spirometer (IS) and/or coughing and deep breathing every 1-2 hours while in-flight.

8.4.10.4.10. Move and drain chest drainage tubing hourly to facilitate flow and prevent clotting. **WARNING:** If clotting is suspected, do not milk or strip chest tubes; this has the potential to cause increased intra-pleural pressure. If you see visible clots, squeeze hand-over-hand along the tubing and release the tubing between squeezes to help move the clots in the drainage unit.

8.4.10.4.11. Unless contraindicated, position on a backrest for comfort.

8.4.10.4.12. Pain medication as required.

#### 8.4.11. Pulmonary emergencies.

##### 8.4.11.1. Initial response to pulmonary emergencies.

8.4.11.1.1. Maintain the airway and assist breathing IAW current AHA ACLS guidelines.

8.4.11.1.2. Administer high flow O<sub>2</sub> to maintain pulse oximetry greater than 92%.

8.4.11.1.3. Establish IV access.

- 8.4.11.1.4. Call C2; the airlift agency will contact the governing PMRC for guidance, possible cabin altitude restriction, and diversion to a MTF capable of handling the situation, as required. **(T-0)**
- 8.4.11.2. Asthma/COPD.
- 8.4.11.2.1. Assess signs and symptoms:
- 8.4.11.2.1.1. Tachypneic, labored respirations with increased effort on exhalation (prolonged).
- 8.4.11.2.1.2. Possible cough and dyspnea.
- 8.4.11.2.1.3. Signs of hypoxia. See **Table 8.4.**
- 8.4.11.2.1.4. The absence of wheezing, difficulty speaking, and use of accessory muscles indicates an emergent situation.
- 8.4.11.2.2. Emergency treatment/management: Refer to **AE Clinical Protocol - Emergency Oxygen.**
- 8.4.11.2.3. Administer medication and oxygen as directed.
- 8.4.11.2.3.1. The goal of oxygen administration for a COPD patient is to maintain adequate arterial blood saturation with oxygen (SaO<sub>2</sub>) without worsening acidosis. **WARNING:** Patients with chronically elevated blood CO<sub>2</sub> levels may rely on relative hypoxia as a respiratory driver. Titrating O<sub>2</sub> outside ordered SpO<sub>2</sub> parameters may result in decreased respiratory drive. In a clinical emergency, high flow oxygen may be required. Patients receiving high flow O<sub>2</sub> will require full time observation. **(T-1)**
- 8.4.11.2.3.2. Encourage oral/by mouth (PO) fluids or consider IV maintenance fluids, if not contraindicated.
- 8.4.12. Tension pneumothorax.
- 8.4.12.1. Air enters the pleural space and is unable to escape. This may occur as a result of trauma, complication of medical treatment/procedure or spontaneous. Tension pneumothorax may also be due to a kinked or clotted chest tube. The involved lung collapses and the mediastinum shifts to the opposite side, compressing the contralateral lung. Venous return to the heart is decreased and cardiac output is dramatically reduced.
- 8.4.12.2. Tension pneumothorax signs and symptoms:
- 8.4.12.2.1. Hypoxia. See **Table 8.4.**
- 8.4.12.2.2. Severe respiratory distress with dyspnea (air hunger and rapid respirations) and cyanosis.
- 8.4.12.2.3. Decreased or absent chest expansion on affected side.
- 8.4.12.2.4. Diminished or absent breath sounds on affected side.
- 8.4.12.2.5. Difficulty ventilating patient with ETT.
- 8.4.12.2.6. Presence of clots in the chest tube or Heimlich valve.
- 8.4.12.2.7. Hyper-resonance on percussion.

8.4.12.2.8. Subcutaneous emphysema.

8.4.12.2.9. Distended neck veins and hypotension.

8.4.12.2.10. Tracheal shift to unaffected side (late sign).

8.4.12.3. Tension pneumothorax treatment/management:

8.4.12.3.1. If this is assessed and not previously treated preflight, the patient is not stable for flight.

8.4.12.3.2. If chest tube is present:

8.4.12.3.2.1. Assure the drainage system is operational.

8.4.12.3.2.2. **WARNING** : If clotting is suspected, do not milk or strip chest tubes; this has the potential to causes increased intra-pleural pressure. If you see visible clots, squeeze hand-over-hand along the tubing and release the tubing between squeezes to help move the clots in the drainage unit.

8.4.12.3.3. If chest tube is not present, or if the chest tube is not patent or operable, pressure must be relieved immediately by a needle decompression.

8.4.12.3.3.1. A 14-gauge needle is inserted over the top of the third rib into the 2nd intercostal space in the mid-clavicular line on the affected side. **WARNING:** The vascular bundle lies underneath the rib. Lacerating the vasculature can lead to life threatening intra-thoracic hemorrhage. Refer to current AHA ACLS and TNCC guidelines.

8.4.12.3.3.2. Continue to assess patient. Decompression may have to be repeated until a chest tube is inserted.

8.4.12.3.3.3. Decrease the cabin altitude, if operationally feasible. **(T-0)**

8.4.12.3.3.4. Contact C2; the airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling the situation. **(T-0)**

8.4.12.3.3.5. Continue to closely monitor the pulse oximeter and patient for reoccurrence.

8.4.13. Open pneumothorax. Air enters the chest via an open wound; also known as a “sucking chest wound.”

8.4.13.1. Open pneumothorax: Signs and symptoms:

8.4.13.1.1. Severe respiratory distress with dyspnea and cyanosis.

8.4.13.1.2. Gurgling, sucking wound.

8.4.13.1.3. Tachypnea and grunting.

8.4.13.2. Open pneumothorax: Treatment/management:

8.4.13.2.1. Treat by applying an occlusive dressing completely over the defect during expiration.

8.4.13.2.2. Allow the casualty to adopt the sitting position if breathing is more comfortable.



8.4.13.2.3. Monitor for possible development of subsequent tension pneumothorax.

8.4.13.2.4. If signs of a tension pneumothorax develop, REMOVE the occlusive dressing for a few seconds and allow the tension pneumothorax to decompress. If this does not resolve the issue, then refer to tension pneumothorax.

8.4.14. Massive hemothorax.

8.4.14.1. Signs and symptoms:

8.4.14.1.1. Severe respiratory distress with dyspnea.

8.4.14.1.2. Signs of shock (section 8.8.) and hypoxia (section 8.5.). Refer to **AE Clinical Protocol – Emergency Oxygen**.

8.4.14.1.3. Breath sounds decreased or absent.

8.4.14.1.4. More than 100ml of blood loss per hr. from chest tube.

8.4.14.1.5. Traumatic injury to the chest.

8.4.14.2. Massive hemothorax: Treatment/management.

8.4.14.2.1. Treat shock as appropriate.

8.4.14.2.2. Chest tube placement is required. Seek immediate assistance from a privileged provider/C2/PMRC for guidance and possible diversion to a MTF capable of handling the situation. **(T-0)**

8.4.15. Flail chest.

8.4.15.1. Multiple rib fractures resulting in loss of chest wall stability. Normal thoracic function and gas exchange are impaired. The underlying pulmonary contusion and splinting of the fracture pain leads to hypoventilation and hypoxia. The flailing segment moves inward during inspirations and outward during expiration. Severe muscle spasms may conceal the flailing segment.

8.4.15.2. Flail chest: Signs and symptoms.

8.4.15.2.1. Respiratory distress with dyspnea, cyanosis, and hypoxia.

8.4.15.2.2. Paradoxical chest wall movement.

8.4.15.2.3. History of blunt trauma to the chest.

8.4.15.3. Flail Chest: Treatment/management.

8.4.15.3.1. Supplemental oxygen. Evaluate for elective intubation.

8.4.15.3.2. Adequate pain management. See Section 8.21.

8.4.15.3.3. Position for comfort. **NOTE:** Place on affected side if in respiratory distress to improve oxygenation of unaffected lung.

8.4.15.3.4. Monitor IVF infusion to avoid fluid overload.

8.4.15.3.5. Pulmonary failure may require emergent intubation.

8.4.15.3.6. May have PEEP or Continuous Positive Airway Pressure.

#### 8.4.16. ARDS.

8.4.16.1. Lung injury with several causes and may be a complication of other diseases, injuries, volume overload, infection, toxic inhalation, massive transfusion, etc.

8.4.16.2. ARDS results from a severe alteration in pulmonary vascular permeability, which leads to a change in lung structure and fluid shift to interstitial space (edema). Interferes with alveolar-capillary membrane affecting ventilation.

8.4.16.3. ARDS: Treatment/management.

8.4.16.3.1. Supplemental oxygen/ventilator support.

8.4.16.3.2. PEEP (if required).

8.4.16.3.3. Monitor continuous pulse oximetry saturations.

8.4.16.3.4. Fluids should be restricted unless shock is present.

8.4.16.3.5. Turn patient every 2 hrs. unless contraindicated to promote postural drainage.

### 8.5. Hypoxia:

8.5.1. Hypoxia is a general term describing an oxygen deficiency in the tissues sufficient enough to cause impairment of function. Oxygen deficiency can result from various causes. AE patients are already in a compromised state, are at a higher risk and may experience signs of hypoxia faster than normal. Administer oxygen for any sign of hypoxia, respiratory distress or significant change from original assessment. Base the treatment on underlying pathology, preflight VS and pulse oximetry.

8.5.2. Stages of altitude induced hypoxia.

8.5.2.1. Indifferent stage: Starts at sea level and extends to 10,000 ft. The body reacts with a slight increase in heart rate and ventilation. Night vision begins to diminish at 5,000 ft.

8.5.2.2. Compensatory stage: Extends from 10,000 ft. to 15,000 ft. The body attempts to protect itself against hypoxia by increasing BP, heart rate, and the rate and depth of respiration. Efficiency and performance of tasks requiring mental alertness becomes impaired.

8.5.2.3. Disturbance stage: Extends from 15,000 ft. to 20,000 ft. Characterized by dizziness, sleepiness, tunnel vision, and cyanosis. Thinking becomes slowed and there is a loss of muscle coordination.

8.5.2.4. Critical stage: Extends from 20,000 ft. to 30,000 ft. Marked mental confusion, incapacitation followed by unconsciousness.

8.5.3. Major causes of hypoxia in the AE environment:

8.5.3.1. High altitude: Altitude is the most common cause of in-flight hypoxia.

8.5.3.2. Hypoventilation: Hypoventilation is inadequate ventilation often caused by diseases outside the respiratory system and can exist when lung tissue is normal. Over-sedation is a common cause of hypoventilation.

8.5.3.3. Lung pathology: Conditions of the lungs producing arterial hypoxia in the presence of normal alveolar PaO<sub>2</sub> is termed “increased alveolar-arterial oxygen tension difference.” Three mechanisms contribute to this condition:

8.5.3.3.1. Diffusion defect: Interference with diffusion of oxygen from alveolar air into pulmonary blood results in lowered PaO<sub>2</sub>. This is seen in diffuse pulmonary infiltration, interstitial fibrosis, early edema, viral pneumonia, sarcoidosis, and anemia.

8.5.3.3.2. Abnormal perfusion-ventilation ratio: An important aspect of normal lung physiology is local/regional optimization of alveolar perfusion based on the ventilation of the alveolar-capillary units. In certain lung diseases there is a breakdown of this optimization with a resulting deterioration in gas exchange. This is seen in patients with pulmonary emphysema, status asthmaticus, pulmonary edema, pulmonary embolus, and chronic bronchitis.

8.5.3.3.3. Intrapulmonary shunts: When the ventilation/perfusion ratio is abnormal due to poor ventilation of the alveoli, the blood passes through the involved parts of the lung without the oxygen-carbon dioxide exchange occurring. For example, in lobar pneumonia, the blood passes directly from the pulmonary arterial circulatory system into the pulmonary venous system without a gas exchange.

#### 8.5.4. Types of hypoxia:

8.5.4.1. Hypoxic hypoxia (altitude hypoxia): Caused by exposure to the airborne environment. Results in deficiency in alveolar oxygen exchange. A lower barometric pressure at altitude results in a decrease in alveolar PaO<sub>2</sub> and interferes with ventilation and perfusion. Any condition requiring oxygen at sea level must be closely monitored at altitude. See **Figure 8.1. (T-0)**

**Figure 8.1. Altitude Blood Oxygen Saturation.**

Altitude Blood Oxygen Saturation
Sea level 98%
10,000 ft. 87%
22,000 ft. 60%

8.5.4.2. Hypemic hypoxia: A reduction in the oxygen-carrying capacity of the blood caused by anemia, hemorrhage, hemoglobin (Hgb) abnormalities (e.g. sickle cell disease), medications (e.g. sulfanilamides, nitrites), or chemicals (e.g. cyanide, carbon monoxide). **WARNING:** Carbon monoxide has a 200 x greater affinity to bond to Hgb than oxygen. Pulse oximetry reading may not be accurate in carbon monoxide poisoning.

8.5.4.3. Histotoxic hypoxia: A deficiency of oxygen reaching the tissues due to impairment of cellular respiration especially by a toxic agent such as alcohol. Histotoxic hypoxia affects efficiency of cells to utilize oxygen, interfere with metabolic activity.

8.5.4.4. Stagnant hypoxia: A reduction in total cardiac output due to the pooling of blood and the reduced blood flow to the tissues. Interferes with the transportation phase of oxygen by reducing systemic blood flow. Causes include: Respiratory failure, continuous positive pressure, ventilation, positive end expiratory pressure,

cardiovascular and/or pulmonary embolus (blood clot or gas bubbles), shock, acceleration (G-Forces), extremes in environmental temperature, postural changes, tourniquets, arterial spasm, hyperventilation, and heart failure.

#### 8.5.5. Characteristics of hypoxia:

8.5.5.1. Generally, patients are not familiar with their personal symptoms of hypoxia, so AECMs must be alert to all possible signs and symptoms patients may exhibit. **(T-0)** Because AE patients are already in a compromised state, they will usually experience the effects of hypoxia earlier than normal. Signs and symptoms are listed in **Table 8.4**.

8.5.5.2. Cyanosis is a late sign of hypoxia because the oxygen saturation must be below 75% in persons with normal Hgb before it is detectable.

**Table 8.4. Signs and Symptoms of Hypoxia.**

<b>Signs</b>	<b>Symptoms</b>
Restlessness	Confusion
Slouching	Headache
Euphoria	Dizziness
Confusion	Euphoria
Stupor	Blurred Vision
Dyspnea	Tunnel Vision
Belligerence	Insomnia
Tachypnea	Hot and cold flashes
Hypertension	Tingling
Tachycardia	Numbness
Bradycardia	Nausea
Arrhythmias	Anger
Hypotension (late)	Tachypnea
Cyanosis (late)	Short of breath
Seizures (late)	Changing judgment or personality
Unconsciousness(late)	

8.5.6. Due to the relative hypoxic environment in AE aircraft, patients having diagnoses or conditions which compromise tissue oxygenation should be considered candidates for either oxygen supplementation or a cabin altitude restriction, or both. The attending physician, in consultation with the VFS, should consider prescribing supplemental oxygen and/or cabin altitude restriction and document these orders in the patient movement request and AF Form 3899 or EHR equivalent.

8.5.7. Prevent hypoxia by encouraging deep breathing and ambulation, if appropriate. Evaluate potential causes of hypoxia: medications, underlying medical conditions, etc.

8.5.8. Treatment of hypoxia. Refer to **AE Clinical Protocol – Emergency Oxygen**.

8.5.8.1. Request lower cabin altitude if unresponsive to high flow O<sub>2</sub> and operationally feasible.

8.5.8.2. When administering O<sub>2</sub> to correct hypoxia, allow approximately 3-5 minutes to elapse for a more accurate pulse oximeter reading.

8.5.9. Documentation will include subjective and objective data for giving oxygen; VS, date, time and delivery method of administering the oxygen (i.e. non-rebreather mask at 15 lpm or nasal-cannula at 4 lpm), notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 or EHR equivalent. **(T-1)** "Oxygen was administered **IAW AE Clinical Protocol – Emergency Oxygen.** **(T-2)** Completion of the DD Form 2852. **(T-1)**

8.5.10. Performance Improvement (PI) Monitoring will include:

8.5.10.1. Hypoxia is identified and treated within the parameters of the AE Clinical Protocol.

8.5.10.2. AOC/AECT is notified and VFS is made aware.

8.5.10.3. Treatment is documented on the patient's AF Form 3899 or EHR equivalent.

8.5.10.4. DD Form 2852 is completed. **(T-2)**

## **8.6. PE/VTE Events During AE.**

8.6.1. PE is the obstruction of one or more pulmonary arteries by a thrombus usually originating in the deep veins of the legs. VTE occurs when a blood clot forms in a person's veins.

8.6.2. Stresses of flight contributing to PE/VTE events

8.6.2.1. Thermal: Excessive heat will lead to additional dehydration

8.6.2.2. Decreased humidity: Leads to dehydration. Dehydration effects the flow of venous blood volume and may cause additional stasis.

8.6.2.3. Fatigue: Excessive fatigue may cause patients to be static for longer periods of time. They may not have the energy to walk or complete the recommended movements or exercises.

8.6.2.4. G-forces: May cause additional venous stasis, leading to pooling of the blood.

8.6.2.5. Flights lasting longer than 4 hours compound the other stresses of flight.

8.6.3. Higher risk for PE/VTE includes patients with: Prolonged bed rest, long bone or pelvic trauma, obesity, history of smoking, history of thromboembolic disease, varicose veins, pregnancy, post-partum, history or family history of PE/VTE, estrogen use, heart failure, myocardial infarction, active cancer, recent surgery, leg cast or splint and/or over the age of 40.

8.6.4. PE signs and symptoms.

8.6.4.1. Dyspnea, pleuritic chest pain, wheezing, crackles on auscultation, restlessness, and hemoptysis. **NOTE:** In-flight auscultation is not a reliable assessment tool.

8.6.4.2. Elevate the head of bed; get a full set of vital signs and place on oxygen **IAW AE Clinical Protocol – Emergency Oxygen.**

8.6.4.3. The MCD will contact C2 immediately; the airlift agency will contact the governing PMRC for guidance. (T-0)

8.6.5. VTE signs and symptoms:

8.6.5.1. Pain in the calf or behind the knee that may increase with standing or ambulating, the feeling of being on pins and needles, swelling (especially unilateral), skin that is warm to touch, erythema, and a systemic temperature greater than 100.4F. Many VTEs are asymptomatic.

8.6.5.2. Homan's sign is often unreliable due to false positives. It is no longer recommended.

8.6.5.3. VTE prophylaxis is essential to preventing complications of immobility in the AE system. Prophylactic methods or measures may include:

8.6.5.3.1. Frequent ambulation, if possible, as well as stretching and flexing of calf muscles. Adequate hydration and frequent changes in position are required throughout the AE system.

8.6.5.3.2. Sequential Compression Devices (SCD) or foot pumps provide non-pharmacologic VTE prophylaxis in critical care and immobilized patients. Some patients being transported benefit from use of a combination of non-pharmacologic and pharmacologic VTE prophylaxis. Approved SCDs in the AE environment may be used on one or more extremities and provides improved benefit over no mechanical prophylaxis.

8.6.5.3.3. VFS may consider heparin, low molecular weight heparins (e.g. Lovenox) or warfarin (e.g. Coumadin).

## 8.7. Cardiovascular Management.

8.7.1. Stresses of flight affecting the cardiovascular system.

8.7.1.1. Decreased partial pressure of oxygen: Increases myocardial workload, predisposing compromised patients to arrhythmias, chest pain and may lead to myocardial infarction. Consider cabin altitude less than 6,000 ft. for cardiac patients.

8.7.1.2. Barometric pressure changes: Gas expansion in the GI tract may cause diaphragmatic crowding and decrease in tidal volume.

8.7.1.3. Thermal: Excessive heat may cause patients on cardiac medication to become hypotensive. Hyperthermia and hypothermia may increase cardiac oxygen requirements.

8.7.1.4. Fatigue: Cumulative effect of stresses may exacerbate the patient's condition.

8.7.1.5. G-forces: Ascent may increase returning blood flow and cardiac workload for some cardiac patients. Use a backrest for cardiac patients on a litter.

8.7.2. Preflight/in-flight considerations for cardiac patients.

8.7.2.1. Use alternate anti-hijacking procedures for patients and passengers with implantable cardiac pacemakers and defibrillators. **WARNING:** EMI from handheld and stationary surveillance systems interferes with these medical devices. Changes in pacing rates, shock, and possible cardiac arrest may occur.

8.7.2.2. Patients with a recent acute myocardial infarction are considered for AE on an individual basis. The referring privileged provider and VFS will work together to determine the appropriate AE precedence and clinical support for cardiac patients. **(T-2)** When continuous cardiac monitoring or other critical care modalities are required, the VFS, in consultation with the referring privileged provider, shall determine if an ERCC team or medical attendant such as a physician or ACLS trained nurse will accompany the patient. **(T-2)** The final decision for determining these requirements rests with the VFS. A 12-Lead electrocardiogram taken within 24 hrs. of scheduled flight and read by a qualified physician should accompany the patient.

8.7.2.3. Patient history.

8.7.2.3.1. Assess if patient is free of chest pain. Document the last episode and if it was associated with dyspnea, nausea and/or diaphoresis. Note what actions/medications were used to relieve pain/discomfort. List other current medications, allergies, and presence of pacemaker or other implantable cardioverter-defibrillator.

8.7.2.3.2. Assess ability to ambulate for prolonged periods and climb stairs.

8.7.2.3.3. All inpatient cardiac patients should have preflight VS and pulse oximetry; repeat VS and pulse oximetry at altitude.

8.7.2.3.4. If the patient has nitroglycerin, ensure it is not expired and the patient notifies the AECM if consumed.

8.7.2.4. Use a backrest if on litter.

8.7.2.5. Place near O2 for flight.

8.7.2.6. The cardiac monitor, if ordered, should be placed in a viewable position for an ACLS certified member in all phases of transport when feasible.

8.7.3. Cardiac emergencies/cardiac arrest: ERCC team/MA may be included in the medical emergency procedures if clinically qualified to assist. Refer to current AHA ACLS Guidelines and in-flight adult ACLS. Defibrillation Procedures: AECMs refer to AFI 11-2AE V3. Call C2; the airlift agency will contact the governing PMRC. **(T-2)** Complete a DD Form 2852 for change of status. **(T-2)**

8.7.4. Ischemic chest pain. Refer to current AHA ACLS guidelines.

8.7.5. Congestive heart failure/cardiogenic shock: Heart failure may result from a myocardial infarction (MI), valvular malfunction, septal defect, left ventricular aneurysm or cardiac trauma.

8.7.5.1. Assess cardiopulmonary, neurological and hemodynamic status of BP, heart rate, pulse oximetry, GCS, peripheral perfusion, presence of edema, color and warmth of skin.

8.7.5.2. Signs and symptoms: Anxiety, dyspnea/shortness of breath with rales and rhonchi, distended neck veins, tachycardia, hypertension or hypotension (cardiogenic shock), diaphoresis, arrhythmias. Appears ashen with cool and clammy skin.

8.7.5.3. Treatment/Management: If symptoms develop during flight, contact C2; the airlift agency will contact the governing PMRC. **(T-2)** Refer to Lippincott or Mosby for additional information.

8.7.6. Cardiac tamponade. Rapid or slow accumulation of fluid into pericardial sac compresses the heart and decreases cardiac output. Results from inflammation, traumatic wound injury to heart, heart failure, cardiac contusion, neoplasm, and aortic dissection.

8.7.6.1. Assess signs and symptoms: Beck's Triad: (distended neck veins, low arterial pressure and distant/muffled heart sounds), dyspnea, tachypnea, cyanosis, tachycardia, hypotension, and severe anxiety. QRS may have smaller amplitude. **NOTE:** Recommend use of ultrasound to diagnose cardiac tamponade if available.

8.7.6.2. Treatment/Management of Cardiac Tamponade:

8.7.6.2.1. Refer to current AHA ACLS guidelines and [paragraph 8.7.6.2.2](#).

8.7.6.2.2. Avoid positive pressure ventilation via bag-mask or ET tube. The physician may order a fluid challenge. . The physician may order a fluid challenge. The only treatment alleviating the cause is pericardiocentesis. **WARNING:** A pericardiocentesis will only be performed by a healthcare professional who has the scope of practice to accomplish this procedure. **(T-0)**

8.7.7. Symptomatic premature ventricular contractions, tachycardia, and cardiac arrest.

8.7.7.1. Refer to current AHA ACLS guidelines for drug indications, actions and precautions.

8.7.8. Treatment and Management of Symptomatic bradycardia.

8.7.8.1. Refer to current AHA ACLS guidelines and [paragraph 8.7.8.1.1](#).

8.7.8.1.1. Consider transcutaneous pacing (TCP) with approved cardiac monitor/defibrillator. Registered nurses (RNs) may initiate pacing IAW current AHA ACLS guidelines. Contact C2 for mission diversion and physician guidance on sedation and pain medication prior to starting TCP. **(T-2)** AETs may assist with set up but may not initiate TCP.

8.7.8.2. TCP is used for short intervals until transvenous pacing can be initiated.

8.7.8.2.1. En route adult or pediatric transvenous pacing requires direct ERCC team or physician supervision. The PMRC VFS will ensure appropriate MA. **(T-2)**

8.7.9. Treatment and Management of Ventricular fibrillation/ventricular tachycardia.

8.7.9.1. Refer to current AHA ACLS guidelines. AECMs refer to AFI 11-2AE V3 and AFI 10-2909 for information specific to defibrillation on an aircraft.

8.7.10. Treatment and Management of Asystole and Pulseless Electrical Activity.

8.7.10.1. Refer to current AHA ACLS guidelines.

## **8.8. Shock Management .**

8.8.1. Stresses of flight affecting shock.



8.8.1.1. Decreased partial pressure: As altitude increases, ambient air pressure decreases, leading to a decrease in the oxygen tension which results in a decreased PaO<sub>2</sub>.

8.8.1.2. Thermal: Inadequate peripheral perfusion aggravated by the potential temperature extremes.

8.8.1.3. Humidity: The humidity in aircraft cabins is extremely low and exacerbates fluid loss.

8.8.1.4. Fatigue: Can exacerbate the patient's underlying condition/diagnosis due to the overall effect of stresses of flight and length of time the patient has been in the AE system. Disruption of circadian rhythms occurs when crossing multiple time zones.

8.8.2. General: Shock is a physiologic state characterized by a significant reduction of systemic tissue perfusion, resulting in decreased oxygen delivery to the tissues. This creates an imbalance between oxygen delivery and oxygen consumption. Prolonged oxygen deprivation leads to cellular hypoxia and derangement of critical biochemical processes at the cellular level, which can progress to the systemic level.

8.8.3. Types of shock.

8.8.3.1. Hypovolemic shock is a lack of oxygen to the tissues caused by reduced blood volume.

8.8.3.1.1. Hypovolemic shock may result from hemorrhage-induced blunt or penetrating trauma, GI bleeding, hemorrhagic pancreatitis, fractures, ruptured aorta, abdominal or left ventricular free wall aneurysm.

8.8.3.1.2. Also caused by fluid loss induced diarrhea, vomiting, heat stroke, inadequate repletion of insensible losses, burns, and third spacing.

8.8.3.1.3. Treatment of hypovolemic shock.

8.8.3.1.3.1. Attempt to determine cause of hypovolemia (e.g. hemorrhage, vomiting or diarrhea).

8.8.3.1.3.2. Evaluate for decreased peripheral perfusion as indicated by delayed capillary refill and cool mottled extremities, dry skin, dry oral mucosa or postural hypotension.

8.8.3.1.3.3. Unless contraindicated, an initial bolus of 1-2 liters of warmed (if possible) Lactated Ringers (first choice) or Normal Saline (second choice) solution as rapidly as possible. Target is adequate tissue perfusion and improving signs/symptoms. Monitor fluid intake, BP, mental status and peripheral perfusion.

8.8.3.2. Cardiogenic shock is a lack of oxygen to the tissues caused by cardiac pump failure or pulmonary embolism.

8.8.3.2.1. Specific conditions/events lead to cardiogenic shock including: myocardial infarction involving greater than 40 percent of the left ventricular myocardium, right ventricular infarction, dilated cardiomyopathies, stunned myocardium following prolonged ischemia, cardiopulmonary bypass, myocarditis and both atrial and ventricular arrhythmias.

8.8.3.2.2. Atrial fibrillation and flutter reduce cardiac output. Mechanical causes of cardiogenic shock include valvular defects, ventricular septal defects or rupture, atrial myxomas and a ruptured ventricular free aneurysm. Other cardiac causes of cardiogenic shock include massive pulmonary embolism, tension pneumothorax, severe constrictive pericarditis and pericardial tamponade.

8.8.3.2.3. Treatment of cardiogenic shock.

8.8.3.2.3.1. Attempt to determine the cause of cardiogenic shock: Myocardial infarction, myocardial depression due to advanced septic shock, atrial or ventricular arrhythmia, Brady arrhythmia, pulmonary embolism, tension pneumothorax, constrictive pericarditis, pericardial tamponade and severe pulmonary hypertension.

8.8.3.2.3.2. Perform fluid resuscitation to correct hypovolemia and hypotension, unless pulmonary edema is present.

8.8.3.2.3.3. Additional drug therapy may be necessary as determined by a privileged provider.

8.8.3.3. Distributive (vasodilatory) shock is a lack of oxygen to the tissues caused by hypotension due to an infection or anaphylactic reaction. Examples include neurogenic, septic and anaphylactic.

8.8.3.3.1. May result from systemic inflammatory response, pancreatitis, burns or multiple traumatic injuries. Also from toxic shock syndrome, anaphylaxis and anaphylactoid reactions, drug or toxin reactions including: insect bites, transfusion reactions, and heavy metal poisoning.

8.8.3.3.2. Other contributing factors: Addisonian crisis, myxedema coma, neurogenic shock after spinal cord injury, acute systemic inflammation following acute myocardial infarction, post-resuscitation syndrome and post-cardiopulmonary bypass.

8.8.3.3.3. Treatment for distributive shock.

8.8.3.3.3.1. Evaluate for decreased peripheral perfusion as indicated by delayed capillary refill and cool mottled extremities, dry skin, dry oral mucosa or postural hypotension.

8.8.3.3.3.2. At least 1 or 2 liters of NS or lactated ringers are initially given as rapidly as possible in an attempt to restore tissue perfusion.

8.8.3.3.3.3. Continue fluid resuscitation at the initial rapid rate as long as the systemic BP remains low. Monitor fluid intake/urine output, BP, mental status and peripheral perfusion.

8.8.3.3.3.4. If it is neurogenic shock, restore volume. Do not use vasoactive medications until volume is restored. Steroids should only be used after consultation with a neurosurgeon. Keep the patient as normo-thermic as possible.

8.8.3.3.3.5. If it is septic shock, treat the underlying infection.

8.8.3.3.3.5.1. Antibiotics and fluid bolus IAW physician's orders.

8.8.3.3.3.6. If it is anaphylactic shock, initiate resuscitation and follow the **AE Clinical Protocol - Anaphylactic Reaction**.

8.8.3.4. Obstructive Shock.

8.8.3.4.1. Obstructive Shock may result from circulatory compromise due to direct failure of the heart muscle or compression or obstruction of blood flow through the heart or great vessels.

8.8.3.4.2. Contributing factors: cardiac tamponade, tension pneumothorax, pulmonary embolism.

8.8.3.4.3. Signs and symptoms include apprehension, shortness of breath, tracheal deviation, jugular vein distention.

8.8.3.4.4. Treat the underlying pathology.

8.8.3.5. The different types of shock can coexist. As an example, patients with septic shock often have a hypovolemic component, a cardiogenic component (due to sepsis-related dysfunction), and a distributive component (due to the effects of inflammatory and anti-inflammatory cascades on vascular permeability and vasodilatation).

8.8.4. Clinical presentation of shock varies according to the type of shock, its cause, and its stage of presentation.

8.8.4.1. Early signs of shock are characterized by rapid compensation for the diminished tissue perfusion. The early symptoms may include anxiety, restlessness, tachycardia, pale clammy skin, and either a modest increase or decrease in systemic BP.

8.8.4.2. As compensatory mechanisms become overwhelmed, additional symptoms for late shock may include: diaphoresis, decreased urine output, agitation, lethargy, dizziness, hypotension, obtunded, and coma.

8.8.5. Treatment/management and preflight/in-flight considerations for shock.

8.8.5.1. Control hemorrhage and maintain circulation, airway, and breathing. Refer to current AHA ACLS guidelines and notify C2. **(T-2)**

8.8.5.2. Correct hypoxemia. Open airway with adjuncts if necessary. Maintain ventilator support if appropriate. Provide supplemental oxygen with high flow delivery. Refer to **AE Clinical Protocol –Emergency Oxygen**.

8.8.5.3. Place the patient in supine position to assist with perfusion. Keep the patient warm.

8.8.5.4. Establish 2 large bore IV's if not already in place.

8.8.5.5. Monitor BP as often as needed but at a minimum hourly. Urine output hourly with goal of 30-50 ml/hr.

8.8.6. Documentation will include subjective and objective data for giving the medication; vital signs, if indicated; known allergies; for women of childbearing years: date of last menstrual cycle; date and time of administration, notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 or EHR

equivalent “(Insert name of drug) was administered IAW AE Clinical Protocol - **Anaphylactic Reaction.**” (T-2) Complete DD Form 2852. (T-1)

8.8.7. Performance Improvement (PI) Monitoring. (Data Source – Patient Record)

8.8.7.1. Anaphylactic Reaction is identified and treated within the parameters of this AE Clinical Protocol.

8.8.7.2. Documentation of notification to the VFS and AOC/AECT agency.

8.8.7.3. Document event, intervention and outcome on patients AF Form 3899 or EHR equivalent.

8.8.7.4. Completion of the DD Form 2852. (T-2)

**8.9. Burn Management.**

8.9.1. Burn patients are frequently transported on AE missions and require intensive inflight nursing care. The expert burn management consultants for worldwide AE are at the United States Army Institute for Surgical Research (USAISR). CONUS burn patients transferring to this facility are normally accompanied by a burn team from a civilian center. The burn team, only under special circumstances, accompanies burn patients from overseas. C2 and PMRC will coordinate the delivery of the burn team and their equipment to the originating facility and subsequent AE airlift of the patient back to the burn center. (T-2) In all cases, burn patients should be moved as soon as the USAISR and VFS concur it is appropriate.

8.9.2. Stresses of flight affecting burn patients.

8.9.2.1. Decreased partial pressure of oxygen: Exacerbates oxygenation deficiencies due to compromised respiration and/or the decreased partial pressure of oxygen in the presence of any inhalation injury.

8.9.2.2. Barometric pressure changes: Increases gastric distention and discomfort.

8.9.2.3. Humidity: Exacerbates fluid loss.

8.9.2.4. Vibration: May increase pain.

8.9.2.5. Thermal: Loss of natural insulation and skin integrity leaves the patient prone to hypothermia and pain. Severity of the burn affects the autonomic temperature regulatory functions and may increase oxygen demand.

8.9.2.6. Fatigue: Exacerbates the patient’s underlying condition.

8.9.3. Intra-theater triggers to activate burn flight team. Patients with significant burns, as defined by ABA criteria (<http://www.ameriburn.org>) as described in **Attachment 10**, will benefit from prompt consultation with a burn surgeon and transport to a burn center.

8.9.3.1. Treating physician will initiate PM process and contact USAISR Burn Center designated representative. (T-2) Governing PMRC will assist sending physician with appropriate recommendations for PM process. (T-2) Physician-to-physician communication is vital in developing optimal movement plan for each patient. The USAISR can be contacted at 210-222-2876 or DSN 312-429-2876.

8.9.3.2. Burn patients who meet ABA burn center referral criteria shall be validated for movement precedence in consultation with the TVFS, USAISR and referring privileged

provider. (T-2) If TRAC2ES is not available, direct contact with servicing PMRC is recommended to facilitate PM. (T-2) The USAISR Burn Center will provide name of accepting burn surgeon. (T-2) Delay or inability to contact the Burn Center directly should not delay processing of the PMR.

8.9.3.2.1. Criteria for Significant burns: Full thickness (3rd degree) burns of any size, partial thickness (2nd degree) involving >10% Total Body Surface Area (TBSA), or Burns >20% total body surface area. Only partial and full thickness burns are used to calculate % TBSA.

8.9.3.2.2. Burns involving >10% TBSA in children and adults over 50 years old.

8.9.3.2.3. Significant burns to the hands, face, feet, ankles, perineum, genitals, across major joints or circumferential burns.

8.9.3.2.4. Smoke inhalation injury.

8.9.3.2.5. Burn patients with associated polytrauma.

8.9.3.2.6. Burn patients requiring mechanical ventilation.

8.9.3.2.7. Burn injury in patients with preexisting medical disorders which could complicate management, prolong recovery, or affect mortality.

8.9.3.2.8. Burn patients with high voltage (>1000 V) electrical injury, including lightning. Fluid rate cannot be estimated using % TBSA because much of the high voltage injury is hidden. Consultation with a burn surgeon at the USAISR is recommended to guide initial resuscitation guidelines.

8.9.3.2.9. Chemical burns.

8.9.3.2.10. Burns that require critical care or resuscitation (e.g. needing ERCC team transport).

#### 8.9.4. Burns: Preflight/inflight considerations.

8.9.4.1. Airway: Anticipate possible airway/trachea edema. If clinically indicated, secure airway early with the largest ET tube possible prior to transport.

8.9.4.1.1. Signs and symptoms of inhalation injury. NOTE: Inhalation injuries are at high risk for rapid airway obstruction.

8.9.4.1.1.1. Nasal/mucosal charring, burns and/or soot on face, in mouth and nose, carbonaceous sputum, and hoarseness.

8.9.4.1.1.2. Carbon monoxide poisoning symptoms include pink to cherry-red skin, tachycardia, tachypnea, headache, dizziness, and nausea; central nervous system (CNS) symptoms vary with carboxyhemoglobin level. WARNING: Pulse oximetry reading is not accurate in carbon monoxide poisoning.

8.9.4.1.2. Evaluate individuals involved in blasts and/or confined in a burning environment for airway compromise. NOTE: Onset may be delayed and other injuries may not be apparent.

8.9.4.1.3. Secure tubes with ties or suture rather than tape. Tape does not secure well on burned skin and increases risk of ETT dislodgement. Important to reassess ETT placement every hr. for the first 24-48 hrs. as edema forms and resolves.

8.9.4.1.4. If non-vented, administer high flow O<sub>2</sub> via humidifier bottles in-flight to provide cool mist and maintain pulse oximetry greater than 92%.

8.9.4.1.5. Patients with known or suspected inhalation injury may require specialized mechanical ventilation.

8.9.4.2. Patients with burns 20% TBSA or more, excluding first-degree burns, should have an IV, NG/OG tube, and foley catheter in place during all phases of AE.

#### 8.9.5. Burns: Fluid loss and intravenous fluid resuscitation.

8.9.5.1. IV access via 2 large bore (18 gauge or larger), if needed. Obtain central venous access if the patient will undergo fluid resuscitation prior to transport. (T-0)

##### 8.9.5.2. First 24 Hours:

8.9.5.2.1. Intravenous fluid resuscitation will be performed for patients whose burn size is greater than or equal to 20% TBSA. (T-0) Lactated Ringers (LR) is the preferred fluid for resuscitation. The goal of initial fluid resuscitation is to restore and maintain adequate tissue perfusion and vital organ function, in addition to preserving heat-injured but viable tissue. Fluid needs are based on the size of the patient and the extent of the burn.

8.9.5.2.1.1. The 'Rule of 10s' offers a simplified method of estimating initial fluid rate for thermal injuries and provides values generally between those calculated by the Modified Brooke Formula and Parkland formula. The Rule of 10s is as follows: Initiate fluid resuscitation using the Rule of 10s (10 mL/hr. x % TBSA) for patients with burns involving 20% TBSA or greater. The Rule of 10s is applied for patients weighing between 40 and 80 kilograms (kg). For patients weighing more than 80 kg, add 100 mL/hr. to LR rate for each 10 kg >80 kg.

8.9.5.2.1.2. Clinical indicators for adequacy of fluid resuscitation are: Clear sensorium, heart rate < or equal to 120/minute (min), Mean Arterial Pressure (MAP) > or equal to 55 mmHg, strong peripheral pulses, serum and electrolytes within normal limits and the absence of metabolic acidosis.

8.9.5.3. Urinary output: Determines the adequacy of renal perfusion and fluid resuscitation.

8.9.5.3.1. The target for resuscitation is to maintain adequate UOP of 30-50ml/hr . Titrate fluid up or down approximately 20% every hour to achieve this goal. NOTE: The fluid rate is increased by 20% or decreased by 10% every hr., as required, in order to achieve an hourly urine output of 30-50 ml/hr. for an adult.

8.9.5.3.1.1. **NOTE :** over resuscitation may cause more harm due to compartment syndrome than periods of under-resuscitation, thus UOP < 30 ml/hr should be tolerated if crystalloid infusion rates are high (>1L/hr) and adjuncts to crystalloid infusion are unsuccessful (e.g. colloid infusion or vasopressors per physician).

8.9.5.3.2. With electrical burns, urine may be rusty red in color. Maintain output at 30-50 mL/hr. to prevent buildup of myoglobin in the kidneys. If pigmenturia occurs, then maintain an output of 75-100 mL/hr

8.9.5.3.3. In children less than 30 kg, hourly output is maintained at 1 to 2 ml/kg/hr.

#### 8.9.6. Burn dressings:

8.9.6.1. Ensure burns are dressed with clean, dry, non-constrictive, bulky dressings. Separate fingers, toes, as well as ears from touching the side of the head. Normally, dressings are not changed in-flight. Reinforce if necessary. Common dressings applied are:

8.9.6.1.1. Silverlon - Used on partial thickness to full thickness burns. This is a synthetic non-adherent dressing impregnated with Silver that is applied to an open wound to promote healing. This is moistened with sterile water prior to application and must remain moist to activate the silver properties. (T-0) Dressing should be moistened with sterile water every 6 hours and prn to keep moist. (T-0)

8.9.6.1.2. Sulfamylon 5% Solution - Used on partial thickness to full thickness burns. It prevents infection from gram negative and gram positive bacteria and helps remove pseudo eschar. May cause burning when applied. This dressing also requires wet downs with the Sulfamylon 5% Solution every 6 hrs.

8.9.6.1.3. Bacitracin - Limited antimicrobial properties but easy to apply. Used for superficial burns.

8.9.6.2. May see negative pressure wound dressings.

8.9.7. Cardiac monitoring: For patients with cardiac history, hypertension, electrical burns, and patients over 50 years of age.

8.9.8. Circulation checks: All extremities. Monitor peripheral pulses Q1hr for electrical, circumferential burns and those burns >20% TBSA. May require Doppler (difficult to hear on air craft) and may have escharotomy or fasciotomy. If the pulse is undetectable, call C2. (T-2)

8.9.9. Mental status: Key indicator of hypoxia and cardiovascular stability. Perform neurological assessments frequently.

8.9.10. Temperature control: Extremely prone to hypothermia. Monitor temperature and maintain a high temperature in the cabin, if possible. The MCD will speak with the PIC and or the Loadmaster/Boom Operator whenever patients are on board and the ambient temperature exceeds a comfortable level. (T-0) NOTE: May cover patient with first aid thermal blanket (i.e. space blanket), clean blankets or sleeping bags for temperature control.

8.9.11. Positioning and exercise.

8.9.11.1. Essential to promote circulation and provide comfort. Prevents contractures, pressure sores, thrombosis, and conversion of burns.

8.9.11.2. Maintain the position of function (e.g. hands, joints, and feet).

8.9.11.2.1. Elevate upper torso: Assists cerebral venous return, slows down edema formation, and assists respiratory functions by reducing diaphragm crowding.

8.9.11.2.2. Elevate extremities: Reduces edema, increases venous return, and reduces pain.

8.9.11.3. Consider pain medication prior to range of motion (ROM) exercise or changing positions.

8.9.11.4. Perform ROM exercises according to provider's orders.

#### 8.9.12. Narcotics/analgesics.

8.9.12.1. Used for both sedation and pain relief. Administered as ordered by the physician. Do not give supplemental acetaminophen (Tylenol) with oral narcotics containing acetaminophen as this may lead to toxicity risks.

8.9.12.2. Consider using continuous IV pain medication and sedation for an intubated patient during transport.

8.9.12.3. Dilaudid IV push will not be administered by flight nurses

8.9.13. The Burn Flight Team may internally feed critically ill patients during flight if previous tube feedings were established. Patient may have an NG/OG tube inserted prior to flight for medication administration and possible gastric decompression.

8.9.14. Eye drops/ointment/lacri-lube/antibiotics are frequently given to these patients.8.10. Hematological and Endocrine Management.

### 8.10. Not Used.

8.10.1. Blood dyscrasia. Affects one or more of the blood components, the bone marrow or the entire blood system. It can be acute or chronic, acquired or congenital. Seen in chemotherapy, post-transplant, post-trauma, renal and liver disease.

8.10.2. Stresses of flight affecting patients with hematological disorders.

8.10.2.1. Decreased partial pressure of oxygen: Exacerbates the body's decreased oxygen transport capability in the blood leading to hypoxia and cardiac decompensation.

8.10.2.2. Thermal: Hot and cold temperatures increase the body's oxygen requirements.

8.10.2.3. Decreased humidity: Dehydration causes headaches and decreases blood volume.

8.10.2.4. Fatigue: Complicates the underlying pathology.

8.10.3. Red blood cells (RBCs): The efficiency of RBCs depends on the quantity and quality of the hemoglobin it contains. Normal Hgb concentration is 14-16 grams (g)/deciliter (dL), and varies with the patient's gender and age.

8.10.3.1. Patients with Hgb below 8.0 mg may be transported if the condition is chronic and stable, and not related to bleeding. Patients with a hematocrit (HCT) below 25% are not airlifted without concurrence of the VFS. Low flow O<sub>2</sub> is used continuously on patients with extremely low Hgb or HCT levels, as in dialysis and chemotherapy patients. A cabin altitude restriction below 5,000 ft. may be ordered by the VFS. **Refer to table 8.2.**

8.10.3.2. Types of anemia.



8.10.3.2.1. Hemolytic: Destruction of erythrocytes caused by bacteria, parasites, venom, transfusions, chemicals, and genetics (thalassemia and sickle cell). Sickle cell crisis can occur at cabin altitudes as low as 4000 ft.

8.10.3.2.2. Aplastic: Failure of the bone marrow to produce erythrocytes due to chemicals, medications and disease.

8.10.4. White blood cells (WBCs or leukocytes): The main function of leukocytes is to isolate areas of inflammation or infection.

8.10.4.1. Normal adult blood contains 5,000 - 10,000 WBC's per cubic millimeter of whole blood.

8.10.4.2. **Leukocyte disorders** . Caused by abnormal WBCs (too few, too many or abnormal morphology).

8.10.4.2.1. Monitor preflight absolute neutrophil count (ANC) and en route temperature. ANC below 1,000 is considered neutropenic and at risk for infection; below 500 is a severe risk for infection and for flight. Monitor temperature every 4 hrs. Temperature above 100.4 F is considered significant; above 101.0 F requires communication with the VFS and AOC/AECT C2.

8.10.4.2.2. Use good hand washing, protective isolation with the patient wearing a N95 mask.

8.10.4.2.3. Dietary considerations:

8.10.4.2.3.1. Avoid all fresh/uncooked fruits, nuts and vegetables, including all fresh garnishes, raw or rare-cooked meat, fish, and eggs. All eggs should be thoroughly cooked. Avoid yogurt and yogurt products with live and active cultures.

8.10.4.2.3.2. All canned, bottled and powdered beverages and sports drinks are OK. Brewed coffee and tea are acceptable.

8.10.5. **Platelets** (thrombocytes).

8.10.5.1. Normal platelet count is greater than 150,000/cubic millimeter.

8.10.5.2. Thrombocytopenia: Observe for bruising, uncontrolled bleeding, petechiae, hematuria, hematomas, and GI bleeding.

8.10.5.2.1. Avoid aspirin and other platelet inhibiting medications.

8.10.5.2.2. Position for safety and enforce fall precautions.

8.10.6. Preflight/in-flight nursing care for blood dyscrasias.

8.10.6.1. Oxygen administration as needed. Refer to **AE Clinical Protocol – Emergency Oxygen**. **NOTE:** These parameters are based on Hgb because HCT may be decreased or elevated in dehydration or fluid overload.

8.10.6.2. Litter with backrest.

8.10.6.3. Offer blankets; patients with anemia tend to have a greater sensitivity to cold.

8.10.6.4. Offer fluids often to avoid headaches and decreased blood volume.

8.10.6.5. Administer blood products, as ordered. AF Form 1225, *Informed Consent for Blood Transfusion*, signed if feasible.

8.10.6.6. Use standard and transmission based precautions.

8.10.7. **Diabetes Mellitus (DM )**. A condition in which the pancreas no longer produces enough insulin, or cells stop responding to the insulin produced, thus preventing glucose in the blood from absorbing into the cells of the body. Symptoms include frequent urination, excessive thirst, hunger and lethargy.

8.10.7.1. Stresses of flight affecting patients with DM, hypoglycemia and hyperglycemia.

8.10.7.1.1. Decreased partial pressure of oxygen: Diabetic retinopathy and peripheral vascular symptoms may be exacerbated.

8.10.7.1.2. Decreased humidity: Leads to dehydration.

8.10.7.1.3. Thermal: May contribute to poor circulation, exacerbating sensitivity.

8.10.7.1.4. Fatigue: May precipitate/exacerbate condition.

8.10.7.2. Preflight/in-flight considerations for DM.

8.10.7.2.1. Assess patient's knowledge of condition, symptoms, treatment, and dietary restrictions.

8.10.7.2.2. Determine time of last meal.

8.10.7.2.3. Type, time and amount of hypoglycemic medication.

8.10.7.2.4. Assure medications and special diets are onboard and available.

8.10.7.2.5. Ensure meals and snacks are served on time.

8.10.7.2.6. There is no glucose monitor or chem strips in the AE allowance standard. ERCC team may be able to assist with a glucose assessment in an emergency situation using approved equipment. Although glucose monitors are not included in the AE allowance standard, use of a glucose monitor approved for in-flight use is authorized.

8.10.7.2.7. MTFs at RON destinations will provide patient education and approved AE glucose monitors. **(T-2)**. MTF will test approved glucose monitors prior to flight to ensure operation. **(T-2)**

8.10.7.2.8. Blood glucose should be checked prior to departure and/or at en route stops. If glucose monitoring may be required ensure an approved glucose monitor accompanies the patient in-flight. AECMs should be prepared to assist patients and/or attendants in performing blood glucose.

8.10.7.2.9. If a patient presents with objective and/or subjective signs of hyperglycemia or hypoglycemia, assist the patient with obtaining a blood glucose reading, contact the PMRC, and take additional action as required.

8.10.7.3. **Hyperglycemia**. Hyperglycemia is defined as an abnormally high blood glucose level. Early symptoms of hyperglycemia include: Polydipsia, polyuria, fatigue, blurred vision, headache and dry warm flushed skin.

8.10.7.3.1. Late symptoms of hyperglycemia are: sweet breath, hypotension, nausea and vomiting, abdominal pain, dry mouth, weakness, shortness of breath, confusion, Kussmaul respiration and coma.

8.10.7.3.2. Treatment/management. Insulin, fluids, electrolyte replacement as directed by a privileged provider.

8.10.7.4. **Hypoglycemia** . Hypoglycemia is defined as a sub-therapeutic plasma glucose concentration exposing an individual to harm. The American Diabetes Association and the Endocrine Society Workgroup on Hypoglycemia published a clinical classification system for hypoglycemia in patients with diabetes mellitus. This classification system includes documented symptomatic hypoglycemic events and severe hypoglycemic events. The low-normal cut-off value for a diabetic's self-monitored blood glucose (SMBG) level has been debated; with the low normal value ranging from <63 mg/dl to <70mg/dl. However, a known diabetic with a SMBG level of <70 should alert the clinician to look for further signs and symptoms associated with hypoglycemia.

8.10.7.4.1. The sending facility will provide known diabetic patients with a supply of simple and complex carbohydrates as these food items may not be available on the aircraft. **(T-3)**

8.10.7.4.2. Symptomatic mild hypoglycemia signs and symptoms.

8.10.7.4.2.1. Plasma glucose concentration of <70 mg/dl (if available).

8.10.7.4.2.2. Early signs and symptoms include diaphoresis, tremors, pallor, tachycardia, palpitations, nervousness. Previous patient history is also valuable.

8.10.7.4.2.3. Later signs and symptoms include light-headedness, headache, irritability, slurred speech and weakness.

8.10.7.4.3. Severe hypoglycemia signs and symptoms.

8.10.7.4.3.1. Classified as a severe event if it required the assistance of another person to initiate resuscitative actions for the diabetic patient.

8.10.7.4.3.2. Severe hypoglycemia can potentially be life-threatening and caused by an overdose of insulin, a reduction in diet or increased exercise without sufficient caloric intake.

8.10.7.4.3.3. Signs and symptoms include: aggressive or unusual behavior, normal or rapid respirations, tachycardia, paleness, diaphoresis, headache, dizziness, fainting, disorientation, confusion, seizure, loss of gag reflex, and loss of consciousness.

8.10.7.4.3.4. If any signs or symptoms are present, immediately rule out hypoxia. Concurrently obtain VS, pulse oximetry, ascertain last meal and check a glucose level if possible.

8.10.7.4.3.5. For all known or suspected hypoglycemic events notify the validating flight surgeon and AOC/AECT for guidance and possible diversion to a MTF capable of handling the situation.

8.10.7.4.4. Treatment/management. Refer to **AE Clinical Protocol – Hypoglycemia Management**.

8.10.7.4.5. Documentation will include subjective and objective data for giving the medication; VS, known allergies, date and time of administration and notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 or EHR equivalent “(Insert name of drug) was administered IAW **AE Clinical Protocol - Hypoglycemic Management**.” Complete DD Form 2852. **(T-1)**

8.10.7.4.6. Performance improvement (PI) Monitoring

8.10.7.4.6.1. Patient blood glucose level remains >70 mg/dl.

8.10.7.4.6.2. Patient does not manifest signs or symptoms of hypoglycemia.

8.10.7.4.6.3. Provide snack or glucose as appropriate.

8.10.7.4.6.4. Documentation of communication with VFS and C2.

8.10.7.4.6.5. Completion of the DD Form 2852. **(T-2)**

## **8.11. Decompression Sickness.**

8.11.1. Caused by the evolution of free gas bubbles from the tissues and fluids of the body as a result of marked decreases in barometric pressure. Nitrogen, a metabolically inert gas, is primarily involved. Nitrogen behaves predictably according to Henry’s Law (Section 7.2.3.). It evolves in a manner similar to the formation of bubbles in a bottle of carbonated beverages when the cap is removed.

8.11.2. Stresses of flight affecting patients with decompression sickness.

8.11.2.1. Decreased partial pressure of oxygen: Exacerbates existing hypoxia.

8.11.2.2. Barometric pressure changes: Nitrogen escapes and exacerbates symptoms.

8.11.2.3. Noise, decreased humidity, thermal changes, vibration, and fatigue: Exacerbates underlying pathology.

8.11.3. Symptoms of decompression sickness. There is no regular sequence, and it is possible to exhibit various symptoms simultaneously.

8.11.3.1. Skin: Itching, tingling, cold or warm sensations, and occasionally a mottled rash referred to as the “Creeps.”

8.11.3.2. Joints: Pain in or around the body joints referred to the “Bends.” More commonly, the larger joints of the elbows, shoulders, knees, and ankles are involved.

8.11.3.3. Respiratory: Deep and sharp sub-sternal pain, dry progressive cough, and a feeling of suffocation referred to as the “Chokes.”

8.11.3.4. CNS: Most dangerous includes muscular weakness, headache, visual impairment, speech difficulties, mental confusion, bowel and bladder dysfunction, paralysis, and coma referred as the “Staggers.”

8.11.4. Preflight/in-flight considerations for patients with decompression sickness.

8.11.4.1. Requires continuous 100% O<sub>2</sub> via a tight fitting mask, unless otherwise ordered.

8.11.4.2. Requires destination field altitude as the cabin altitude restriction (recommended) en route.

8.11.4.3. Establish a large bore IV (18 gauge or larger) to maintain hydration.

8.11.4.4. The use of narcotics may mask CNS symptoms.

8.11.4.5. Specifically for decompression sickness, immobilize joints and maintain complete bed rest, unless otherwise ordered. **WARNING:** Trendelenberg position increases cerebral edema and ischemia, and is contraindicated.

8.11.5. Suspect if individual has been scuba diving within the last 24 hrs. or involved in a loss of cabin pressurization. Any individual experiencing symptoms during flight needs prompt treatment. Suspect

8.11.5.1. Immobilize the painful area.

8.11.5.2. Request a lower cabin altitude and notify C2; the airlift agency will contact the governing PMRC. (T-2)

8.11.5.3. Possible diversion to a MTF capable of handling the situation, as required.

8.11.5.4. Must be evaluated by a FS, even if the symptoms disappear during descent. (T-2)

8.11.6. Patients en route to the hyperbaric (decompression) chamber may also include the following diagnoses: carbon monoxide poisoning, gas gangrene, or extensive wound infections.

## 8.12. Neurological Management.

8.12.1. Stresses of flight affecting neurological patients.

8.12.1.1. Decreased partial pressure of oxygen: Lower levels of O<sub>2</sub> causes brain cell and tissue ischemia. Brain cell ischemia produces cerebral edema which leads to increased ICP, then hypoventilation and further hypoxemia. **NOTE:** One hypoxic episode in the presence of traumatic brain injury may lead to a catastrophic secondary brain injury.

8.12.1.2. Barometric pressure changes: Penetrating head injuries, skull fractures and severe facial fractures may produce air in the cranium, causing increased ICP. The potential for ear block exists in those patients who have a decreased level of consciousness, inability to follow directions or a physical disability. Valsalva increases ICP. **NOTE:** A cabin altitude restriction minimizes the stresses of barometric pressure changes and decreased partial pressure of oxygen.

8.12.1.3. Vibration: May cause motion sickness and vomiting, thus increasing ICP.

8.12.1.4. Thermal Changes: A consideration for patients with hypothalamus involvement.

8.12.1.5. Decreased humidity: Will dry the corneas of patients with decreased corneal/blink reflex, and possibly increase dehydration and headaches.

8.12.1.6. G-Forces: Takeoff may increase ICP and bleeding for litter patients or decrease cerebral blood flow to ambulatory patients. Litter patients are secured and

padded on a backrest (if not contraindicated) with the head mid-line. **NOTE:** Physician determines head aft or forward litter positioning for flight.

#### 8.12.2. Traumatic brain injury.

8.12.2.1. TBI mechanism of injury: Acceleration/deceleration, penetrating/non-penetrating forces from an explosion/over-pressurized blast wave (the speed of sound), fall, direct impact, or motor vehicle/aircraft crash.

8.12.2.1.1. For more detailed information, refer to:  
<http://www.pdhealth.mil/tbi.asp#cg>.

8.12.2.1.2. Penetrating TBI is typically identified and cared for immediately.

#### 8.12.2.2. Types of TBI:

8.12.2.2.1. Closed head injury.

8.12.2.2.2. Skull fractures. **WARNING:** The BVM will not be used on patients with a skull fracture to correct ear block.

8.12.2.2.3. Hemorrhage (subdural and epidural hematomas).

8.12.2.3. Management and treatment of TBI. It is essential to complete a baseline preflight assessment; including pulse oximetry and neurologic checks.

#### 8.12.3. Neurological checks. See [Attachment 11](#).

8.12.3.1. Immediate TBI signs/symptoms: Alteration in mental status typically resulting in the temporarily related onset of: headache, nausea, vomiting, dizziness/balance, fatigue, insomnia/sleep disturbances, drowsiness, sensitivity to light/noise, blurred vision, difficulty remembering, and/or difficulty concentrating. **WARNING:** TBI may be missed, especially in the presence of other more obvious injuries such as heat or toxic injury, hypovolemic shock/dehydration, eye and spinal injury, and acute stress reactions.

8.12.3.2. GCS indicators - Moderate TBI = 9-13; Severe TBI = 3-8. See [paragraph 8.4.2.2.3](#).

8.12.3.3. The treatment goals are to prevent the secondary brain injury and progressive damage from hypoxemia, hypotension, cerebral hypoxia and edema, and to recognize and to treat the early signs of intracranial hypertension or increasing ICP by maintaining an adequate airway, monitoring pupils, LOC and the GCS for sudden or subtle changes. Refer to DoD Policy Guidance for Management of Mild TBI/Concussion in the Deployed Setting and Management of Patients with Severe Head Injury and [Table 8.5](#).

**Table 8.5. Management and Treatment Considerations/Recommendations for TBI and Increased ICP.**

Management of TBI
Administer Tylenol as ordered for headache
<b>NOTE:</b> Tramadol, narcotics, non-steroidal anti-inflammatory drug, aspirin, or other platelet inhibitors are contra-indicated.

Elevate head to increase cerebral venous return
<b>WARNING:</b> Concomitant thoracic or lumbar fractures should be transported flat.
Minimize cerebral venous blood volume
<b>WARNING:</b> Prevent ET tube struggle, Valsalva and overhydrating.
<b>WARNING:</b> Do not use NG tube on patients with skull or facial fractures.
<b>Management of Increased ICP</b>
If “MACE Red Flags” refer to <b>Table 8.7</b> or signs of increased ICP; refer to Section 8.12.4.1.
Deliver high flow O2 and rule out hypoxia and hypoglycemia
Maintain patent airway, adequate breathing and circulation, and a pulse oximeter reading > 92%.
If ordered, implement hyperventilation if patient’s pupil/pupils are dilated and nonreactive.
<b>WARNING:</b> Excessive hyperventilation/ hyper oxygenation to control increased ICP without ICP monitoring may have adverse results. Keep assisted breathing rate < 20/min. If situation occurs in-flight, consider lower cabin altitude if operationally feasible. Notify C2 for guidance and possible diversion to a definitive care MTF (if required). <b>(T-2)</b> .
If ordered, initiation of hypertonic saline (3%), normal saline not greater than 100ml/hr. (if not hypovolemic). May receive mannitol as ordered.
Document I&O
If patient is in a drug-induced coma, the patient will be a ERCC patient and on a ventilator. <b>(T-0)</b>

#### 8.12.4. Intracranial pressure.

##### 8.12.4.1. Signs and symptoms increased ICP.

8.12.4.1.1. LOC is the most important indicator of brain function.

8.12.4.1.2. Elevated BP with a widening pulse pressure (the difference between systolic and diastolic).

8.12.4.1.3. Change in pupil size.

8.12.4.1.4. Tachycardia initially, followed by bradycardia as ICP increases.

8.12.4.1.5. Tachypnea (early) and then slowing with lengthening period of apnea.

8.12.4.1.6. Headache: Increasing intensity and may be aggravated with movement.

8.12.4.1.7. Vomiting, with or without nausea, may become projectile.

8.12.4.2. When ICP increases, the body attempts to perfuse the compressed brain tissue at all cost. Hypotension in head injured patients can be catastrophic because cerebral blood vessels cannot auto-regulate and therefore cannot constrict to preserve cerebral blood flow during hypotension. When auto-regulation is lost, massive cerebral vasodilation occurs, and secondarily increases ICP. To monitor ICP the patient would need an arterial line and ICP monitor. See **Table 8.6.** for assessment parameters.

**Table 8.6. ICP and Cerebral Perfusion Pressure (CPP) Parameters.**

ICP (mmHg)	CPP (mmHg) = MAP-ICP
0-10 Normal	80-100 Average
> 15-18 Treat	60 Possible Brain Ischemia
> 40 Poor Prognosis	40 Irreversible Brain Ischemia
> 60 Probably Fatal	30 Neuronal Cell Death

#### 8.12.5. Cerebral perfusion pressure (CPP).

8.12.5.1. Pressure gradient that drives blood and nutrients into the brain. Normal range:  $CPP \geq 80\text{mmHg}$ . ( $CPP = \text{MAP} - \text{ICP}$ ).

8.12.5.2. Dependent upon: Automatic/auto-regulation dilation and constriction of the cerebral blood vessels to maintain constant blood flow despite fluctuations in the systemic blood pressure. Normal range: Systolic BP  $\geq 90\text{ mmHg}$ , ICP  $\leq 20\text{ mmHg}$ .

#### 8.12.6. Military Acute Concussion Evaluation (MACE).

8.12.6.1. Mandatory during the first 48 hrs. for all individuals involved in an explosion/blast, fall, blow to the head and/or motor vehicle/aircraft crash who were dazed, confused, “saw stars” or lost consciousness (even momentarily). See [Attachment 11](#).

8.12.6.2. Casualties displaying any of the signs/symptoms in [Table 8.7](#). MACE - Red Flags should be referred for additional medical evaluation as soon as operationally possible. If new symptoms occur before takeoff, the patient is not stable for flight, and needs to be cleared by a FS. Notify Theater PMRC, as soon as possible.

**Table 8.7. MACE - Red Flags.**

Double vision	Seizures
Breathing Difficulties	Slurred Speech
Headache that worsens	Unsteady on feet
Can't recognize people or places/Disorientation	Repeated vomiting
Can't be awakened easily	Weakness or numbness in arms/legs
Behaves unusually or seems confused/irritable	Progressively declining neurological exam

8.12.6.2.1. If symptoms manifest in-flight, start high flow O<sub>2</sub>; contact C2 for guidance.

8.12.6.2.2. MACE scores below 25 may represent clinically neurocognitive impairment requiring further evaluation for a more serious brain injury.

#### 8.12.7. Spinal cord injuries.



8.12.7.1. The goal is to maintain spine stability and prevent further deterioration of the patient's neurological condition during transport. The VFS will order the appropriate stabilization device.

8.12.7.2. May exhibit signs of shock. See Section 8.8. **NOTE:** Rule out TBI with all spinal cord injuries.

8.12.7.3. May be respiratory-compromised and require ventilator support: "C3, 4, and 5 keep the diaphragm alive;" and T2-8 innervates the intercostal muscles.

8.12.7.4. Disability and dependency is determined by level of injury.

8.12.7.5. See Section 6.7. for specific antihijacking precautions.

#### 8.12.8. Cerebral vascular accident (CVA).

8.12.8.1. The disruption of cerebral blood supply from ischemia, thrombosis, embolism, or hemorrhage.

8.12.8.2. CVA assessment:

8.12.8.2.1. Obtain VS, GCS, pulse oximetry, cardiac rhythm, and temperature.

8.12.8.2.2. Signs and symptoms: Altered level of consciousness; sudden, severe headache; numbness, facial droop, weakness or unilateral paraplegia; hemiparesis; slurred speech; dysphagia; aphasia; visual disturbance; and/or altered cognitive abilities. **NOTE:** First rule out TBI with diagnoses of CVA.

8.12.8.2.3. Check blood sugar if on the ground or if ERCC team is on board, and treat if indicated.

8.12.8.3. CVA treatment and management: IAW current AHA ACLS guidelines; [Table 8.8](#).

**Table 8.8. Special Considerations for CNS-injured/Neurologic Disease/Comatose/Vented Patient.**

Protect airway	If gag reflex diminished
Talk to patient	Hearing is last sense to go; orient to surroundings; explain procedures prior to performing; and touch patient while talking with them. May need to repeat information several times.
Prevent corneal abrasions	Artificial tears; steri-strip lids closed if corneal reflex absent.
Reposition patient if able	Every 2 hrs. reposition and massage area to prevent skin breakdown.
Passive ROM	Every 4 hrs. (if not contraindicated)
Oral hygiene	Every 2 hrs.
Assist with ADLs	Meals and toileting; MA may be required en route
Possible modalities	Tube feedings; Foley catheter; and/or external urinary catheter

Monitor	VS (with temperature); pulse oximetry; GCS; pupils, I&O
---------	--

8.12.9. Seizures/Status epilepticus. This is a serious neurologic emergency. Status epilepticus has high morbidity and mortality (permanent brain damage/severe neurologic deficits). It is characterized by acute, prolonged, repetitive seizure activity or series of generalized seizures without return to consciousness between attacks. Factors precipitating status epilepticus in patients with pre-existing seizure disorder include medication withdrawal, fever, metabolic or environmental stresses, alcohol or drug withdrawal, and sleep deprivation. The stresses of flight should also be considered a potential precipitating factor.

8.12.9.1. Signs and symptoms.

8.12.9.1.1. Staring and subtle body movement.

8.12.9.1.2. Brief loss of awareness.

8.12.9.1.3. Stiffening of muscles especially the back, arms and legs.

8.12.9.1.4. Rhythmic, jerking muscle movements, usually affecting the neck, face and arms or sudden brief jerks or twitches of the arms and legs.

8.12.9.1.5. Loss of muscle control, which may cause a sudden collapse or fall to the ground

8.12.9.1.6. Loss of consciousness, body stiffening and shaking, and sometimes loss of bladder control or biting the tongue.

8.12.9.1.7. Classic signs.

8.12.9.1.7.1. The seizure lasts more than five minutes.

8.12.9.1.7.2. Breathing or consciousness does not return after the seizure stops.

8.12.9.1.7.3. A second seizure follows immediately.

8.12.9.1.7.4. Refer to **AE Clinical Protocol – Status Epilepticus** for management and treatment.

8.12.9.1.7.5. Notify the validating flight surgeon and AOC/AECT for guidance and possible diversion to a MTF capable of handling the medical emergency.

8.12.9.1.7.6. Documentation in the AF Form series 3899 or EHR equivalent of the use of the AE Clinical Protocol will include the subjective and objective assessments leading up to, during, and post seizure activity and will include:

8.12.9.1.7.6.1. A description of the seizure activity (body movement and presentation of tonic/clonic states). **(T-1)**

8.12.9.1.7.6.2. Presence of a preceding aura. **(T-1)**

8.12.9.1.7.6.3. Order of symptoms. **(T-1)**

8.12.9.1.7.6.4. Position of the eyes (open or closed), pupil size changes (did they change together or individually). **(T-1)**

8.12.9.1.7.6.5. Incontinence of urine or feces. **(T-1)**

- 8.12.9.1.7.6.6. If there was a loss of consciousness and how long it lasted. **(T-1)**
- 8.12.9.1.7.6.7. Observation of chewing of the mouth, biting the tongue and/or rolling of the eyes. **(T-1)**
- 8.12.9.1.7.6.8. Skin appearance, clammy/flushed/ashen. **(T-1)**
- 8.12.9.1.7.6.9. Compliance with medication regime (if known). **(T-1)**
- 8.12.9.1.7.6.10. Complete set of vitals, date and time of medication administration, and VFS notification. **(T-1)**
- 8.12.9.1.7.6.11. Documentation of any medication administered IAW the AE Clinical Protocol. **(T-1)**
- 8.12.9.1.7.7. Performance improvement Monitoring. **(T-1)**
- 8.12.9.1.7.7.1. Successful control of seizure activity IAW this AE Clinical Protocol. **(T-1)**
- 8.12.9.1.7.7.2. Appropriate patient preparation to prevent seizure activity. **(T-1)**
- 8.12.9.1.7.7.3. Document in the patient's record. **(T-1)**
- 8.12.9.1.7.7.4. The subjective and objective assessments leading up to, during, and post seizure activity: a description of the seizure activity (body movement and presentation of tonic/clonic states); position of the eyes and pupil size changes; incontinence; lost consciousness and duration; and compliance with medication regime (if known); VS; date and time of medication administration and VFS notification.
- 8.12.9.1.7.7.5. The following statement will be documented on AF Form 3899 or EHR equivalent: “(Insert name of drug) was administered IAW AE Clinical Protocol - Status Epilepticus.” **(T-1)**
- 8.12.9.1.7.7.6. Completion of the DD Form 2852. **(T-1)**

**Table 8.9. Seizure Precaution and Treatment.**

<b>Prior to Seizures</b>	
Maintain airway	Maintain adequate breathing and circulation (pulse oximetry >92%)
Maintain	Ordered medication regimen and patent IV
Position near	Oxygen and suction
Position away from	Windows near propellers/rhythmic flashes of light
<b>During Seizures</b>	
Protect from injury	Assist to floor; recline the seat; do not restrain; position to side to prevent aspiration.
Prepare to	Suction; apply high flow O <sub>2</sub> ; and/or assist respirations. DO NOT attempt placing a bite

	block
Observations to record	<ul style="list-style-type: none"> <li>- Assess for aura; rigidity superseded by jerks/convulsions? When/where did this occur and in what order?</li> <li>- Did the body change position during the seizure?</li> <li>- Did you observe any chewing of the mouth, biting tongue and/or rolling of the eyes?</li> <li>- If the eyes were open, what did the pupils look like? Did they change in size? Together or individually?</li> <li>- What was the respiratory pattern?</li> <li>- What was the skin appearance? Flushed/ashen/clammy?</li> <li>- If unconscious, how much time elapsed before the patient regained consciousness?</li> <li>- Was the patient incontinent of urine or feces?</li> <li>- Did the patient sleep afterwards? If so, how long?</li> </ul>
<b>Treatment After Seizure (Postictal)</b>	
Maintain airway/breathing	Rule out hypoxia
Litter	As needed
Obtain VS, neurological assessment	Pulse oximetry and detailed neurological assessment
Postictal Improving	<ul style="list-style-type: none"> <li>- Maintain seizure precautions and O2</li> <li>- Decrease stimuli as much as possible</li> <li>- Minimize the situation if patient has chronic seizure history</li> <li>- Provide support, reassurance, and comfort</li> </ul>

### 8.13. Musculo-Skeletal System/Wound Disorders/Injuries.

8.13.1. Stresses of flight affecting patients with musculo-skeletal and wound disorders/injuries.

8.13.1.1. Decreased partial pressure of oxygen: Exacerbates the effects of hemorrhage, shock and low H&H.

8.13.1.2. Barometric pressure changes: May contribute to compartment syndrome if patient is in a circumferential cast or resultant condition causes extremity hypo-perfusion.

8.13.1.3. Vibration: Severe jarring may affect alignment and/or positioning of unstabilized fractures. Vibration alone can increase pain at fracture sites.

8.13.1.4. Humidity: May lead to dehydration predisposing individuals to VTEs and may also cause skin dryness over time, leading to itching under cast.

8.13.1.5. Thermal: Changes of temperature may compromise circulation and increase pain; patient can sweat under cast/dressings on the flight line and then become cold at altitude.

### 8.13.2. Preflight/in-flight considerations.

8.13.2.1. Neurovascular assessment: Compare to unaffected extremity. Important to obtain a baseline assessment prior to flight to recognize changes during flight.

8.13.2.1.1. Sensation: Compare to peripheral nerve block side to unaffected side. Assess level of epidural effectiveness, utilizing the dermatome map in [Figure 8.1](#).

8.13.2.2. Peripheral pulse qualities (proximal/distal to injury). Presence does not rule out injury; re-assess frequently and compare to unaffected extremity.

8.13.2.3. Capillary refill less than 2 seconds is normal. Can be hard to assess in dark/shadows, affected by extremity temperature, staining of extremity with blood/prep solutions.

8.13.2.4. Presence of edema. Remove constricting items above and below the injury (rings and watches, tight clothing, tight dressings/splints; casts should be bivalved).

8.13.2.5. Color and temperature. Affected by ambient temperature, therapeutic cooling, PNB/epidural catheter.

8.13.2.6. Motor function. Affected by PNB/epidural catheter.

8.13.2.7. Reassess after position change and immobilization.

8.13.2.8. Instruct the patient to report any pain and motor sensory changes (tingling, numbness, weakness, increasing pain).

8.13.2.9. External fixators: pin care as necessary will be completed during preflight. Fixators may be handled/manipulated by medical care personnel (nursing care/transportation/wound care) and used to transmit traction to affected limb in select situations (skeletal traction). Fixators may also be suspended from fixed devices in select situations (preparation for surgery or edema control).

### 8.13.3. Considerations for orthopedic and soft tissue injuries.

8.13.3.1. Ensure skin integrity remains intact.

8.13.3.2. Maintain injured extremity/fracture immobility to control bleeding, maintain circulation, and to prevent fat embolism.

8.13.3.3. Maintain traction if applicable. **WARNING:** Do not use free hanging weights in-flight. **WARNING:** Sitting in cramped conditions for a long period of time, and/or injury and infection may lead to a VTE or a blood clot deep in the tissues of the calves or groin. Consider thrombosis prophylaxis in select cases (should be part of preflight assessment).

8.13.3.3.1. Ensure stability when using the following equipment:

8.13.3.3.2. Stryker frame.

8.13.3.3.3. HALO/external fixation/skeletal traction.

8.13.3.3.4. C-Collar, backboard, vacuum spine board or other non-shifting medium.

8.13.3.3.5. Hare, Sager, Kendrick traction devices and Thomas splints.

8.13.4. **Compartment syndrome** : The compromise of muscle viability due to swelling of, or bleeding into tissues encased within the fascial sheath of an extremity. Resultant pressure change in the extremity blocks venous outflow and subsequent “backup” of blood flow, ultimately preventing arterial inflow. Associated with open/closed fractures, external fixation/skeletal devices, compression/crushing injuries or constrictive bandages/casts, vascular injuries, burns. Can occur in upper and lower extremity injuries. **WARNING:** This is a limb-threatening emergency.

8.13.4.1. Assess for signs and symptoms: Classic signs of edema, pulselessness, pallor, paresthesia or sensory deficit with late signs of paralysis and cyanosis. Severe unremitting pain, pain on passive stretch of muscle or pain that is out of proportion to what is expected by the provider and compartment firmness are earliest signs. Compartment pressure measurement with invasive needle device is not required for diagnosis, but can be used by physicians in obtunded/sedated patients.

8.13.4.2. **Treatment and Management.**

8.13.4.2.1. Remove constrictive dressings. Ensure cast is bi-valved prior to leaving the MTF if cast is less than 48 hours old. **Refer to 8.5.2.**

8.13.4.2.2. Maintain extremity at heart level. Neither elevation nor dependency of the extremity has been shown to benefit.

8.13.4.2.3. Administer pain medication after assessment. **WARNING:** Frequently assess adequacy of pain control measures. Pain medicine is often inadequate to control the symptoms of CS, and even when successful, could potentially hide the emergent nature of the problem. This is a surgical emergency. The measures listed here are of potential benefit in an impending compartment syndrome, but once established these patients need fasciotomy. Call C2; the airlift agency will contact the governing PMRC to consider diversion to a location where surgical care is available. **(T-2)**

8.13.5. **Amputation** : Control bleeding and pain. Assess dressings. Amputation stumps are prone to swelling, causing initially adequate dressings to become compressive. If the limb has been fitted with a prosthesis, the socket or sleeve may become too tight or loose and require removal.

8.13.6. **Pelvic fractures** : Complete bed rest. May have external fixation devices. Assess VS and assess distal pulses regularly. Extensive blood loss and internal vascular injuries are associated with pelvic fractures. PE/VTE prophylaxis is essential. Section 8.6.

8.13.7. Application of splints/ace wraps/kerlix:

8.13.7.1. Proper splint placement: Splint the joint above and the joint below the injury (Do not splint the shoulder when splinting an elbow and do not splint the hip when splinting the knee).

8.13.7.2. Proper alignment: In the position of function/comfort as long as distal perfusion and neurological exam unchanged.

8.13.7.3. Security of splint/ace. Re-wrap if too tight or too loose.

8.13.7.4. Air splints: **WARNING:** Air expands at altitude. Requires close observation and adjustments during ascent, at altitude and descent, and should not be used in-flight if alternate splinting devices are available.

8.13.7.5. Positioning and alignment.

8.13.7.5.1. Reposition every 2 hrs. with pillows.

8.13.7.5.2. Pad and elevate extremities. **WARNING:** Do not tie extremities to any portion of the aircraft in order to maintain elevation.

8.13.7.6. ROM exercises.

8.13.7.7. Avoid resting extremities on the bulkhead or the interior of the aircraft due to effects of vibration.

8.13.7.8. Litter patients should be positioned away from the bulkhead.

8.13.7.9. Spica casts require two litter spaces (these are now rare, usually confined to pediatric patients, special attention to toileting needs is required).

8.13.7.10. Mobility impaired ambulatory patients should not be near emergency exits.

#### **8.14. Wound management.**

8.14.1. Provider's orders for all wound management include frequency of dressing changes and type of wound care, including surgical debridement, while in the patient movement system.

8.14.2. All combat wounds are considered contaminated and will not be closed initially.

8.14.3. Note type and amount of drainage on dressings. On the aircraft, dressings will not be changed; reinforce only.

8.14.4. Any wound associated with a fracture must be managed as if it was an open fracture and treatment should be started within 8 hrs. **(T-0)** This includes debridement, when appropriate, and IV antibiotics prior to and during flight.

8.14.5. Observe for increased temperature, redness at wound site, swelling, and presence of drains (note amount, color and location).

8.14.6. Control bleeding with direct pressure, elevation, and pressure points. If that is not effective, a tourniquet or Quick Clot may be used if available. **NOTE:** The Aircraft First Aid Kit contains an Israeli Tourniquet and Quick Clot. Monitor BP closely in actively bleeding patients. Immediately contact C2. **(T-2)**

8.14.7. Pain medication, as ordered, after assessment. Frequently assess adequacy of pain control measures. Avoid over-sedation and nausea, especially in supine patients.

8.14.8. Wound drainage tubes (Jackson-Pratt [JP], T-tube, Hemovac etc.).

8.14.8.1. Assess insertion site and assure suction is maintained at altitude, if indicated.

8.14.8.2. Document I&O.

8.14.8.3. Use standard precautions for disposal of blood and body fluids.

8.14.9. **Negative-pressure wound therapy (NPWT)** .

8.14.9.1. NPWT systems are generally indicated for the management of wounds, burns, ulcers, flaps and grafts. NPWT applies negative pressure to the wound in order to remove fluids, including wound exudates, irrigation fluids, and infectious materials. Benefits of NPWT include augmented wound granulation, wound contraction, improved control of wound exudates, decreased wound edema, reduced skin maceration, and improved pain management.

8.14.9.2. NPWT are contraindicated in the presence of exposed anastomotic sites, exposed vasculature, exposed nerves, exposed organs, necrotic tissue with eschar present, untreated osteomyelitis, non-enteric and unexplored fistulas, and malignancy in the wound. Also, carefully consider the use of this therapy in patients with certain risk factors, including those with a high risk for bleeding and hemorrhage, and those receiving anticoagulants or platelet aggregation inhibitors.

8.14.9.3. Do not continue with the flight if problems occur on the ground preflight.

8.14.9.4. Assess patient comfort and system functioning every 2 hrs. in-flight.

8.14.9.4.1. Be vigilant for potentially rare life-threatening bleeding complications, and be prepared to take prompt action if that occurs.

8.14.9.4.2. NPWT should not be interrupted for greater than 2 hrs. within a 24 hr. period due to the potential for infection.

8.14.9.4.3. Assess proper function by examining for alarms on the pump unit and inspecting the dressing. The dressing for a properly functioning system should have a “raisin-skin” appearance.

8.14.9.4.4. **WARNING** . The NPWT may cease effective pressure if the occlusive dressing is not sealed. Occlusive reinforcement may need to be applied.

8.14.9.4.5. For non-correctable NPWT system failures in-flight, the overlying occlusive film should be opened by making 2-3 slits into the film to allow for wound drainage. DO NOT remove the occlusive film or the sponge inside the wound for risk of bleeding or wound contamination. A dry dressing should then be applied over the site and reinforced as needed. Report wound vacuum system failure and actions taken to receiving facility during hand-off for follow-on care. Complete a DD Form 2852 and notify C2 at end of mission. **(T-2) WARNING:** Do not interchange different types of NPWT devices and dressings. Other suction units may not provide adequate and consistent suction thereby increasing risk of infection.

8.14.9.4.6. Extra NPWT canisters should be available in the event that the current ones become full or cracked. **NOTE:** This guidance is for use in-flight should full system failure occur. If NPWT system failure occurs while on the ground, at originating station, or during en route stops contact the appropriate TPMRC.

8.14.9.5. Document amount of drainage from the NPWT canisters.

## 8.15. Medical Devices.

8.15.1. Special considerations must be made to ensure extremities and devices are not impeding egress of the aisles and exits. **(T-3)**



8.15.2. Casts. Ideally, casts on recent fractures should be at least 48 hrs. old to allow for possible soft tissue expansion inside the cast. Casts should be bivalved if tissue edema and vascular compromise is possible, or if cast restricts emergency egress. Cast cutters will not be available in-flight. If casts are not to be bi-valved, such as on casted old injuries or because it jeopardizes alignment of the fracture, specific orders “*Do not BiValve for flight*” must be written on proper documentation. **(T-2)**

8.15.2.1. If the cast is over a surgical wound site, “window” the cast to allow for tissue expansion. Always keep the window replaced in the cast after assessment to prevent focal edema through the window.

8.15.2.2. Assess cast for: Proper drying, cracks, rough edges, drainage and bleeding (outline, date and time site), foul odor, and pressure points.

8.15.2.3. Perform circulation and neurovascular checks prior to flight. If abnormal, contact the MTF to bivalve the cast or loosen the bivalved cast. Cast padding can be cut on both sides with scissors to further reduce compression if necessary without compromising immobilization.

8.15.2.4. Patients with crutches or full leg casts, or whose condition prevents them from using seats, will be classified and transported as litter patients. **(T-2)** The MCD is final authority on whether patients should be enplaned via litter. **NOTE:** Crutches and canes must accompany patients who require such items. **(T-2)**

8.15.3. The Stryker® Wedge Turning Frame 965 Military Option. See AFI 10-2909.

8.15.4. Vacuum spine board (VSB).

8.15.4.1. Purpose is to provide full body immobilization for suspected spine, pelvic, hip fractures and patients with multiple fractures.

8.15.4.1.1. TVFS must provide appropriate documentation requesting use of VSB and have ERCC team assigned to patient. **(T-2)**

8.15.4.1.2. Originating facilities are responsible for assisting ERCC team with putting the patient on the VSB.

8.15.4.1.3. Always use a cervical collar (C-collar), in conjunction with the VSB, if C-Spine injury is suspected. **NOTE:** Equipment waiver is required from Standards & Evaluations (AMC/A3VM) for VSB.

8.15.4.1.4. Patients requiring spinal traction, or lying prone position, should be transported on a Stryker not with a VSB.

8.15.4.1.5. TVFS should consider if patient needs VSB or can be transported in C-Collar on NATO litter with AE mattress.

8.15.4.1.6. Preventative measures should be taken to protect the occiput, back, coccyx and heels.

8.15.4.1.7. If total transport time is anticipated to be greater than 10 hrs., open the VSB valves every 2 hrs., release straps, logroll patient (ensuring appropriate alignment is maintained), to ensure adequate time for relief of pressure points. **NOTE:** If contraindicated, a credentialed provider must write an order not to deflate

- the VSB and logroll the patient. **(T-2)** Documentation should include why deflation of the VSB and logroll not completed.
- 8.15.4.1.8. Conduct thorough skin assessment prior to placing on VSB and ensure documented on AF Form 3899L or EHR equivalent.
- 8.15.4.2. In-flight nursing considerations for the VSB.
- 8.15.4.2.1. The black litter mattress should be placed on the NATO litter and the VSB on top of mattress. Ensure hand pump accompanies the patient.
- 8.15.4.2.2. Patient will not be transported without use of a NATO litter/Over-Sized Litter and AE mattress. **(T-2)**
- 8.15.4.2.3. Apply straps IAW manufacturer's guidelines.
- 8.15.4.2.4. Do not retighten chest or abdominal straps after suction applied, as over tightening may restrict chest wall movement and affect breathing.
- 8.15.4.2.5. Patient will be turned every 2 hrs. unless otherwise ordered and documented. **(T-0)** Turn schedule should be documented on AF Form 3899L or EHR equivalent. **(T-1)** AECMs will be responsible for assisting with turning/repositioning patient with ERCC team members. **(T-3)** MCD will coordinate turn schedule and any special requirements with ERCC team physician. **(T-3)**
- 8.15.4.2.6. Monitor occiput, back, coccyx and heels for signs of skin breakdown.
- 8.15.4.2.7. Monitor patient temperature regularly as part of VS assessment. **NOTE:** VSB may retain heat and cause elevated temperature.
- 8.15.4.2.8. Optimally maintain respiratory and hemodynamic parameters.
- 8.15.4.2.9. Ensure gastric decompression (as required).
- 8.15.4.2.9.1. Ensure suction is easily accessible in all phases of transport.
- 8.15.4.2.9.2. If patient begins vomiting, you may logroll patient if needed, using a minimum of 2 staff members.
- 8.15.4.2.10. Assess for pain, tenderness, sensation (dermatome level) with VS and document on AF Form 3899L or EHR equivalent.
- 8.15.4.3. VSB deplaning considerations.
- 8.15.4.3.1. Brief patient on deplaning procedures; ensure VSB straps and all litter straps are secure.
- 8.15.4.3.2. Ensure IV tubing, urinary catheter tubing and collection bag are secure.
- 8.15.4.3.3. Patient will be in supine position for landing/transport. **(T-2)**
- 8.15.4.3.4. Deplane patient, using (minimum) four person carry ensuring all personnel are briefed in proper lifting and carrying techniques.
- 8.15.4.3.5. Ensure documentation of post-flight skin condition documented on AF Form 3899L or EHR equivalent.
- 8.15.4.4. VSB cleaning.

8.15.4.4.1. Ensure VSB valve is closed. Use normal detergents/cleaners to disinfect. May hose off/wipe down with cold water if soiled.

8.15.4.4.2. All straps are removable for cleaning in washing machine. Follow manufacturer instructions.

## **8.16. Eyes, Ears, Nose, and Maxillofacial Management.**

### **8.16.1. Eyes .**

#### **8.16.1.1. Stresses of flight.**

8.16.1.1.1. Decreased Partial Pressure of Oxygen: May cause increased intraocular pressure and vasodilatation due to hypoxia and may aggravate retinal hemorrhage, detached retina and glaucoma.

8.16.1.1.2. Barometric pressure changes: Causes increased pressure with pain and reduced blood flow to the eye. Post-op eye surgery patients may have trapped air in the globe; certain gases used in surgery may persist three to nine weeks. A closed penetrating eye injury may also have trapped air in the globe; air normally is reabsorbed in three days. Expanding air at altitude may lead to increased pressure, pain and/or extrusion of eye contents.

8.16.1.1.3. Decreased humidity: Excessive drying of the eyes leads to corneal irritation and abrasions of the sclera, especially in comatose patients or patients whose eyes do not completely close.

8.16.1.1.4. Vibration/thermal/turbulence: Leads to motion sickness, vomiting, and increased intraocular pressure and pain.

#### **8.16.1.2. Preflight/in-flight considerations.**

##### **8.16.1.2.1. Chemical Injuries.**

8.16.1.2.1.1. Immediately begin copious irrigation with normal saline or balanced salt solution

8.16.1.2.1.2. Assess extent of visual impairment/in-flight risks.

8.16.1.2.1.3. Shield and transport

##### **8.16.1.2.2. Traumatic Injuries**

8.16.1.2.2.1. Avoid any maneuver that places pressure on the globe. Do not place any dressing under the shield or that touches the eye. Do not place a head wrap over an unshielded eye.

8.16.1.2.2.2. Shield with a rigid eye shield or an alternative such as a cup, the casualty's eye armor or other expedient device that does not place pressure on the globe.

8.16.1.2.2.3. Do not attempt to open the eye. Do not remove foreign bodies. Do not use topical anesthetics. Shield and transport

8.16.1.2.3. Suspect air in the globe with recent surgery and penetrating eye injuries (may also have associated facial trauma/burns and head and C-Spine injuries).

8.16.1.2.4. Post-op eye surgery patients will be cleared by an Ophthalmologist prior to flight. **(T-2) NOTE:** Any O2 requirements needed during flight will be ordered by the Ophthalmologist, or the VFS, if the Ophthalmologist is not available. **(T-2)**

8.16.1.2.5. Successful outcomes for penetrating eye injuries with documented air in the globe are highly dependent on rapid transportation to specialized care. Maintain the cabin altitude restriction which may be ordered by the VFS. **NOTE:** Flying at lower altitudes may decrease speed and increase fuel consumption; however, rapid transportation to definitive care takes precedence.

8.16.1.2.6. Hyphema or blood in the anterior chamber may re-bleed 2-7 days post-injury. Re-bleeding may cause pain and substantial visual disability or blindness.

8.16.1.2.7. Medication: Will be ordered on the appropriate patient treatment form and provided by the originating MTF. **(T-2)** Prescribed eye drops may affect vision.

8.16.1.2.8. Patients with suspected bacterial or viral eye infections will not have eye patches. **(T-0)**

8.16.1.2.9. Patients with a severe detached retina or penetrating injury must have a physician's order for complete bed-rest on a litter with the head immobilized, bilateral eye patches, and O2 in-flight. **(T-0) NOTE:** Signs and symptoms of detached retina: Light flashes, floating black spots, curtain-like narrowing of peripheral vision.

8.16.1.2.10. If vision worsens or pain and drowsiness develops en route:

8.16.1.2.10.1. Assess oxygenation. Administer high flow O2 and call C2 for further instructions. **(T-2)**

8.16.1.2.10.2. Call C2; the airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling the situation, as required. **(T-2)**

8.16.1.2.11. May have diminished corneal/blink reflex: Use artificial tears as often as needed.

8.16.1.2.12. Consider a preflight anti-emetic for motion sickness.

8.16.1.2.13. May ambulate during enplaning/deplaning with assistance, if not contraindicated.

8.16.1.2.14. Position in seats away from emergency exits, near an able-bodied individual, inboard, with the good eye toward the aisle. Positioning is the same for the blind patient.

8.16.1.2.15. Consider administering preflight nasal decongestant to prevent ear block. **WARNING:** Valsalva is not performed by patients with acute eye injuries, post-op eye surgery, glaucoma, detached retina, hyphema. These patients should be evaluated by a FS prior to flight and have decongestants available.

8.16.1.2.16. Information for patients with vision impairment.

8.16.1.2.16.1. Noise may be excessive and unfamiliar.

8.16.1.2.16.2. Instruct on clearing of ears on descent.

8.16.1.2.16.3. Provide assistance and preplan for emergencies by assigning an able-bodied individual or AECM.

8.16.1.2.16.4. Provide information on scheduled meal plan, lavatory location, destination and, ETA information as necessary, as well as and how to notify an AECM if needed.

8.16.1.2.16.5. Assist with meals, restroom, ambulating as necessary.

8.16.1.2.16.6. Seeing eye dogs. Patient may have a service animal. See Section 10.16.

## 8.16.2. Ears.

### 8.16.2.1. Stresses of flight.

8.16.2.1.1. Barometric pressure changes: Gas expansion or contraction affects the middle ear when pressure in the air-filled cavities does not equalize with the cabin pressure. Equalization depends on the patency of the eustachian tube. During ascent, pressure is normally passively vented. During descent, the eustachian tube needs active “opening” as the pressure becomes negative.

8.16.2.1.2. Noise: Exposure for even a short period of time can lead to tinnitus, mild to severe pain, fatigue, and temporary to permanent hearing loss. Position away from high noise areas of aircraft and provide ear protection.

### 8.16.2.2. Preflight/in-flight considerations.

8.16.2.2.1. Ear block. Potential patients at risk are: Upper respiratory infections (URI), sinus infections, allergies, otitis media, on high-flow O<sub>2</sub>, facial injury, nasal packing, infants, post-ears-nose-throat (ENT) surgery, difficulty swallowing, language barriers, unconscious/comatose patients.

8.16.2.2.1.1. Prevention techniques. The following may help prevent ear blocks on descent: Swallowing, yawning, moving jaw from side to side, chewing gum, Toynbee maneuver (swallowing water with the nostrils closed), valsalva (turning head away from the blocked ear while stretching the opposite ear to the shoulder which stretches the Eustachian tube of the blocked ear). While in this position, have the patient valsalva. **WARNING:** With certain diagnoses (e.g. glaucoma, recent eye surgery or injury, nasal/facial fractures, post-operative nasal surgery, history of aneurysm, acute head injuries, severe hypertension, cardiac disease and arrhythmias, and neurological disease with ICP) valsalva is contra-indicated.

8.16.2.2.2. Assess for signs/symptoms. Fullness, pain (mild to severe), pressure in ear(s), decreased hearing (mild to acute), vertigo, tinnitus, and severe pain.

### 8.16.2.2.3. Treatment/management.

8.16.2.2.3.1. Pre-medicate with oral or nasal decongestants unless contraindicated per VFS orders.

8.16.2.2.3.2. FN may delay transport if patient is unable to “clear” ears or if a cabin altitude restriction is required but operationally unrealistic. Call C2; the

airlift agency will contact the governing PMRC. (T-2)

8.16.2.2.3.3. Ensure parents of infants/children have full bottle or cup with straw to aid in clearing of ears.

8.16.2.2.3.4. If unable to clear ears during descent, have the PIC re-ascend and slow the rate of cabin descent, if operationally possible.

8.16.2.2.3.5. The FN may administer medications per **AE Clinical Protocol – Over-the-Counter Medication Administration**.

8.16.2.2.4. To use BVM to clear the ears: The patient must be alert and oriented. (T-0) Two AECMs may be required. Patient should be in the sitting position with the affected ear pointed towards the ceiling. One AECM will stand behind the patient and hold the BVM mask up against the face. (T-0) The other AECM will stand in front of the patient and will do a verbal count (one, two, three) and squeeze the bag at the same time as the patient swallows. (T-0)

8.16.2.2.4.1. Document and reassess patient after landing. Requires ongoing evaluation if there are other en route stops.

8.16.2.2.4.2. Assess if the patient is able to clear ears and is pain free to continue flight and if an evaluation by a FS is required.

8.16.2.2.4.3. Direct patient and MTF representative to seek medical evaluation at destination MTF.

### 8.16.3. Nose.

#### 8.16.3.1. Stresses of flight.

8.16.3.1.1. Barometric Pressure Changes: Any obstruction of the nasal passage can result in an ear/sinus block (e.g. facial fractures, nasal packing, nasopharyngeal tube and/or nasogastric tube).

8.16.3.1.2. Decreased humidity: Can cause drying of mucous membranes, thickening of secretions and increased risk of epistaxis (nosebleed).

8.16.3.1.3. Vibration: May cause pain and increased bleeding in facial fracture patients.

#### 8.16.3.2. Preflight/in-flight considerations.

8.16.3.2.1. Pre-medicate with a decongestant prior to flight (if not contraindicated) per VFS orders.

8.16.3.2.2. May require a cabin altitude restriction.

8.16.3.2.3. Anterior bleeding (most common).

8.16.3.2.3.1. Lean forward in a sitting position and encourage mouth breathing.

8.16.3.2.3.2. Pinch nostrils 4-10 minutes, and place cold packs to the posterior neck and bridge of nose, if available.

8.16.3.2.4. Posterior bleeding.

8.16.3.2.4.1. Should not be transported if known to be actively bleeding.

8.16.3.2.4.2. Sit up to allow drainage.

8.16.3.2.4.3. Monitor VS; may be hypertensive.

8.16.3.2.4.4. Initiate IV for blood loss greater than 240ml and call C2; the airlift agency will contact the governing PMRC. **(T-2)**

8.16.3.2.4.5. If nasal packing is present, leave in place. If a foley is being used for nasal packing, have the physician fill it with NS prior to flight.

8.16.3.2.4.6. Encourage fluids en route.

#### 8.16.4. Sinus block.

8.16.4.1. Sinuses normally equalize and vent during ascent. On descent, individuals who are more likely to have colds, allergies, and chronic or acute sinus conditions, or at risk for problems and/or blocks.

8.16.4.2. Prior to flight, brief patients on signs and symptoms, and how to notify AECMs. Pre-medicate with oral analgesic or mild vasoconstrictors per VFS orders.

8.16.4.3. Assess for signs/symptoms: Include pain (mild to severe), burning sensation, and tenderness over the affected sinus, bloody/mucopurulent discharge, teary eyes, and a sucking/crackling noise in the sinus area.

8.16.4.4. Position in a seat or with head of litter elevated.

8.16.4.5. Provide humidification; force fluids.

8.16.4.6. If sinus block occurs, treatment includes:

8.16.4.6.1. Coordinate with the PIC to ascend from the current altitude or request a slower rate of descent.

8.16.4.6.2. Administer medications per **AE Clinical Protocol – Over the Counter Medication Administration**.

8.16.4.6.3. Observe for relief of pain, pressure, and bleeding/drainage.

8.16.4.6.4. Evaluation by a FS at en route stop or RON to assess whether the patient may continue with the mission. If the patient continues on the mission, coordinate slower descents and provide patient with vasoconstrictor for the subsequent descents; may require a cabin altitude restriction. Observe for bleeding/drainage.

#### 8.16.5. Maxillofacial.

8.16.5.1. Stresses of flight.

8.16.5.1.1. Barometric pressure changes: Gas may become trapped or partially trapped in sinuses and teeth, increasing pain.

8.16.5.1.2. Decreased humidity: Causes mucous membranes to dry out leading to pain and/or discomfort.

8.16.5.1.3. Vibration: May increase pain and exacerbate underlying condition.

8.16.5.2. Preflight/in-flight considerations.

8.16.5.2.1. Pharyngeal injuries less than 72 hrs. old should have a tracheostomy prior to flight.

8.16.5.2.2. Jaw immobilization: Assess for type of immobilizer and release mechanisms. Have suction set up and available next to patient.

8.16.5.2.2.1. Wired jaw: Ensure wire cutters or scissors are attached to the patient.

8.16.5.2.2.2. Quick release mechanism: Ensure the patient and AECMs know how to operate.

8.16.5.2.2.3. Antiemetics to prevent vomiting per VFS orders.

8.16.5.2.2.4. Only in an emergency (i.e. possible loss of airway) release the jaws when vomiting is likely. Re-stabilize with cravat or Kerlix.

8.16.5.2.2.5. Liquid diet.

8.16.5.2.2.6. Patient's classified for a litter require a backrest prior to flight. Ambulatory patients will require a seat. **(T-3)**

8.16.5.2.2.7. Mouth care.

#### 8.16.5.3. Teeth.

8.16.5.3.1. Tooth pain may be associated with trapped gas in a decayed tooth or pressure on the tooth below the blocked sinus. May require a cabin altitude restriction until tooth is evaluated and treated. Have a FS evaluate the patient prior to flight.

8.16.5.3.2. If pain occurs at altitude, descend until pain is diminished, if operationally possible.

8.16.5.3.2.1. Document and communicate with receiving MTF for further evaluation.

8.16.5.3.2.2. Instruct patient/passenger to seek medical attention at final destination.

### 8.17. Gastrointestinal (GI)/Genitourinary/Tube Management.

#### 8.17.1. Stresses of flight.

8.17.1.1. Barometric pressure changes. Gas expansion may cause increase in nausea and abdominal discomfort, vomiting, decreased lung expansion and volume, and may require nasogastric tube decompression preflight or in-flight.

8.17.1.2. Vibration: May exacerbate patient's underlying condition or diagnosis and make more susceptible to motion sickness.

8.17.1.3. Thermal: Underlying condition or diagnosis may make the patient more sensitive to thermal changes.

8.17.1.4. Fatigue: May exacerbate the patient's condition.

8.17.1.5. Decreased humidity may lead to dehydration.



8.17.1.6. G-Forces: Turbulence and acceleration changes can be exaggerated in the rear of the aircraft. This can lead to an increase in motion sickness in susceptible patients. Consider placing patients, susceptible to motion sickness, forward or over the wing to reduce the exaggeration of changes in the aircraft.

#### 8.17.2. Acute abdomen.

##### 8.17.2.1. Acute abdomen: Preflight/in-flight considerations.

8.17.2.1.1. Current and past disease processes may present or exacerbate in-flight. History includes, but is not limited to, previous abdominal surgeries, adhesions, intestinal obstruction, neoplasms, ulcerative colitis, kidney disease, cardio-pulmonary disease, pregnancy, and stroke.

8.17.2.1.2. Assess for signs and symptoms: Fever, chills, abdominal pain, nausea, vomiting (bilious, feculent, blood, and/or coffee-ground appearance), dysuria, and hematuria. There may also be fluctuations in BP.

8.17.2.1.3. Assess VS, bowel sounds and percuss the abdomen preflight.

##### 8.17.2.2. Acute abdomen: Treatment/management.

###### 8.17.2.2.1. NPO. Monitor I&O.

8.17.2.2.2. Insert a nasogastric tube if there is gastric distention, nausea and vomiting are severe, and/or if the airway may be compromised. **NOTE:** If symptoms occur preflight, the patient is not stable. Notify C2; the airlift agency will contact the governing PMRC. **(T-2)** If symptoms occur in-flight, initiate treatment and notify C2, and the airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling the situation. **(T-2)**

#### 8.17.3. GI Bleeding.

##### 8.17.3.1. Preflight/in-flight considerations.

8.17.3.1.1. Seen in trauma to the GI tract; inflammatory/ulcerative disease, response to stress, varices, alcohol, aspirin compounds anticoagulants for coagulation abnormalities, VTE, heart valve replacement; neoplasms, and hemorrhoids or fissures.

8.17.3.1.2. Assess for signs and symptoms: Bright red or “coffee grounds ” emesis, tarry stool or coating of stool.

8.17.3.1.3. NG tube will not have active bleeding or coffee ground material preflight.

8.17.3.1.4. Usually will not be airlifted less than 3 days post-GI bleed. Should not have orthostatic postural changes (measure BP and pulse: Supine-to-sitting-to-standing; a twenty-point pulse increase or a systolic 10% decrease is positive for orthostatic postural changes and may need fluids or blood administered).

8.17.3.1.5. Should have a preflight H&H (Hgb 8 g/dL and HCT 25 %) and O2 at 2-4 LPM in-flight per VFS orders. **NOTE:** For patients with a HCT below 24% strong consideration should be given for patient to receive blood product replacement, repeat H&H and cleared by VFS prior to flight.

- 8.17.3.1.6. Obtain preflight VS, including pulse oximetry.
- 8.17.3.2. Treatment/management.
  - 8.17.3.2.1. NPO. Monitor I&O.
  - 8.17.3.2.2. IV access for medications and fluid replacement.
  - 8.17.3.2.3. Onset of upper GI bleeding in-flight. Initiate treatment and notify C2, and the airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling the situation. **(T-2)**
    - 8.17.3.2.3.1. Maintain airway, breathing and circulation. Assess VS and pulse oximetry.
    - 8.17.3.2.3.2. Administer high flow O2 to maintain pulse oximetry at or above 92%.
    - 8.17.3.2.3.3. Start LR or NS with large bore IV access to maintain BP, heart rate and UOP. If blood infusion tubing is used, prime with NS.
    - 8.17.3.2.3.4. Litter for comfort.
    - 8.17.3.2.3.5. Assess and address the underlying cause, if known.
    - 8.17.3.2.3.6. Consider NG tube insertion.
- 8.17.4. Chronic GI conditions.
  - 8.17.4.1. Bowel inflammation, peptic ulcer, and enteritis (Crohn's Disease and Ulcerative Colitis).
  - 8.17.4.2. Chronic GI conditions: Preflight/in-flight considerations.
    - 8.17.4.2.1. Consider proximity to bathroom, medications, hydration, and diet restrictions.
    - 8.17.4.2.2. Special diet; AE crew makes certain the diets are onboard.
    - 8.17.4.2.3. Ostomy patients may have more bowel movements due to gas expansion.
      - 8.17.4.2.3.1. Ensure patient has extra bags, wafers and stoma adhesive.
      - 8.17.4.2.3.2. Empty contents preflight. Check immediately after ascent. Vent bag if possible. **NOTE:** If non-venting colostomy apparatus, vent collection bag to avoid excess gas from dislodging the bag from the stoma wafer. Using a straight pin, puncture 2 holes in the ostomy bag, above the wafer ring. Patient may be self-conscious about the odor emanating from the vented bag.
    - 8.17.4.2.4. Advise patient to expect an increase in flatus and stool during ascent and in-flight.
    - 8.17.4.2.5. Peptic ulcer: Monitor H&H and observe for signs of acute GI conditions.
- 8.17.5. Abdominal distention.
  - 8.17.5.1. Observe for abdominal distention.
  - 8.17.5.2. Ambulate or change positions to relieve symptoms of abdominal distention.

8.17.5.3. If lower abdominal area, have patient roll first from right upper quadrant to left upper quadrant of abdomen to move flatus.

8.17.5.4. Insert a soft rubber urinary catheter no more than 2 inches into stoma to relieve gas buildup. Do not irrigate the colostomy in-flight. **NOTE:** Follow surgeon's orders for fresh post-op stoma care.

8.17.6. Tube feedings. In the event of altered transportation plans, the ERPS shall obtain adequate nutritional provisions for patients and shall obtain and provide 1-day tube feeding supply for intra-theater patient movement and 3-day supply for inter-theater PM. **(T-2)** If on a continuous feeding, allow for venting.

#### 8.17.6.1. Types of Feeding Tubes

##### 8.17.6.1.1. Nasogastric/Orogastric, (NG/OG) Salem Sump

8.17.6.1.1.1. Purpose-Diagnostic; gastric decompression/ evacuation; fluid/nutrient replacement; medication administration.

8.17.6.1.1.2. Management:

8.17.6.1.1.2.1. NG tube is contraindicated in basal skull and nasal fractures.

8.17.6.1.1.2.2. X-Ray to confirm placement.

##### 8.17.6.1.2. Jejunal

8.17.6.1.2.1. Purpose- Fluid/nutrient replacement; medication administration.

8.17.6.1.2.2. Management:

8.17.6.1.2.2.1. KUB X-Ray placement confirmation: beyond ligament of Treitz either day before or day of transport.

8.17.6.1.2.2.2. May require simultaneous NG/OG decompression of stomach to prevent aspiration.

8.17.6.1.2.2.3. May have physician order to position/secure litter head forward (towards cockpit) with backrest (if not contraindicated).

8.17.6.1.2.2.4. Aspiration for residual gastric content may not be possible.

##### 8.17.6.1.3. Gastrostomy/Jejunostomy

8.17.6.1.3.1. Purpose: Fluid/nutrient replacement; medication administration; decompression/ evacuation.

8.17.6.1.3.2. Management:

8.17.6.1.3.2.1. X-Ray to confirm placement

8.17.6.1.3.2.2. Assess insertion site, evaluate for leaking or infection (redness, induration (hardness), warmth, purulence, pain). **NOTE:** If feeding tube becomes occluded irrigation is unsuccessful, hold feedings and notify AOC/PMRC for physician guidance.

#### 8.17.6.2. Management of Feeding Tubes:

- 8.17.6.2.1. Assess all GI tubes for placement and gastric residual at every patient care hand-off, every four hours, including during continuous feeding, and before injecting any fluids or medications:
- 8.17.6.2.2. Auscultate lung sounds.
- 8.17.6.2.3. Abdomen: note distention, presence of bowels sounds, rigid/soft, tenderness, flatus, bowel movement, and feeding tolerance including nausea, vomiting and diarrhea.
- 8.17.6.3. Tube placement:
- 8.17.6.3.1. Inject 30 mL of air into the tube via irrigation tip syringe while listening for air flow over the epigastric area with a stethoscope to confirm placement (not advised in aircraft noise environment).
- 8.17.6.3.2. Aspirate stomach contents for amount of gastric residual – Note amount and characteristics, and document. **NOTE:** Do not discard aspirate (place in drainage bag) allow tube to gravity drain.
- 8.17.6.4. Administer all tube feedings if gastric residual is less than 50% the hourly rate or IAW physician's order.
- 8.17.6.5. Hold all tube feedings if gastric residual is greater than 200 mL or greater than 50% the hourly rate or IAW physician's order. Recheck in one hour and resume if within normal range. **NOTE:** If residual remains above limits after the second assessment, hold tube feeding and contact AOC/PMRC for physician guidance.
- 8.17.6.6. After replacement of gastric contents, medications and bolus feeding add 30-60 mL distilled H<sub>2</sub>O and allow gravity to clear the tube. Avoid infusing air.
- 8.17.6.7. Clamp the tube for 30-45 minutes to ensure medication absorption before reconnecting to suction, if ordered. **NOTE:** Do not clamp tube for the entire flight; secure glove/other gravity drainage device if feeding is held, or apply suction if indicated (i.e. nausea; vomiting; abdominal distention; excessive residual posing risk of aspiration).
- 8.17.6.8. Maintain head of bed/litter elevated at least 45° . **NOTE:** If condition prevents elevation, additional care should be taken to prevent aspiration, including holding feedings 30-60 minutes prior to takeoff and landing. For flight, consider placing patient head forward (towards cockpit) in litter position to reduce 4°-8° negative grade, and administer bolus feedings preferably at cruise altitude to decrease risk of aspiration.
- 8.17.6.9. Oral care will be accomplished every two hours with normal saline or clean distilled water, and cleaning/brushing teeth and tongue. **(T-3)** Documentation includes at a minimum tube location (i.e. oral/nasal/J-G, landmarks, bowel sounds, lung sounds), intake/output, feeding type, GI assessment, position, oral care, etc.
- 8.17.6.10. Vital signs and temperature every four hours on AF Form 3899A or 3899D or EHR equivalent.
- 8.17.6.11. Document I&O every four hours on AF Form 3899E or EHR equivalent.
- 8.17.6.12. Additional feeding tube care/supplies and formula is required for the destination facility.

8.17.6.13. If administration set becomes occluded during transport it should be changed and primed, then set at the previous administration rate. **NOTE:** If feeding tube becomes occluded irrigation is unsuccessful, hold feedings and notify AOC/PMRC for physician guidance.

8.17.7. Motion sickness.

8.17.7.1. Organic motion sickness. Caused by disease processes affecting the inner ear resulting in sensitivity to labyrinth stimulation.

8.17.7.2. Non-organic motion sickness. Caused by turbulence, hypoxia, fear, emotional stress, odor, heat, visual stimuli, reactive hypoglycemia, an empty stomach, self-imposed stresses, dehydration, caffeine, and carbonated drinks.

8.17.7.3. Motion sickness; preflight/in-flight considerations.

8.17.7.3.1. Assess for signs and symptoms: Headache, apathy, pallor, diaphoresis, nausea, and vomiting.

8.17.7.3.2. Administer preflight antiemetic as ordered by the VFS 30-60 minutes prior to flight.

8.17.7.3.3. If symptoms occur in-flight, the FN may give medications per **AE Clinical Protocol – Over the Counter Medication Administration**.

8.17.7.3.4. Instruct patient to take slow, deep, and relaxing breaths to decrease anxiety and sympathetic tone.

8.17.7.3.5. Restrict head movements.

8.17.7.3.6. Have patient visually fixate on a stationary object; provide oxygen blow by.

8.17.7.3.7. Cool the cabin and/or the patient (cool compresses, open air vents if available in the mode of transportation). **NOTE:** If patient is vomiting, keep NPO, and consider starting an IV of LR or NS. Contact C2; the airlift agency will contact the governing PMRC for further instruction and possible orders for intramuscular (IM) and IV, if symptoms are severe. **(T-2)**

8.17.8. Urinary disorders.

8.17.8.1. Stresses of flight.

8.17.8.1.1. Barometric pressure changes: May increase nausea and pain from gastric distention (causing pressure on bladder).

8.17.8.1.2. Decreased humidity: May lead to dehydration.

8.17.8.1.3. Fatigue: Exaggerates underlying condition.

8.17.8.2. Foley catheter/suprapubic catheters/ileal conduit.

8.17.8.2.1. Empty, measure, and document prior to flight.

8.17.8.2.2. Drainage bag needs to be lower than the site in order to drain properly and not on the floor. Consider covering drainage bags.

8.17.8.2.3. Document I&O.

8.17.8.3. Nephrolithiasis (renal stone disease)/Urolithiasis (stones in the urinary system).

8.17.8.3.1. Preflight/in-flight considerations:

8.17.8.3.1.1. Pain management.

8.17.8.3.1.2. Anti-emetics.

8.17.8.3.1.3. IVF as needed.

8.17.8.3.1.4. Avoid milk products and encourage fluids per patients' preference.

8.17.8.3.2. Observe for anuria, hematuria, dysuria, oliguria, and signs and symptoms of urinary tract infection.

8.17.8.4. Renal failure.

8.17.8.4.1. Preflight/in-flight considerations.

8.17.8.4.1.1. O2 available.

8.17.8.4.1.2. Special diet and fluid restriction as ordered.

8.17.8.4.1.3. Document intake and output.

8.17.8.4.1.4. Peritoneal dialysis and hemodialysis will not be conducted in-flight.

8.17.8.4.1.5. MTF should document most recent dialysis and the next scheduled dialysis.

8.17.8.4.1.6. Peritoneal dialysis; assess site for signs of infection.

8.17.8.4.2. Hemodialysis site - vascular access is present with internal and external shunts. A "bruit" or a "thrill" may be felt over the blood vessel or tubing and/or auscultated with a stethoscope. **WARNING:** Do not flush or use for IV access. Do not take BP on same extremity as the shunt.

8.17.8.4.2.1. Assess site for infection. Assess distal circulation and neurological status.

8.17.8.4.2.2. Protect access site from cold, pressure, venipuncture, disconnection, and infection.

8.17.8.4.2.3. Have clamps available for external shunts to control bleeding if disconnected.

**8.18. OB/In-Flight Child Birth Management .**

8.18.1. Stresses of flight.

8.18.1.1. Decreased partial pressure of oxygen: May cause an increase in cardiac workload with a decrease in diaphragmatic excursion. Lower concentration of O<sub>2</sub> to the placenta results in fetal hypoxia.

8.18.1.2. Barometric pressure changes: Gas expansion may cause pain and uterine irritability and decrease capacity for lung expansion. Decreased barometric pressure is also associated with onset of labor and premature rupture of membranes.

8.18.1.3. Noise/vibration: May increase seizure risk in pre-eclamptic and eclamptic patients, and may cause uterine irritability and excessive stimulation and movement of the fetus.

8.18.1.4. Decreased humidity: Dehydration may induce or complicate preterm labor. Pregnant women are also especially prone to dehydration and its effects.

8.18.1.5. Fatigue: Excess weight, physiological changes, overall effects of the previously mentioned stresses, and the length of time in the AE system fatigues the patient.

8.18.1.6. G-Forces: May result in pushing fetus onto the maternal vena cava or the placenta.

#### 8.18.2. General considerations.

8.18.2.1. Patients who are beyond the 34th week of pregnancy are not routinely accepted for AE, but will be moved if determined necessary by a physician.

8.18.2.2. Patients in premature labor, or with prematurely ruptured membranes, may be airlifted after labor is assessed on a case-by-case basis.

8.18.2.3. Patient positioning: If on strict bed rest, patient will be positioned in the left lateral recumbent position. **(T-0)** If the patient must be placed in the supine position, place a pillow under either hip to promote uterine displacement and relieve pressure on the superior vena cava, which can lead to hypotension and decreased oxygen flow to the fetus. If ambulatory, seatbelt should be placed low on the abdomen across the hips and may be padded with a blanket or pillow. A litter should be available if needed for ambulatory pregnant patients or a back rest may be used.

8.18.2.4. Pregnant patients are at increased risk of VTE. Hydration should be stressed and seated patients should be encouraged to ambulate and litter patients should be encouraged to perform ROM exercises.

#### 8.18.2.5. Supplies and equipment.

8.18.2.5.1. Universal OB pack.

8.18.2.5.2. Airborne life support system (ALSS) if greater than 34 weeks or otherwise indicated.

8.18.2.5.3. Oxygen and suction available.

8.18.2.5.4. Doppler/Doptone.

8.18.2.5.5. Pulse oximeter.

8.18.2.5.6. IV infusion pump.

8.18.2.5.7. Cardiac monitor.

#### 8.18.3. Preflight assessment and documentation.

8.18.3.1. Maternal VS including pulse oximetry, temperature, and respiratory rate. Assess for edema.

8.18.3.2. Obstetric history, including expected date of delivery, gestational age, summary, current pregnancy course, previous OB history including complications and mode of delivery.

8.18.3.3. Presence of any signs/symptoms of labor to include duration, frequency, and intensity of contractions, back pain, pelvic/rectal pressure or abdominal cramps.

8.18.3.4. Status of membranes; if ruptured, date/time of rupture, amount and character of fluid.

8.18.3.5. Presence of vaginal bleeding (amount and any associated pain).

8.18.3.6. Most recent cervical exam.

8.18.3.7. Urinalysis results if indicated.

8.18.3.8. Fetal assessment: Fetal heart tones (FHTs), presentation, last ultrasound findings, and known abnormalities.

8.18.3.9. Other significant medical history: Epigastric pain, cardiac history, headache, infectious disease status, medical conditions such as diabetes and hypertension. History of smoking, alcohol, or drug use in pregnancy.

#### 8.18.4. Treatment/management priorities and in-flight considerations.

8.18.4.1. If gestation is greater than 20 weeks, FHTs should be obtained before departure, at cruise altitude and every 12 hours thereafter. If rupture of membranes occur, FHTs should be obtained immediately (ambient noise may make it impossible to hear FHTs). Normal range for FHTs are 120-160/minute.

8.18.4.2. Obtain maternal VS at cruise altitude and if indicated by a status change. Maternal oxygenation is particularly important to ensure fetal well-being.

8.18.4.3. Patient comfort may be the greatest concern in stable pregnancies. Comfort items, hydration/snacks, ambulation, and position change should be offered as appropriate.

#### 8.18.5. Considerations for high-risk OB: A qualified medical attendant will accompany high-risk OB patients. (T-2)

##### 8.18.5.1. Hypertensive disorders of pregnancy.

8.18.5.1.1. Chronic hypertension: Preexisting hypertension may affect maternal health, fetal growth, oxygenation, placental function, and predispose patient to other pregnancy complications.

8.18.5.1.2. Gestational hypertension: Hypertension diagnosed before 20 weeks of pregnancy not accompanied by other symptoms. May affect maternal health, fetal growth, oxygenation, placental function, and predispose patient to other pregnancy complications.

8.18.5.1.3. Preeclampsia: Condition generally diagnosed after 20 weeks of pregnancy. Multi-organ system disease usually evidenced by elevated BP (>140/90), proteinuria, epigastric pain, visual changes, headaches, and abnormal liver function tests. HELLP Syndrome: Variant of preeclampsia characterized by hemolysis,



elevated liver enzymes, and low platelets. The only resolution to preeclampsia is delivery or termination of pregnancy.

8.18.5.1.4. Eclampsia and HELLP Syndrome: Patients with active eclampsia or HELLP Syndrome should not be moved.

8.18.5.2. Placental disorders.

8.18.5.2.1. Placental abruption: Premature separation of normally implanted placenta. Placental abruption cannot be diagnosed before 20 weeks of gestation. Cause is unknown although risk factors include hypertension, abdominal trauma, short umbilical cord, uterine anomaly, cocaine use, and abruption in previous pregnancy. Signs and symptoms may include abdominal pain or short, frequent contractions, vaginal bleeding, change in maternal VS or change in fetal heart rate. If suspected abruption occurs in-flight, patient should be treated for hemorrhage/shock and C2 contacted for guidance and possible diversion to a MTF capable of handling the situation. **(T-2) WARNING:** This is a life threatening condition for mother and baby.

8.18.5.2.2. Placenta previa: Implantation of placenta in the lower uterine segment, completely or partially covering the internal cervical os. Placenta previa cannot be diagnosed before 20 weeks of gestation. Placenta previa may be stable or may result in episodes of painless vaginal bleeding. Should an unanticipated bleed occur in-flight, treat for hemorrhage/shock and contact C2 for guidance and diversion to a MTF capable of handling the situation. **(T-2) WARNING:** A severe bleed or onset of labor is life threatening for mother and baby.

8.18.5.3. Preterm labor. Progressive cervical dilation and effacement prior to 37 weeks of pregnancy. Signs and symptoms may include uterine contractions, back pain, vaginal discharge or bleeding, rupture of membranes, and pelvic pain. Preterm labor is generally slowed with medication and mother may be transported to facilitate higher level care for the premature infant. There are no known effective treatments to stop preterm labor but may successfully prevent delivery long enough to facilitate transfer. Normally patients are not transported in active preterm labor.

8.18.5.4. Gestational diabetes: Diabetics diagnosed during pregnancy may be controlled by a combination of diet, exercise, oral medication and/or insulin. Gestational diabetes should have orders for diet, glucose testing, and medications if needed.

8.18.5.5. Medications used in high risk pregnancy:

8.18.5.5.1. Magnesium sulfate: May be used for seizure prophylaxis in preeclampsia/eclampsia or for neuroprotection of the fetus in pre-term labor. It is also used to reduce uterine contractility in pre-term labor.

8.18.5.5.1.1. Magnesium sulfate is a high risk medication and should always be administered via infusion pump. **WARNING:** May produce cardiac arrhythmia, bradycardia, or cardiac arrest. Stop infusion if chest pain occurs. Contact C2 for further guidance and possible diversion. **(T-2)**

8.18.5.5.1.2. Maternal BP, respirations, strict I&O, and deep tendon reflex should be monitored carefully during magnesium sulfate therapy. Patients may

experience flushing, warmth, dizziness, and malaise as normal symptoms of magnesium sulfate therapy.

8.18.5.5.1.3. Patients on magnesium sulfate will generally have orders for NPO or fluid restriction due to the risk of fluid overload.

8.18.5.5.1.4. Magnesium sulfate toxicity: Severe CNS depression and pulmonary edema may occur. The patient should be stable on magnesium sulfate and/or serum magnesium sulfate should be measured for therapeutic levels prior to transport. If severe lethargy, slurred speech, decreased respirations, or other symptoms occur, infusion should be discontinued. Patient should be placed on a cardiac monitor prior to administering magnesium sulfate and calcium gluconate antidote may be administered per physician order if indicated.

8.18.5.5.2. Tocolytic agents: Terbutaline, nifedipine, indomethacin, and less frequently, magnesium sulfate may be used for inhibition of uterine contractions. These medications will tend to produce flushing, headache, and tachycardia. Generally they are effective in delaying delivery for 24-48 hrs.

8.18.5.5.3. Treatment for Magnesium Sulfate Toxicity

8.18.5.5.3.1. IV access - central line (preferably) and arterial line/Swan Ganz (SG) may be present (insure balloon is deflated in SG prior to take-off).

8.18.5.5.3.2. Infusion Pumps: Mainline/MgSO<sub>4</sub> infusion.

8.18.5.5.3.3. Foley catheter should be in place to monitor strict I & O. **NOTE 1:** Consider Left Lateral Recumbent position when monitoring Foley output.

8.18.5.5.3.4. Calcium gluconate for MgSO<sub>4</sub> toxicity. **NOTE:** Must be ordered on the patient treatment form and provided by the originating MTF. **(T-0)** **NOTE 2:** Not a part of the in-flight medical kit.

8.18.5.5.3.5. Be vigilant for loss of Deep Tendon Reflexes, pulse less than 60/min; BP less than 90 mmHg/systolic; urine output less than 30cc/hour.

8.18.5.5.3.6. Place on cardiac monitor.

8.18.5.5.3.7. Administer calcium gluconate 10% solution, per physician's order (usually 1 gram), slow IVP over 3 minutes.

8.18.5.5.4. Steroids: Betamethasone injections are typically given to women when preterm delivery is threatened to promote fetal lung maturity. Betamethasone is given in 2 doses 24 hrs. apart and may result in an elevation in maternal blood glucose.

8.18.6. In-flight considerations and care for unexpected labor and delivery.

8.18.6.1. Contact C2 for guidance and diversion to a MTF capable of handling the situation. **(T-2)** Request the receiving facility send qualified medical personnel to the aircraft.

8.18.6.2. Patient positioning for in-flight birth.

- 8.18.6.2.1. If the expectant mother is a litter patient and there is another patient underneath her, try to move the lower patient to another position. This way you can facilitate care and privacy.
  - 8.18.6.2.2. If ambulatory, move patient to a litter. Patient may be positioned side-lying, sitting with her back supported, or whatever position is most comfortable.
  - 8.18.6.2.3. Set up supplies and equipment to include obstetric pack, doppler, absorbent pads, and blankets.
  - 8.18.6.2.4. Medical or non-medical attendant accompanying patient or an AECM should coach the mother to remain calm and if possible to avoid pushing until set up is complete.
  - 8.18.6.2.5. Start flowchart: Obtain maternal VS q 1 hr. and FHTs q 15 mins.
  - 8.18.6.2.6. Start an IV of LR at 125ml/hr. depending on hydration and renal, cardiac, magnesium sulfate therapy and pulmonary status.
  - 8.18.6.2.7. Administer high flow O2 if needed.
  - 8.18.6.2.8. Delivery procedures: Follow Lippincott or Mosby. In a precipitous delivery, support baby's head and body during expulsion and guide baby to the maternal abdomen. Maternal pushing efforts will generally facilitate delivery without any provider intervention.
  - 8.18.6.2.9. If neonatal resuscitation is required it should be performed by the medical attendant or AECM in accordance with Neonatal Resuscitation Program Guidelines.
- 8.18.6.3. Immediate care of the newborn. Infant should be dried, stimulated and placed on the maternal abdomen. If needed, infant's mouth and nose may be cleared with a bulb syringe. Suction the mouth first to avoid aspiration. If sterile scissors are available, cord may be clamped twice and cut, otherwise cord may be left intact.
- 8.18.6.3.1. After delivery of placenta, place it in a towel or chux pad and then into a red biohazard bag with label. If cord is left intact, placenta should be placed near and approximately level to infant. The placenta will offload with the patient and will not be discarded.
  - 8.18.6.3.2. Breastfeeding should be encouraged within the first hr. of life to promote uterine involution and avoid neonatal hypoglycemia. Baby should be placed directly skin to skin with mom and both covered with a blanket to maintain temperature.
- 8.18.6.4. Labor and delivery and postpartum emergencies - all of these emergencies require contacting C2 and diversion to a MTF capable of providing care. **(T-2)**
- 8.18.6.4.1. Shoulder dystocia: Following delivery of the fetal head the fetal anterior shoulder may become stuck on the pubic bone and baby will appear to be turtling. Delivery of the shoulder should be attempted by mother assuming McRoberts position on her back (flexion of maternal legs), suprapubic pressure, maternal position change to hands and knees, and attempting to rotate the fetal shoulders either towards each other to decrease the shoulder girdle or to rotate the fetus to the oblique to deliver. These maneuvers should continue to be attempted until the fetus is delivered or fetal death.

8.18.6.4.2. Breech presentation: A fetus presenting buttocks or feet first may be delivered vaginally but is at increased risk of injury or cord compression. Allow maternal pushing efforts to occur and do not attempt to manipulate the baby as the gentle traction of the baby's weight will provide support and facilitate delivery of the head. After delivery up to the fetal umbilicus you may assist the delivery of the arms by sweeping them downward if they do not deliver spontaneously. Following birth, place the baby on the maternal abdomen to assess and provide routine care.

8.18.6.4.3. Cord prolapse: The umbilical cord precedes the presenting part and presents a risk of cord compression and hypoxia to the fetus. This is most likely to occur following rupture of membranes and should be suspected if sudden decrease in FHT occurs with rupture. The cord may be visualized at the introitus or palpated in the vagina alongside the presenting part. The mother should be placed in trendelenburg or knee-chest position and the presenting part should be lifted off the cord. **WARNING:** This position will need to be maintained until fetus can be delivered via cesarean section; do not discontinue until directed by a physician. **(T-0)** If cord prolapse occurs during second stage, baby may be delivered vaginally before cesarean can be performed. Assess fetal heart tones q 15 minutes. If baby is delivered, place on the maternal abdomen and assess for resuscitation.

8.18.6.4.4. Postpartum hemorrhage: Blood loss greater than 500 ml following a vaginal delivery. Patient may experience dizziness, fainting, tachycardia, and decreased BP. Treatment for hemorrhage should be provided along with aggressive fundal massage. Nipple stimulation may be provided manually or through breastfeeding to encourage uterine contraction.

#### 8.18.6.5. Documentation.

8.18.6.5.1. For the infant, initiate an AF Form 3899 or EHR equivalent, AE patient record. Document time of birth; Apgar score at one and five minutes post birth (per Lippincott); VS; and any concerns with labor. Document no vitamin K or ophthalmic ointment was given. Create a 3899 or EHR for newborn and document the same. Add infant to the AF Form 3830, *Patient Manifest*.

8.18.6.5.2. On mother's chart, annotate the following: Course of labor; time of birth in ZULU time (Universal Time); time of placenta delivery ZULU time; fundal massage and lochia checks; and VS q 15 mins for 2 hrs., then q 30 minutes for one hr., then every 4 hrs. for 24 hrs.

8.18.6.5.3. Annotate events on AF Form 3829 (TRAC2ES Cover Sheet).

8.18.6.5.4. Annotate events on DD Form 2852. **(T-2)**

8.18.7. A postpartum mother may accompany an infant to more definitive care. Ensure medication and supplies accompany the patient. If determined to be unstable, notify C2; the airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling the situation. **(T-2)** If the patient is nursing the infant, all nursing supplies, breast pump and refrigeration capability is the responsibility of the patient/sending facility.

### 8.19. Pediatric Management.

#### 8.19.1. Stresses Of Flight.

8.19.1.1. Decreased Partial Pressure of Oxygen: Infants and younger children are more reactive to hypoxia, and will become hypoxic earlier than adults.

8.19.1.2. Barometric Pressure Changes: Encourage the use of a pacifier/bottle on descent to help the infant/child clear their ears. Gastric compression may restrict diaphragmatic movement, especially if supine; elevate head and consider decompression with an oral or nasogastric tube if necessary.

8.19.1.3. Thermal: Thermal changes have the greatest impact on infants and young children who have a very sensitive thermoregulating system. Increase the cabin temperature, if necessary and possible.

8.19.1.4. Decreased Humidity: Infants and children are more susceptible to dehydration. If infant is in an Airborne Life Support System (ALSS), ensure that the proper amount of distilled sterile water is present in the humidification sponge. If not NPO or receiving IVs or tube feedings, give fluids at least every two hours. **NOTE:** Assess for infant dehydration: palpate for depressed anterior fontanel.

8.19.1.5. Noise: Infants/children are sensitive to excessive noise. Earplugs should be cut in half (vertically) to fit the smaller ear canals. Infants in ALSS should also wear earplugs, even though the double paned construction muffles aircraft noise.

8.19.1.6. Vibration: Ensure infants are padded when in car seats or the incubator.

8.19.1.7. Fatigue: Fatigue has the greatest impact on pediatric patients' newborn to 12 years old.

#### 8.19.2. General Considerations:

8.19.2.1. Assess airway and breathing: is the child able to maintain independently or are adjuncts/assistance to maintain patency required?

8.19.2.1.1. Respiratory dysfunction is the most common cause of cardiac arrest so stabilization of the airway is of primary concern. Assess rate; mechanics (retractions, grunting, nasal flaring, use of accessory muscles); chest expansion, breath sounds stridor, wheezing or paradoxical chest movement.

8.19.2.1.2. Proper positioning is essential because a child's trachea is narrow, the tongue is large and intercostal muscles are weak.

8.19.2.1.3. Use jaw thrust or chin lift maneuver to open the airway.

8.19.2.1.4. For spinal immobilization use jaw thrust. **WARNING:** Hyperextension or flexion of the neck will cause airway compression. A rolled towel placed under the shoulders of the infant or child aids in maximizing airway size and reducing resistance. For neutral alignment of the C-Spine, align the external auditory meatus with the shoulders.

8.19.2.2. If intubated, there should be a medical attendant accompanying the patient capable of managing the airway and a ventilator.

8.19.2.2.1. Use cuffless endotracheal tubes up to age ten.

- 8.19.2.2.2. Have on hand one size larger and one size smaller endotracheal tube.
- 8.19.2.2.3. Monitor pulse oximetry and titrate O<sub>2</sub> to maintain SaO<sub>2</sub> greater than 93%.
- 8.19.2.2.4. Ensure adequate humidification of the O<sub>2</sub> delivery systems.
- 8.19.2.2.5. Assess color (pale or cyanotic); capillary refill; skin temperature; presence of mottling.
- 8.19.2.3. Vital Signs: Normal Heart Rate. Count apical pulse for a full minute. **WARNING:** Bradycardia is life threatening and is associated with hypoxemia, perform CPR if the child is bradycardic with poor perfusion or is pulseless.
  - 8.19.2.3.1. Infant: 120-160/min.
  - 8.19.2.3.2. Toddler: 90 – 190/ min.
  - 8.19.2.3.3. Preschool: 80 - 110/min.
  - 8.19.2.3.4. School age: 75 - 110/min.
  - 8.19.2.3.5. Adolescent: 60 – 90/min.
- 8.19.2.4. Normal Respiratory Rate. Count for a full minute. **NOTE:** a respiratory rate greater than 60/min is abnormal for any child.
  - 8.19.2.4.1. Infant: 30 - 60/min.
  - 8.19.2.4.2. Toddler: 20– 40/min.
  - 8.19.2.4.3. Preschool: 20 - 30/min.
  - 8.19.2.4.4. School age: 18 - 30/min.
  - 8.19.2.4.5. Adolescent: 12 – 16/min.
- 8.19.2.5. Blood Pressure. Average systolic pressure for children one year old and over: (Age in years X 2) + 90mm Hg; lower limit: (Age in years X 2) + 70mm Hg indicates hypotension.
- 8.19.2.6. Skin Color. Cyanosis is a late sign of hypoxia.
- 8.19.2.7. Mental Status/Level of Activity. Active and alert? Lethargic or unresponsive?
- 8.19.2.8. Urine Output.
  - 8.19.2.8.1. Infant: 2 ml/kg/hr.
  - 8.19.2.8.2. Child over 2 yr: 1 ml/kg/hr.
- 8.19.2.9. Offer fluids every one to two hours (unless contraindicated). **NOTE:** IV infusion pumps will be used for all neonatal/pediatric patients. **(T-0)**
- 8.19.2.10. CNS perfusion: responsiveness and recognizes parents.
- 8.19.2.11. Muscle tone.
- 8.19.2.12. Pupil size, posturing.

8.19.3. Rapid Cardiopulmonary Assessment/Treatment. **Refer to current AHA BLS/ACLS/PALS guidelines.**

8.19.3.1. Early recognition of the symptoms of progressive deterioration in respiratory and circulatory function and prompt initiation of therapy can often prevent cardiac arrest. **WARNING:** Bradycardia is life threatening and is associated with hypoxia; CPR is indicated if the child is bradycardic with poor perfusion or is pulseless. Notify AOC/PMRC for guidance and possible diversion to a MTF capable of handling the situation.

8.19.4. Assessment of Signs/Symptoms of Severe Respiratory Distress. Notify AOC/ PMRC for guidance and possible diversion to a MTF capable of handling the situation.

8.19.4.1. Respiratory Distress: Respiratory rate over 60 per minute, grunting or forced expiration, and head bobbing.

8.19.4.1.1. Retractions: Use of accessory muscles: sternal retractions, chest muscles visibly pulling and prolonged expiratory time.

8.19.4.1.2. Nasal Flaring. Obligated nose breathers for the first four months of life. Keep nares clear of secretions.

8.19.4.1.3. Cardiovascular: poor peripheral perfusion, tachycardia.

8.19.4.1.4. Neurological: decreased muscle tone, altered mental status.

8.19.4.1.5. Pallor precedes cyanosis. Assess capillary refill (<2 seconds).

8.19.5. Signs/Symptoms Respiratory Distress/Respiratory Failure.

8.19.5.1. Respiratory: Respiratory rate less than 10 per minute and/or irregular respirations.

8.19.5.2. Cardiovascular: Slower than normal or absent heart rate, weak or absent peripheral pulses, hypotension.

8.19.5.3. Neurological: unresponsiveness, limp muscle tone.

8.19.6. Treatment/Management of Respiratory Distress/Respiratory Failure.

8.19.6.1. Airway.

8.19.6.1.1. Assessment: open airway jaw thrust/chin lift maneuver. If neck injury is suspected, use the jaw thrust. Rule out foreign body, anatomic or other obstruction.

8.19.6.1.2. Treatment/Management: Place on 100% oxygen via non- rebreather mask, blow-by if mask is not tolerated. Consider oral airway, nasopharyngeal airway, and intubation per PALS guidelines when operationally feasible. **WARNING:** Performed by specially trained healthcare professionals working within their AFSC scope of practice.

8.19.6.1.3. Breathing.

8.19.6.1.3.1. Assessment: Is breathing ineffective?

8.19.6.1.3.2. Treatment/Management: Rescue breathing: mouth to mouth or nose to mouth, bag mask, and endotracheal intubation per PALS guidelines when

operationally feasible. Place on pulse oximetry.

#### 8.19.6.2. Circulation.

8.19.6.2.1. Assessment: Heart rate, pulses (central and peripheral), place on cardiac monitor, capillary refill, and blood pressure.

8.19.6.2.2. Cardiac compressions and fluid resuscitation.

8.19.6.2.2.1. Intravenous access: During CPR in children 6 years old and younger, intraosseous access should be established if reliable venous access cannot be achieved within three attempts or 90 seconds, whichever comes first, per PALS guidelines when operationally feasible. **WARNING:** Performed by specially trained healthcare professionals working within their AFSC scope of practice.

#### 8.19.6.3. Neurological.

8.19.6.3.1. Minimize anxiety.

8.19.6.3.2. Involve parents.

8.19.6.3.3. Evaluate Muscle Tone

8.19.6.3.4. Evaluate Pupil size and posturing if present

#### 8.19.7. Selected Diagnosis for the Pediatric Population

8.19.7.1. Epiglottitis – a rapidly progressing bacterial infection of the epiglottis and surrounding soft tissue. Usually affects children between the ages of 3 and 7 years.

8.19.7.1.1. Signs and Symptoms: Illness or sudden onset (usually 6 to 8 hours from initial symptom) dysphasia, “barking” cough, inspiratory stridor, hoarse or muffled voice, fever or drooling. Child may prefer sitting up or leaning forward.

8.19.7.1.2. Treatment/Management.

8.19.7.1.2.1. **WARNING :** Do not attempt to visualize/assess the airway or place anything in the airway.

8.19.7.1.2.2. Minimize anxiety and allow child to choose position of comfort.

8.19.7.1.2.3. Cool mist, blow-by oxygen.

8.19.7.1.2.4. Consider deferring IV access if child is severely agitated. Extreme agitation and anxiety may result in complete upper airway obstruction.

8.19.7.1.2.5. If IV access is in place, administer fluids and antibiotics as ordered.

8.19.7.1.2.6. Tylenol (acetaminophen) for fever. Refer to manufacturer’s recommendations for dosages.

8.19.7.2. Foreign Body Aspiration - Children between the ages of 6 months and 4 years are at high risk.

8.19.7.2.1. Signs and Symptoms: Sudden onset of coughing or wheezing associated with an episode of choking.

8.19.7.2.2. Treatment/Management.



8.19.7.2.2.1. Severe Distress: Infants – back blows and chest thrusts.

8.19.7.2.2.2. Children – abdominal thrusts.

8.19.7.2.2.3. Minimal to moderate distress – Oxygen with cool mist and IV fluids.

8.19.7.3. Allergic Reaction – An immediate life-threatening situation. See **AE Clinical Protocol – Anaphylaxis**.

8.19.7.4. Croup. Croup is a common term for a viral infection that affects the larynx but may extend to the trachea and bronchi.

8.19.7.4.1. Signs and Symptoms:

8.19.7.4.1.1. History of cold symptoms and fever; inspiratory stridor with accompanied “barking” cough; wheezing may develop as a later symptom

8.19.7.4.2. Treatment /Management

8.19.7.4.2.1. Primarily supportive. Prevent dehydration and treat respiratory distress.

8.19.7.5. Asthma. The most common chronic illness in the pediatric population is asthma. Asthma is caused by a variety of environmental and immunologic factors.

8.19.7.5.1. Signs and Symptoms

8.19.7.5.1.1. Expiratory wheezing, particularly in an acute attack; signs of respiratory distress, ie retractions, nasal flaring, cyanosis, accessory muscle use and eventual altered mental status.

8.19.7.5.2. Treatment/Management

8.19.7.5.2.1. Ascertain past history; home medication use; visits to the Emergency Room or hospital admissions

8.19.7.5.2.2. Supplemental oxygen and beta-adrenergic and anti-cholinergic aerosols (albuterol and Atrovent).

8.19.7.6. Pneumonia. Pneumonia is an inflammation of the pulmonary parenchyma caused by viral, bacterial or fungal organisms.

8.19.7.6.1. Signs and Symptoms

8.19.7.6.1.1. Fever; grunting respirations; decreased breath sounds; tachypnea

8.19.7.6.2. Treatment/Management

8.19.7.6.2.1. Supportive treatment; prevent dehydration and hypoxia. Treat fever with Tylenol (acetaminophen) per physicians order. Administer antibiotics if bacterial in origin.

8.19.7.7. Hypothermia. Core temperature below 35 degrees centigrade, or 95 degrees Fahrenheit. Hypothermia can be caused by both environmental and therapeutic interventions such as rapid fluid infusion.

8.19.7.7.1. Signs and Symptoms. Clinical signs of hypothermia are subtle: A change in mental status, cool, mottled skin and shivering in mild to moderate hypothermia. Vital signs vary with the level of severity.

8.19.7.7.2. Treatment/Management

8.19.7.7.2.1. Remove the child from the cold stresses. Remove wet clothing, warm oxygen, warm fluids, warm the room.

8.19.7.8. Hyperthermia. Presents with a core temperature of greater than 41 degrees centigrade, or 105.8 degrees Fahrenheit. Usually caused by leaving children in hot cars, athletes, cystic fibrosis.

8.19.7.8.1. Signs and Symptoms. Patients will have hot, dry skin; seizures; renal failure.

8.19.7.8.2. Treatment/Management.

8.19.7.8.2.1. Remove from heat stress. Immerse in cool or iced water, direct fans to increase evaporation.

8.19.7.9. Descent

8.19.7.9.1. Monitor infant/child closely during actual descent. Encourage the use of a pacifier/bottle. If crying during descent, this will usually clear the ears.

8.19.7.9.2. Instruct nose-blowing technique for valsalva.

## **8.20. Mental Health Patient Management.**

8.20.1. Stresses of flight.

8.20.1.1. Decreased partial pressure of oxygen and low humidity, may exacerbate the effects of mental health patients.

8.20.1.1.1. Rule out hypoxia.

8.20.1.1.2. Exacerbates effects of medication.

8.20.1.2. Noise, fatigue, vibration, thermal changes in the aircraft and prolonged confinement place both physical and psychological stress on patients. **NOTE:** With psychiatric patients, this stress may be manifested by heightened awareness; mood changes to include increased irritability, depression, apprehension, paranoia, excitability or worsening suicidal thoughts.

8.20.2. The acute exacerbation of psychiatric or behavioral disorders in-flight may place the aircraft, crew, other patients, and passengers at risk. If a patient presents a risk to flight safety, a danger to themselves or others, restraints may be required. The goal is to use the safest and least restrictive measures to control behavior within the AE environment while maintaining the patient's dignity.

8.20.2.1. Physicians, nurses, MAs, and family members may be used to comfort and talk to the patient.

8.20.2.2. An extra headset from the wireless communication system if needed may be used with the patient to be able to comfort and talk with the patient. Assure HIPAA is followed with communications.

8.20.3. Patient classifications. See Section 3.7.

8.20.4. Validation criteria of mental health patients.

8.20.4.1. Validation must look carefully for signs that mental health patients may have a change of status during flight that may directly threaten the aircraft or personnel onboard. **(T-0)** The most helpful information to the VFS can be ascertained by asking the originating mental health and medical staff, “what has the patient actually said or done?”

8.20.4.2. The VFS needs to know if the patient is a danger to self, others, or the aircraft/facility.

8.20.4.3. The MCD may refuse a patient for AE transport if the patient’s behavior is determined to be detrimental to self and others, the patient has not been adequately prepared for AE movement, the AE crew is unable to make corrections before departure, and therapeutic interventions are ineffective. Document in the health record and notify C2. The airlift agency will contact the governing PMRC at time of refusal. **(T-2)** The MCD completes and submits a DD Form 2852. **(T-2)**

8.20.5. General considerations for mental health patients.

8.20.5.1. Physical factors: Age, cognitive level, sleep patterns, nutrition/hydration, elimination, touch, comfort, and physical activity. If appropriate based on classification, allow ambulation, sitting in “get up” seats, “stretch breaks” at en route stops, and comfort breaks. Offer fluids and nutrition frequently.

8.20.5.2. Pathophysiological factors: Drug interactions, substance abuses, dehydration, poor nutrition, underlying disease/illness, and metabolic and endocrine disturbances.

8.20.5.2.1. Correct underlying pathology (dehydration; alcohol and drug detoxification).

8.20.5.2.2. Observe for and treat hypoxia.

8.20.5.2.3. Sedated patients may be more susceptible to dehydration and/or hypoxia, and aspiration during patient movement.

8.20.5.2.4. Assure adequate hydration and nutrition.

8.20.5.3. Psychological factors: Anxiety/fear, fatigue, depression/grief, denial, boredom, communication barriers, stress, and post-traumatic stress. **NOTE:** History of physical or sexual abuse may affect individual reactions to physical contact and place the individual at greater psychological distress. Mental health patients are typically physically healthy and therefore capable of independent actions that could directly threaten the aircrew, patient staging personnel and other patients. If the patient is exhibiting aggressive and uncontrollable behavior, is extremely agitated or violent and/or is determined to be a danger to flight safety, self or others, give as needed (PRN) medication as ordered. If no PRN medication is ordered, give Haldol or Valium in accordance with **AE Clinical Protocol – Acute Exacerbation of Mental Health or Behavior Disorders**. Consult with the PMRC VFS and AOC/AECT for guidance and possible diversion to a Medical Treatment Facility capable of handling the situation and for further medical direction as soon as operationally feasible.

8.20.5.4. Environmental factors: Confined space, noise, lighting, positioning, temperature, aircraft systems, and personal items.

8.20.6. Physician orders for mental health patients.

8.20.6.1. The originating physician will write orders for routine medication as well as PRN medication for increasing symptoms while the patient is in the AE system. **(T-3)**

8.20.6.2. Extremely high-risk mental health patients should travel with an experienced psychiatric technician/RN or medical provider capable of recognizing the need for the medication administration and/or providing specialized care.

8.20.6.3. The requirement for a MA should be determined by the originating physician in consultation with the PMRC VFS. **NOTE:** All mental health patients requiring ongoing supervision will, preferably, have a MA of the same gender, commensurate rank during movement between the originating and the destination facility. **(T-0)**

8.20.7. Preflight/in-flight care for mental health patients.

8.20.7.1. General:

8.20.7.1.1. Position litter patients in the lowest litter space, away from the flight deck, emergency exits, and O2 shutoff valves. Assign ambulatory patients a seat near the bulkhead, away from the flight deck, emergency exits and O2 shut off valves. Assess potential safety risks of nearby objects and cargo.

8.20.7.1.2. Inform flight crew as to where the mental health patient is placed on the aircraft and where they are at all times. For confidentiality purposes, no further information is given.

8.20.7.1.3. Give clear behavioral expectations (examples: seatbelts, no smoking, stretch breaks, no access to the flight deck, and use of the lavatory) and establish a verbal contract, including when medication or restraints can be used.

8.20.7.1.4. Use neutral language and speak in a non-threatening, non-judgmental manner.

8.20.7.1.5. Mental health inpatients and their hand-carried bags will be searched by an AECM for sharps, matches, lighters and cigarettes prior to enplaning. **(T-0)** These items will be inventoried, secured, and deplaned to the receiving MTF. **(T-2)** Use AF Form 3854, *Receipt of Valuables*. Litter patients are allowed to carry eyeglasses, toothbrush, and a small amount of money, wedding band, rings, wristwatch, ID card, and wallet.

8.20.7.1.6. The designated MA or AECM will maintain line-of-sight or one-to-one observation of patients in restraints and/or with suicidal, homicidal or elopement precautions. **(T-2)** Assign one AECM, preferably the same gender to act as the team leader. This caregiver will coordinate with the MCD and the MA should further interventions be required. **(T-2)**

8.20.7.1.7. Disposable eating utensils do not need to be removed for high-risk patients but should be inventoried when trays are collected.

8.20.7.1.8. Offer fluids every 2 hrs.

8.20.7.1.9. Medications are to be given preflight and PRN if behavior becomes unmanageable. Monitor SpO2 and temperature for patients on antipsychotic medications (i.e. risperidone, olanzapine).

8.20.7.1.9.1. Determine whether medication is effective. Document findings.

8.20.7.1.9.2. Body temperature of 102°F and above along with increased agitation while on antipsychotic medication may indicate neuroleptic malignant syndrome (NMS) which can be life-threatening. If symptoms appear preflight, the patient is not stable for flight. Notify C2; the airlift agency will contact the governing PMRC. **(T-2) WARNING:** If symptoms appear in-flight, hold medication, monitor VS, apply cooling blanket if available. Assess for increased agitation, which may require PRN anti-anxiety medication as ordered by the physician. Document the medication administration; notify C2; the airlift agency will contact the governing PMRC. **(T-2)**

8.20.7.1.9.3. High potency neuroleptics, such as Haldol, may cause extrapyramidal symptoms (EPS) within hrs. or days after starting medication. EPS may present as muscle spasms or distortion of the neck, jaw, tongue, rotating of the eyes, or inability to be still. Other side effects may include cardiac irregularities, hypotension, respiratory suppression, and over-sedation. Patients on these medications should have orders to treat possibility of EPS. **WARNING:** If symptoms appear in-flight and no orders are available, hold neuroleptic medications, and notify C2 for further instruction. **(T-2)** Cogentin and Benadryl are available in the in-flight kit (IFK). The airlift agency will contact the governing PMRC for guidance and possible diversion to a MTF capable of handling this emergent situation. **(T-2) WARNING:** If previously untreated EPS symptoms are present preflight, the patient is not stable for flight. Notify C2; the airlift agency will contact the governing PMRC. **(T-2)**

8.20.8. Acute exacerbation of psychiatric or behavior disorder. If the patient is exhibiting aggressive and uncontrollable behavior, is extremely agitated and violent, and/or is determined to be a danger to flight safety, self or others on the aircraft, administer PRN medication as ordered. Consult C2 and the PMRC for guidance, medication orders and possible diversion to a MTF capable of handling the situation. If no PRN medication is ordered, give Haldol or Valium in accordance with **AE Clinical Protocol – Acute Exacerbation of Mental Health or Behavior Disorders**. Consult with the PMRC VFS and AOC/AECT for guidance and possible diversion to a Medical Treatment Facility (MTF) capable of handling the situation and for further medical direction as soon as operationally feasible. **(T-2)**

8.20.8.1. An AECM trained and competent in the application of restraints will act as the team leader and coordinate with the MCD and the MA. **(T-2)** The team leader establishes and is responsible for patient interaction while en route.

8.20.8.2. The safest and least restrictive alternative methods for controlling violent and uncontrollable behavior in the AE environment will be utilized. **(T-0)** These include but are not limited to:

- 8.20.8.2.1. Countermeasures. Appropriate use of medications and/or physical restraints in AE should be used to prevent patients from physically harming themselves, others, or becoming a safety risk to the flight. The least restrictive methods should be used to maintain safety of the patient, others and the aircraft. Verbal deescalating techniques should always be used first. De-escalating techniques can include allowing the patient to verbalize their feelings in an appropriate manner and talking to the patient in a calm but firm direction. An extremely agitated, high-risk patient may require an upgraded classification or may need to stay behind. Appropriate standing PRN medications (PO/IM) should be used.
- 8.20.8.2.2. Verbal de-escalation, verbal contract, explanation of consequences for not changing behavior, MA/family intervention, and medication as ordered.
- 8.20.8.2.3. Perform brief examination to rule out and treat underlying organic medical causes of agitation to include but not limited to hypoxia, hypoglycemia, alcohol/drug intoxication or withdrawal, medication effect/overdose, and hypotension.
- 8.20.8.2.4. Assessment to include but not limited to orientation to time, person and place, ability to follow commands/recall directions, or accepts limits and reliably contracts for safety. Identify if a danger to flight safety, increased risk to self or others, or too agitated/violent and needs sedatives administered. **NOTE:** If attempts at verbal de-escalation have failed and the patient is extremely violent, out of control, or a threat to flight safety, then medicate with prescribed PRN medications and apply restraints. Call C2 and request a patch to the PMRC if in-flight or call the VFS if in the staging facility. **(T-2)** **NOTE:** If this situation occurs prior to takeoff, the patient is not stable for flight. The patient will be stabilized with medication prior to take-off in coordination with C2, PMRC, and/or local physician. **(T-2)** The mission should not be delayed in order to meet this requirement.
- 8.20.8.3. When alternative measures are unsuccessful, the MCD, as the AECM team leader, and the MA, will:
- 8.20.8.3.1. Ensure the patient, the crew, and others are not in immediate danger. **(T-0)**
  - 8.20.8.3.2. Direct the notification of the flight crew to include securing access to the flight deck. **(T-0)**
  - 8.20.8.3.3. Make every effort to maintain the patient's dignity and privacy. **(T-0)**
  - 8.20.8.3.4. Inform the patient and family member (if present) he/she has escalating symptoms, and the crew is assuming control until he/she is able to regain control. **(T-0)**
  - 8.20.8.3.5. If restraints are required, apply IAW AFI 10-2909 and follow the **AE Clinical Protocol - Acute Exacerbation of Mental Health or Behavioral Disorders**. **(T-0)**
- 8.20.9. Management of patients requiring restraints in the AE environment. **WARNING:** When applying physical restraints, there is a potential to produce serious consequences, such

as physical and psychological harm, loss of dignity, violation of an individual's rights, and even death.

8.20.9.1. The goal for restraint use is to provide the most effective method to ensure and maintain the safety of the patient and staff/aircrew. Restraints may also be utilized for patients at risk for dislodging vital therapeutic devices.

8.20.9.2. Restraints will not be applied as punishment or for crew convenience.

8.20.10. Physician written time limited orders for restraints: **(T-2)**

8.20.10.1. Physicians will annotate restraint orders on AF Form 3899F or EHR equivalent. **(T-1)** Each order for physical restraints must cover the timeframe the patient is in the AE system. **(T-0)** A PRN restraint order is not a valid order.

8.20.10.2. In an emergency, FN or RN may initiate the use of restraints before an order is obtained. The MCD/FN may determine a patient requires restraints or the patient requires the continuation of restraints in the AE environment beyond initial order. In either situation, the use of restraints will not exceed 24 hrs.

8.20.10.3. Document application, continuation of restraints and clinical observations to the governing PMRC through C2. **(T-2)**

8.20.10.4. After the original restraint order is obtained, the patient must receive face-to-face assessment by a physician or licensed independent practitioner, usually done at the RON or destination facility, whichever is sooner. **(T-0)**

8.20.10.5. In the AE system, contact C2 when restraints are initiated without an order. Document all C2 contact attempts/contacts on AF Form 3899 EHR or equivalent. **(T-2)**  
**NOTE:** In the AE system contact C2 and PMRC with any change in the patient's condition and notify C2 of the delay of the time frames below. **(T-2)**

8.20.10.6. The following time constraints are ideally required for physician assessment after initiation of restraints:

8.20.10.6.1. Four (4) hrs. for adults.

8.20.10.6.2. Two (2) hrs. for children and adolescents age 9 to 17.

8.20.10.6.3. One (1) hr. for patients under age 9.

8.20.11. Level of observation required for patients in restraints.

8.20.11.1. Restrained patients should be directly observed for the duration of the restraint episode. During the restraint period, the MCD/FN may remove wrist restraints but not the ankle restraints. This is consistent with maintaining flight safety and facilitates patient feeding and other personal activities while the patient adapts to the AE environment.

8.20.12. Documentation of patient in restraints and release criteria.

8.20.12.1. Patient assessment and behavior/justification for PRN sedation medication or restraint application.

8.20.12.2. Date/time of administration of medication and/or application of restraints, and outcome.

8.20.12.3. Date/time of notification of the physician.

8.20.12.4. Complete DD Form 2852. (T-2)

8.20.12.5. Maintain direct observation, including during take-off and landing.

8.20.12.6. Perform neurovascular assessment to extremities and document observations every 15 minutes according to AF Form 3899G or EHR equivalent.

8.20.12.7. Assess hydration, nutrition, skin integrity, and toileting needs every 2 hrs.

8.20.12.8. Turn and reposition patient at least once every 2 hrs., removing one extremity restraint at a time to check skin integrity.

8.20.12.9. Perform skin care to the area and ROM exercises at least once every 2 hrs.

8.20.12.10. Leg restraints should not be removed while in-flight. During patient staging, if the patient is reassessed by a physician, the physician may write an order to remove the restraints.

8.20.13. Alcohol and drug withdrawal.

8.20.13.1. Level of withdrawal is determined according to the clinical institute withdrawal assessment for alcohol (CIWA) guidelines. **Refer to Attachment 12.**

8.20.13.2. Signs and symptoms may be mild-moderate such as restlessness, agitation, anxiety, and fear, nausea, vomiting, malaise, weakness, tachycardia, diaphoresis, elevated temperature, tremors, and dilated but reactive pupils.

8.20.13.2.1. Critical symptoms may include abnormal VS, tremors, seizures, delirium (fluctuating mental status), and hallucinations.

8.20.13.2.2. A detoxification period of 3-5 days is required to be accepted for flight.

8.20.13.2.3. If residual withdrawal symptoms are present, patient must have IV access. (T-3)

8.20.13.2.4. Medications per **AE Clinical Protocol - Acute Exacerbation of Mental Health or Behavior Disorders Medication Administration.**

8.20.13.2.5. Documentation will include subjective and objective data for giving the medication; VS; known allergies; for women of childbearing years: date of last menstrual cycle; date and time of administration and notification of a physician, and the outcome. (T-0) The following statement will be documented on AF Form 3899 or EHR equivalent "(Insert name of drug) was administered IAW **AE Clinical Protocol - Acute Exacerbation of Mental Health or Behavior Disorders.** Complete DD Form 2852. (T-1)

8.20.13.2.6. Performance Improvement Monitoring.

8.20.13.2.6.1. Documentation of application of physical restraints IAW AFI 48-307 V3.

8.20.13.2.6.2. Documentation of administration of medication on the AF Form 3899I or EHR equivalent and the patient's response to the medication.

8.20.13.2.6.3. Documentation of notification to the PMRC VFS and AOC/AECT agency.



8.20.13.2.6.4. Completion of the DD Form 2852. **(T-2)**

## 8.20.14. Acute stress disorder/post-traumatic stress syndrome (PTSD).

8.20.14.1. Special consideration should be given to mental health patients experiencing acute stress reactions and PTSD. Acute stress and PTSD develop after experiencing a psychologically traumatic event outside the range of usual experience (e.g. combat, bombings, sexual assault).

8.20.14.1.1. Individuals may re-experience the event through recurrent thoughts, images, flashback episodes and dreams.

8.20.14.1.2. Individuals may present with symptoms such as increased arousal or irritability, sleep deprivation, hypervigilance, exaggerated startled response, survival guilt, poor concentration, anxiety and motor restlessness.

8.20.14.2. Assess for signs and symptoms (may be associated with other injuries: Tremors, profuse sweating, dry mouth, tachycardia, shortness of breath and hyperventilation (rule out hypoxia), irritability, flat affect, staring, crying, insomnia, and avoidant or emotional numbness). **NOTE:** May be more prone to violent and aggressive behaviors while in the AE environment due to stress of flight.

8.20.14.3. Treatment/Management begins as soon as symptoms are noticed.

8.20.14.3.1. Keep acute stress disorder/PTSD patients together for mutual support and away from other patients, if feasible. Provide comfort measures to include fluids, nutrition, blankets, and medications.

8.20.14.3.2. Talk to patients in a calm, reassuring manner, avoid approaching individual from behind and keep from touching if possible.

8.20.14.3.3. Anxiolytic medications may be necessary preflight and in-flight for increased anxiety, extreme agitation, and restlessness.

## 8.20.15. Post-mission/RON requirements.

8.20.15.1. The receiving MA will assume responsibility of the patient and remain with the patient at all times until released. **(T-2)** In consultation with the MCD, this MA, if a physician or licensed independent practitioner, determines if restraints will be continued during transportation to the MTF. Restraints will not be placed for the convenience of the receiving facility. **(T-2)** Continuity of care and patient dignity will be maintained en route to the receiving MTF.

8.20.15.2. A physician or licensed independent practitioner will perform a face-to-face reassessment of the patient to determine if restraints are to be continued while in the AE environment. **(T-0)**

8.20.15.3. The physician or licensed independent practitioner at the RON site will review the FN's determination to apply restraints and/or administer PRN sedation medications en route. **(T-0)**

8.20.15.4. Higher acuity psychiatric patients ( i.e., 1A or 1B) or alcohol abuse patients, or in extreme situations where a patient has required restraints for more than 24 hrs.,

RON bed may be required at an off-base psychiatric facility. Notify PMRC personnel of requirements in the event of unscheduled RON's.

## **8.21. Pain Management.**

### **8.21.1. Stresses of flight.**

8.21.1.1. Decreased partial pressure of oxygen: Decreases tissue oxygen availability and will exacerbate oxygenation deficiencies due to preexisting hypoxias related to injury, disease, and/or treatment. May exacerbate the CNS effects of pain medication.

8.21.1.2. Barometric pressure changes: Gas expansion in the abdominal cavity at cruise altitude may lead to crowding of the diaphragm increasing pain and splinting. Splinting and diaphragmatic crowding decreases lung volume and expansion, and may exacerbate the risk of hypoxia. Consider placing a nasogastric tube.

8.21.1.3. Thermal: Cold temperatures may lead to vasoconstriction, shivering and exacerbated pain. Keep patient warm and limit exposure to cold temperatures.

8.21.1.4. Vibration/turbulence: Increases muscle activity, metabolic rate, and peripheral vasoconstriction. Avoid excessive speed of ground transportation assets. Secure patients away from the bulkhead and floor of ground vehicles and aircraft, encourage and assist with position changes, and provide adequate padding and skin care, especially for orthopedic patients with internal/external fixators.

8.21.1.5. Gravitational forces: Seat belts in side-facing and rear-facing seats may cause injury during acceleration/deceleration; use extra padding between abdomen and seat belt for patients with abdominal surgery.

8.21.1.6. Fatigue: Exacerbates the patient's underlying condition/diagnosis due to the overall effect of previously mentioned stresses of flight, and length of time the patient has been in the AE system.

8.21.2. General: Pain is a complex experience with multiple dimensions and is always subjective. Pain is defined by the International Association for the Study of Pain as an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage. **NOTE:** The inability to communicate verbally does not negate the possibility that an individual is experiencing pain and is in need of appropriate pain-relieving treatment. **NOTE:** Do not give supplemental acetaminophen (Tylenol) with oral narcotics containing acetaminophen as this may lead to toxicity risks.

8.21.2.1. Undertreated and poorly managed pain may lead to adverse physical and psychological consequences and complications such as pneumonia, VTE, delayed recovery and/or progression to chronic pain. Reassessment of pain is required whenever the patient's environment changes. Pain management needs change frequently and can dictate whether transport is possible (or recommended).

8.21.2.2. For any patient with escalating pain control requirements, vigilant monitoring and documentation during and after all interventions is mandatory to assess the patient's response to therapy and to prevent problems such as over-sedation and airway obstruction. Proper documentation of orders, VS, pulse-oximetry monitoring, patient response and a coordinated hand-off when providers change duties is critical.

8.21.2.2.1. Phenergan is sedating and when used with opioids may increase the risk of respiratory depression. Respiratory depression, airway obstruction, and apnea are much more common when these medications are used in combination. Tolerance to respiratory-depressant effects usually develop within 1 week of starting regularly scheduled opioid therapy. Phenergan will not be given IV in the AE system.

8.21.2.2.2. Benzodiazepines, such as diazepam, clonazepam, or lorazepam, due to their sedative and respiratory depressant effects, should be used cautiously with opioids. The opioids' dose may need to be decreased. Respiratory depression, airway obstruction, and apnea are much more common when these medications are used in combination.

8.21.2.2.3. Frequent monitoring of VS, including Motor Activity Assessment Scale (MAAS) sedation score, is essential not only when administering the medications, but for 15 – 30 minutes further to ensure these complications do not occur.

8.21.3. Pain assessment: When assessing pain, always rule out and treat life-threatening conditions, such as cardiac pain/pulmonary embolism.

8.21.3.1. Indicators of pain by hierarchy:

8.21.3.1.1. Patient self-report – single most reliable measure of intensity of pain.

8.21.3.1.2. Pathological conditions or procedures known to be painful.

8.21.3.1.3. Observed pain-related behaviors (grimacing, restlessness, vocalization, groaning).

8.21.3.1.4. Reports of pain by family or attendant.

8.21.3.1.5. Physiological changes (increased pulse and BP).

8.21.3.2. Types of pain scales. When choosing a pain scale, select the one that best aligns with the age and condition of the patient. **Refer to Attachment 13.**

8.21.3.2.1. 0-10 Numeric Pain Rating Scale.

8.21.3.2.1.1. Most commonly based on a scale from zero to 10.

8.21.3.2.1.2. Zero represents no pain at all while 10 represents the worst imaginable pain.

8.21.3.2.2. Wong-Baker faces.

8.21.3.2.2.1. Represented by faces with expressions. Zero is represented by a smiley face, while 10 is represented as a distraught, crying face.

8.21.3.2.2.2. Useful when rating pain in children, or for adults with mild cognitive impairments.

8.21.3.2.3. Defense and Veterans Pain Rating Scale (DVPRS). This scale includes visual cues and verbal descriptors to improve interpretability of incremental pain intensity levels supplemental questions assess pain interference with general activity, sleep, mood, and stress.

- 8.21.3.2.4. Face, Legs, Activity, Crying and Consolability (FLACC). Observer rated pain scale for children between the ages of 2 and 7 and for people who are unable to communicate their pain (e.g. ventilator patients).
- 8.21.3.3. Obtain VS (including pulse oximetry) and assess pain at least every 4 hrs. for patients who require en route pain medication administration. Rule out hypoxia and consider compartment syndrome.
- 8.21.3.4. Determine characteristics of pain: Quality, region, radiation, what provokes/triggers (movement/dressing changes/deep breathing and coughing), palliates/eases (repositioning/elevation/support/medication), and the adequacy/adverse effects of pain medication.
- 8.21.3.5. Ascertain the patient's pain level and their acceptable level of pain. The acceptable level of pain is the level of pain the patient is willing to tolerate. Respect the patient's self-report of pain. **NOTE:** Individual practice may lead to differences in delivery of pain medication. **NOTE:** Healthcare providers' bias, prejudice and stereotyping may lead to differences in delivery of pain medication. Avoid attributing pain to psychological causes, and respect/accept patient's self-report of pain.
- 8.21.3.6. If appropriate, educate the patient on the availability of medications.
- 8.21.3.7. A pain score of 3 or more usually indicates the need for pain medication. Assess current medications to evaluate potential interactions to include hypoxia before administering pain medication.
- 8.21.3.8. Pain should be reassessed as ordered and after interventions.
- 8.21.3.8.1. Pain and VS will be reassessed 15-30 minutes after pharmacologic interventions. **(T-3)**
- 8.21.3.8.2. Take into consideration the type of medication, time of onset based on route, and duration of known effectiveness.
- 8.21.3.9. When operationally feasible:
- 8.21.3.9.1. Assess cultural attitudes, stoicism, guilt, potential frustration, helplessness, mental functioning, mood, and fear of pain.
- 8.21.3.9.2. Educate patients, family, and attendants regarding reporting pain, availability of pain medication, as well as, the low risk of addiction from long-term use and/or high doses of medication for pain relief, and document in the health record. **NOTE:** Include information about PRN medications being available around-the-clock.
- 8.21.4. Pain: Treatment/management:
- 8.21.4.1. Administer pain medication, as ordered, prior to potential painful events such as transportation movement and en route staging treatments and dressing changes. Take into consideration the type of pain medication, time of onset based on route, and duration of known effectiveness. For example, opioid analgesic onset is immediate when administered intravenously, and rapid when administered via intramuscular and oral routes (approximately 30 - 60 minutes); duration is usually 1- 8 hrs. Also consider

adjunct medications such as anxiolytics. **NOTE:** Document all known allergies in the health record.

8.21.4.2. Assess adequacy of pain medication at all patient care hand-offs, en route staging locations and in-flight. Consider medication for breakthrough pain (pain that occurs in between regularly scheduled doses of pain medication). Start pain control at least 60 minutes prior to patient movement from bedside (en route to aircraft) when feasible. **NOTE:** If medication is inadequate or absent at the staging facility, the physician/FS will evaluate and order pain medication prior to continuation of PM. **(T-2)** **NOTE:** If a physician is not present and pain medication is not available or is insufficient, request and establish contact with PMRC for a physician order.

8.21.4.3. Non-drug interventions to assist in alleviating pain: Maintain body alignment, elevate extremity, change position; readjust splints and bivalved casts; encourage physical activity, if operationally and clinically feasible. Consider heat/cold application if not contraindicated.

8.21.4.4. Prescribed controlled medications entrusted to a patient/attendant are considered the property of the individual, who is then responsible for safeguarding and administering the drug(s) during all phases of PM. Ensure patients understand use and have an adequate supply for duration of movement to the receiving MTF. Medical personnel will determine if the patient or attendant is competent to safely manage these medications. **(T-0)** **NOTE:** Patients and NMA will not carry or administer controlled medications without a current written physician's order.

8.21.4.5. The originating facility will be responsible for supplying the patient's pain medication for their time in the AE system. **(T-2)** Intratheater requires a 1-day supply and intertheater requires a 3-day supply of medication. **(T-3)**

#### 8.21.5. Epidurals and PNBs.

8.21.5.1. Epidural analgesia and PNBs are a proven adjunct for severe pain management for patients transiting the continuum of care. Patients will be managed by ERCC team, MAs, and/or AECMs and ERPS personnel. **(T-2)** All staging facility nursing personnel and AECMs currently providing patient care in the AE system must accomplish the approved AMC/SG training plan. **(T-2)** This training will be completed annually and within 90 days of deployment. **(T-1)** This training will be documented in the RN's Competency Assessment Folder and the medical technician/AET Air Force Training Record. **(T-1)** The CN will be responsible for ensuring all AECMs/staging facility nursing personnel have accomplished training prior to caring for patients with epidural analgesia or PNB infusions. **(T-1)** The training can be local AMC SG/A3 website, <https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx>.

8.21.5.2. The following apply to patients moving in the AE system without an attendant/ERCC team:

8.21.5.2.1. An epidural analgesia or PNB infusion must be in place and running without incident for a minimum of 4 hrs. prior to departing the sending facility. **(T-2)**

8.21.5.2.2. Only analgesic concentrations of local anesthetics will be infused. **(T-0)** Narcotics (or any other medication) will NOT be added to the infusions. **(T-0)**

8.21.5.2.2.1. Only amides such as bupivacaine and ropivacaine will be used. (T-0) Esters, such as procaine and chloroprocaine are not permitted due to increased risks associated with these medications.

8.21.5.2.2.2. More dilute solutions, i.e. 0.125% Bupivacaine, will be used to decrease the risk of sympathetic blockade. (T-0)

8.21.5.2.3. All infusions must be stable at an analgesic level, not a surgical anesthesia level, at the T10 dermatome (umbilicus) level. (T-0) The patient should be able to regain partial “motor” control of the lower extremities. (T-0)

8.21.5.2.4. Other pain medications or narcotics may be administered orally, IV or by PCA using established protocols or in conjunction with written physician orders.

8.21.5.2.5. All epidural analgesia or PNB infusions must be administered using an approved infusion pump. (T-2) Non-approved pumps will not be accepted without a waiver from AMC/A3VM. (T-2) The pump and the IV tubing must clearly be labeled as “**EPIDURAL INFUSION**” or “**PERIPHERAL NERVE BLOCK INFUSION.**” (T-2)

8.21.5.2.6. A patient hand-off will be completed and documented on the AF Form 3899M or EHR equivalent each time a different clinician accepts care of the patient. (T-2) The hand-off will be performed consistently with high alert IV medications to prevent programming errors. (T-2) An independent double-check is defined as 2 medical persons familiar with the process/equipment/medication (at least one being a RN), independently verifying the practitioner’s/provider’s orders, medication hanging, and the correct set up of PCA or IV pump in use (rate, dose, volume to infuse, medication concentration, basal rate, bolus lockout, etc.). This hand-off will include clearing the infusion history on the infusion pump. (T-2) Documentation of double-checks will be reflected by two signatures on required forms/flow sheets or in the health record. (T-2) This is applicable to MTFs, ERPS, ERCC team, and AECMs. Double-checks are conducted and documented when initiating high alert medications, during hand-offs of care, following a change in orders, and when a new bag is started.

8.21.5.2.7. Sufficient orders for the epidural analgesia or regional block infusion must be fully documented in the health record. (T-2) These orders should include medication, infusion rates/settings as well as back-up pain management orders in the event the pump should fail or inadequate pain relief should occur while the patient is in transit.

8.21.5.2.8. In the event there are complications related to the epidural infusion or regional block, nursing personnel will terminate the infusion and treat patient as appropriate and per established clinical guidelines included in the Epidural and PNB Training Plan established by AMC/SGK. (T-2) Interventions could include a range of activities from administering alternate pain adjuncts to airway/circulatory support. Changes in status and interventions will be documented in the health record and communicated to C2. (T-2)

8.21.5.2.9. At each en route location, an anesthesia provider will be contacted, if needed, for consultation.

8.21.5.2.10. Sterile dressings to insertion site will not be changed in the aircraft. (T-0) They may be reinforced if necessary. The epidural catheter will be secured so the catheter is not stretched or pulled at the site with any movement of the patient. (T-0)

8.21.5.3. Patients who do not meet the above criteria must be assigned a medical attendant who is appropriately trained/credentialed to support such a patient. (T-0) The PMR should also reflect type of infusion and attendant information.

8.21.5.4. All individuals participating in the care of the patient should have up-to-date training and experience with PCA use, regional analgesia and the equipment. All equipment associated with the use of regional analgesia must be approved for flight. (T-2) Consider heat/cold application if not contraindicated.

8.21.5.5. At each patient care hand off and every 2 hrs., assess pain status, MAAS sedation score, dermatome level of analgesia, VS, motor function, and drug side effects. AETs may assist in providing care to these patients in accordance with their Career Field Education and Training Plan (CFETP).

8.21.5.6. Assessing motor/sensory dermatome levels includes motor and sensory function checks. **NOTE:** a dermatome is best defined as that area of the skin that is supplied by a single spinal nerve or more specifically, the vertebral level at which the spinal nerve exits the spinal cord that innervates the skin in a contiguous sensory band or stripe (~ 1-2 inches wide). These bands arise posteriorly, from the spinal column laterally/anteriorly. Each stripe or band is referred to as a dermatome and each dermatome corresponds to a specific nerve root. Dermatome segments are standardized to a specific nerve root and enable clear/consistent communication about the level of anesthesia (sensory blockade).

8.21.5.6.1. Assessing motor function:

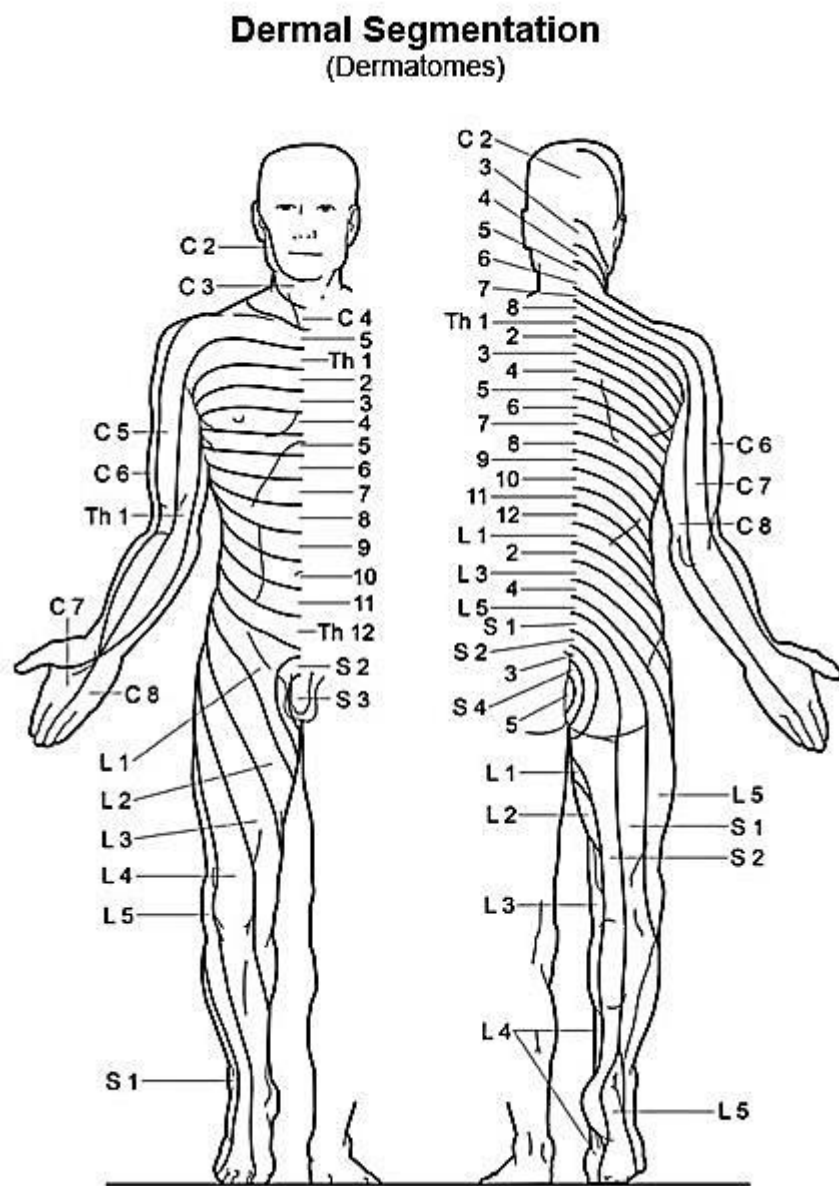
8.21.5.6.1.1. Ask patient to wiggle toes, dorsiflex foot.

8.21.5.6.1.2. Ask patient to bend knees/raise leg.

8.21.5.6.1.3. Tense the rectus muscles by lifting the head.

8.21.5.6.1.4. See [Figure 8.2](#). to determine the level of motor blockade.

Figure 8.2. Dermatome Map.



8.21.5.6.1.4.1. Supplied by ASET website (American Society of Electroencephalography)

8.21.5.6.1.4.2. Technicians (ASET), 2011  
(<http://orimtec.com/illustrations/pop-dermal.php>).

8.21.5.6.2. Assessing sensory function: **NOTE:** Positive findings indicate return of motor function. It does not, however, indicate resolution of the sensory/autonomic blockade therefore adequate pain control may still be present.

8.21.5.6.2.1. Temperature - use a cold object (e.g. ice/alcohol swab).

8.21.5.6.2.2. Touch - apply a sharp and dull object to the skin (e.g. paper clip).



8.21.5.6.2.3. Begin the assessment along the sternum moving from side-to-side, progressing downward until the patient identifies a 'change' in 'touch' sensation and 'temperature' sensation (cold warmth or no sensation). Sensation levels may return faster on one side than the other, therefore clear documentation identifying the sensory levels (left and right) should be recorded.

#### 8.21.5.7. Peripheral nerve blocks.

8.21.5.7.1. There are several types of regional anesthesia currently used including axillary, femoral, and popliteal PNBs. With these blocks, the anesthesia provider injects or infuses the local anesthetic into the tissue surrounding the nerve. Needle placement is determined initially by using anatomic landmarks. Next, a peripheral nerve stimulator is used to facilitate precise location of the appropriate nerve. The anesthetic effect occurs primarily distal to the injection sites. For example, a popliteal block may be used for distal surgical procedures, such as the achilles tendon repair. In contrast, intravenous (Bier) nerve blocks are administered distal to the surgical site and rely on diffusion rather than direct injection to achieve anesthetic effects.

8.21.5.7.2. All local anesthetic agents used in PNBs induce physiologic responses via the same mechanism. Specifically, anesthetics interfere with the neuronal membrane's permeability to sodium. Disruption of sodium exchange results in inhibition of neuronal impulses between the affected extremity and the brain. Consequently, sensory, motor, and sympathetic neural pathways are affected, and the patient is unable to feel or move the anesthetized limb.

8.21.5.7.3. Signs of systemic toxicity include tinnitus, sudden metallic taste, confusion that progresses rapidly to loss of consciousness, seizures, and abrupt onset of cardiac dysrhythmias. Neurologic symptoms are likely to appear before cardiovascular disturbances, unless epinephrine (EPI) has been added to the block. Inadvertent systemic administration of anesthetic combinations containing epinephrine will cause transient tachycardia and hypertension. Refer to **AE Clinical Protocol - Local Anesthetic Toxicity (LAST) Treatment**.

#### 8.21.5.8. Patient care responsibilities for epidural/PNB infusions.

8.21.5.8.1. Ensure the patient is on continuous pulse oximetry for epidurals. Assess and document the respiratory rate and oxygen saturation, MAAS sedation score, VS, pain scale, dermatome level, motor and sensory function and side effects (if present) every 2 hrs. Document this on the AF Form 3899N, or EHR equivalent. AETs may perform these duties in accordance with their CFETP. The AET will report these VS to the FN. **(T-3)** If the oxygen saturation falls below 92%, refer to **AE Clinical Protocol – Emergency Oxygen**.

8.21.5.8.2. Some motor weakness in patients undergoing epidural analgesia or PNB therapy to a lower extremity is expected and the patient should be considered a risk for falls and require assistance when ambulating. Identify the patient as a fall risk via the "Epidural Patient" or "PNB Patient" wrist band.

8.21.5.8.3. Assess the dressing for leakage every 4 hrs. and record on the AF Form 3899N or or EHR equivalent.

8.21.5.8.4. Catheters will NOT be removed until reevaluated by an anesthesia provider at the next scheduled en route stop. **(T-2)** Only the anesthesia provider will remove the catheter if required. Staging facility personnel and AECMs WILL NEVER remove the catheter. **(T-2)** Administration of PRN medications per physician's orders will be the method of pain management if the approved AE infusion pump must be turned off due to adverse side effects. **(T-2)**

8.21.5.8.5. Caution should be taken with any patient receiving epidural or PNB analgesia via an indwelling catheter who is also receiving anticoagulation therapy, to include coumadin, heparin infusions, or low molecular weight heparin or lovenox.

8.21.5.8.6. Maintain IV access of #20 gauge or larger.

8.21.5.8.7. Change epidural/PNB medication bag before infusion runs out.

8.21.5.8.8. Ensure the approved AE infusion pump and IV tubing is labeled "EPIDURAL ANALGESIA OR PERIPHERAL NERVE BLOCK" and the catheter is taped with label indicating "FOR EPIDURAL ANALGESIA or PERIPHERAL NERVE BLOCK USE ONLY." The MCD will ensure the patient's placement on the aircraft is clearly marked on the load plan and specifically identify the patient's location to the AE crew during pre-mission crew brief. **(T-1)**

8.21.5.8.9. Adverse effects of local anesthetics typically occur as a result of high blood levels of the drugs, and are similar among all agents in use. Neurologic symptoms are likely to appear before cardiovascular disturbances, unless epinephrine has been added to the block. Inadvertent systemic administration of anesthetic combinations containing epinephrine will cause transient tachycardia and hypertension. Hypersensitivity, or allergic reactions, although rare, are also a concern with regional anesthetic agents, and are more likely to occur with ester-based agents than with amides. Esters include procaine, chlorprocaine, tetracaine, and piperocaine, whereas amides include bupivacaine, mepivacaine, and prilocaine. **WARNING:** If adverse side effects occur, the course of action to take for all problems related to these infusions during flight will be to terminate the infusion (turn off the approved AE infusion pump) and resort to other established pain management techniques. **(T-2)**

8.21.5.8.10. While controversy exists regarding the mechanism of lipid rescue, the most broadly accepted theory is that Intralipid creates a new intravascular lipid compartment, or "lipid sink," that increases the volume distribution of lipophilic drugs. Distribution of drugs to this additional lipid compartment rapidly decreases the concentration of overdosed medicines on vital organs and quickly reverses the effects of the toxins. Thus far, lipid rescue has been proven to work in anesthetic overdoses such as bupivacaine and lidocaine (commonly used emergency department [ED] anesthetics). Refer to **AE Clinical Protocol – LAST**.

8.21.5.8.11. If in-flight, notify the clearing FS or TVFS (via phone patch) for:

8.21.5.8.11.1. CNS symptoms

8.21.5.8.11.1.1. Metallic taste in the mouth

8.21.5.8.11.1.2. Tinnitus

- 8.21.5.8.11.1.3. Tingling of the lips; difficulty swallowing
- 8.21.5.8.11.1.4. Agitation
- 8.21.5.8.11.1.5. Seizures
- 8.21.5.8.11.2. Cardiovascular symptoms
  - 8.21.5.8.11.2.1. Bradycardia
  - 8.21.5.8.11.2.2. Decreased myocardial contractility
  - 8.21.5.8.11.2.3. Atrial-ventricular block
  - 8.21.5.8.11.2.4. Vasodilation
  - 8.21.5.8.11.2.5. Ventricular arrhythmias
  - 8.21.5.8.11.2.6. Cardiac Arrest
- 8.21.5.8.11.3. Respiratory symptoms
  - 8.21.5.8.11.3.1. Shortness of breath.
  - 8.21.5.8.11.3.2. Dizziness or light-headedness.
  - 8.21.5.8.11.3.3. Respiratory rate of 10/minute or less, or 50% below baseline.
- 8.21.5.8.11.4. Patient expressions of impending doom.
- 8.21.5.8.11.5. Pain out of proportion to the clinical injury or out of character for the patient's history.
- 8.21.5.8.11.6. Increasing MAAS sedation score or presence of confusion.
- 8.21.5.8.11.7. Inadequate analgesia.
- 8.21.5.8.11.8. Pruritus or nausea/vomiting unrelieved after initial treatment.
- 8.21.5.8.11.9. Oxygen saturation less than 92% on room air.
- 8.21.5.8.11.10. Hypotension: Postural BP drop > 15mmHg from baseline.
- 8.21.5.8.11.11. High sensory level: Numbness at or above nipples.
- 8.21.5.8.11.12. Motor blockade: Inability to bend knees while lying bed.
- 8.21.5.8.11.13. Dislodgement or Leakage on the catheter dressing.
- 8.21.5.8.11.14. Catheter disconnection.
- 8.21.5.8.11.15. Temperature >101 F and/or presence of shaking chills.
- 8.21.5.8.12. Documentation will include subjective and objective data for giving the medication; VS; known allergies; for women of childbearing years: date of last menstrual cycle; date and time of administration and notification of a physician, and the outcome. **(T-0)** Document the rate (ml/hr.), and dose (ml) with VS on the AF Form 3899N or EHR equivalent every 2 hrs. **(T-0)** The following statement will be documented on AF Form 3899 or EHR equivalent "(Insert name of drug) was administered IAW AE Clinical Protocol - LAST." Complete and submit DD Form 2852. **(T-2)**

8.21.5.8.13. Process improvement monitoring will include: Ensuring healthcare provider followed and documented the AE Clinical Protocol - LAST; the VFS was notified as soon as operationally possible and the DD Form 2852 was completed and submitted. **(T-2)**

8.21.5.8.14. Epidural analgesia therapy and PNB therapy to a lower extremity can cause motor weakness and is normal; therefore, the patient requires assistance with all activities. The staging facility nurses and flight nurses will be responsible for assessing the patient's motor strength. **(T-1)** If a patient cannot move their legs due to excessive motor block from the infusion, notify the TVFS immediately. **(T-2)**

8.21.5.8.15. If the patient has a MAAS score of less than 2 or greater than 4, consider other causes like hypoxia, pain, and the need to use the restroom, etc. and call the C2 agency. **Table 8.10.**

**Table 8.10. Motor Activity Assessment Scale (MAAS) Sedation Scoring System.**

0 Unresponsive	Does not move with noxious stimuli (e.g., suctioning or five seconds of vigorous sternal or nail bed pressure)
1 Responsive only to noxious stimuli	Opens eyes, raises eyebrows, turns head towards stimulus or moves limbs with noxious stimuli
2 Responsive to touch or name	Opens eyes, raises eyebrows, turns head towards stimulus or moves limbs when name is spoken loudly
3 Calm and cooperative	No external stimulus required to elicit response, movements purposeful, follows commands
4 Restless and cooperative	No external stimulus required to elicit response <b>AND</b> patient is picking at sheets or tubes <b>OR</b> uncovering self and follows commands
5 Agitated	No external stimuli required to elicit response <b>AND</b> attempting to sit up <b>OR</b> move limbs out of bed <b>AND</b> does not consistently follow commands
6 Dangerously agitated, uncooperative	No external stimuli required to elicit response <b>AND</b> patient is pulling at tubes or catheters <b>OR</b> thrashing side-to-side <b>OR</b> striking at others <b>OR</b> trying to climb out of bed <b>AND</b> does not calm down when asked

8.21.5.8.16. If pain medication is not available or is insufficient, request and establish immediate radio communication with C2 and they will notify the governing PMRC for a physician order. **(T-2)** The MCD/nurse will complete DD Form 2852 and document the occurrence on AF Form 3829 if flight related. **(T-2)**

8.21.6. Patient controlled analgesia.

8.21.6.1. Various pieces of PCA equipment/pumps for the administration of pain medication may be encountered in the AE system. Refer to specific equipment manuals contained in the EFB or at the patient staging location. **WARNING:** In addition to correct labeling of IV and pain medication containers/bags, ensure all IV and pain management tubing is taped/labeled with drug/location/date/time in ZULU. For example, “PCA IV Morphine, Right Forearm, Date/ZULU time.” All medical personnel will ensure PCA pump is locked after set up, dose change, and turn over. **(T-2)**

8.21.6.2. Prior to flight. Anesthesia services/pain service personnel:

8.21.6.2.1. Will provide consultation and programming of the PCA infusion pump at the MTF for all patients transiting the AE system, including during ERPS RON. **(T-1)**

8.21.6.2.2. Will order and/or review all pain medication loading dose(s), PCA bolus dose amount, lock-out interval, basal flow (continuous) rate, breakthrough pain orders, continuous peripheral IV infusion or saline lock, and over-sedation protocol on the AF Form 3899 or EHR equivalent. **(T-1)**

8.21.6.2.3. After confirming infusion programming, the pump and narcotic reservoir will be placed in the protective casing (if available) and locked. **(T-1)** **NOTE:** Assure pain management tubing is taped/labeled with drug/location/date/time in ZULU.

8.21.6.2.4. Will consider increasing the dose or decreasing lock-out interval to account for increased pain during patient transport. **(T-1)** A nurse or credentialed provider will consider increasing or decreasing the dosage in accordance with physician orders. **(T-1)**

8.21.6.3. At each patient care hand-off (e.g. aircraft/ERPS/MTF) and/or “Change of Shift.”

8.21.6.3.1. Assess pain score, VS, pulse ox, and MAAS baseline score every 2 hours. Treat pain PRN. Assess for the presence of medication side effects (nausea, pruritus, constipation). **NOTE:** While on PCA, have continuous pulse ox monitoring as indicated by patient condition. **(T-1)**

8.21.6.3.2. Inspect the PCA narcotic reservoir bag for adequate supply of medication for the duration of the transport, and verify tubing label location. **NOTE:** Assess every 2 hrs. and assure tubing and pump are secured to the patient.

8.21.6.3.3. Document and verify pump infusion history and current configuration with the sending/receiving nurse or MTF representative and annotate remaining fluid (ml's) on the front of AF Form 3899A or EHR equivalent. Two medical personnel will clear the pump at every hand-off and change of shift. **(T-1)**

8.21.6.3.4. Confirm with the sending/receiving nurse or MTF representative: Physician orders, to include any medication loading dose(s), PCA bolus dose amount, lock-out interval, basal flow rate, over-sedation protocol and breakthrough pain orders. Also confirm tubing is labeled with date initiated/last changed, and the tubing is secured.

8.21.6.4. While en route, at RON location or ERPS.

- 8.21.6.4.1. Document amount of PCA medication administered for each leg of the mission/patient care hand-off and/or shift change in the EHR, on the front of AF Form 3899I or EHR equivalent.
- 8.21.6.4.2. If unresponsive to painful stimulation and/or respirations are 10 or less per minute, stop PCA pump infusion immediately. Refer to **AE Clinical Protocol - Narcotic or Benzodiazepine Overdose**. Notify C2. **(T-2)** If in the ERPS, notify anesthesia and/or FS. Document all assessment data and follow-up in the patient health record and DD Form 2852. **(T-2)**.
- 8.21.6.4.3. If the PCA infusion pump is discontinued, the unused volume of narcotic in the reservoir bag will be witnessed and disposed of by 2 medical personnel, in which 1 will be a RN and documented as “wasted” on the AF Form 3899 or EHR equivalent. **(T-2)**
- 8.21.6.4.4. If the pump malfunctions or is emptied or if the catheter is dislodged (leaking), shut the pump off and provide alternate pain medication. Document in the health record (if in-flight document on AF Form 3829 or EHR) and submit DD Form 2852. **(T-2)**
- 8.21.6.5. Discontinued pumps will be returned to the nearest PMI center IAW to current CONOPS/OPLAN. **(T-2)**
- 8.21.6.6. Patient/family education.
- 8.21.6.6.1. Benefits of the pain control system (basal rate, extra dose delivery).
- 8.21.6.6.2. Safety mechanisms/operation of pump including administration, alarms and signals.
- 8.21.6.6.3. Administration of the pain medication is to be completed by only the patient due to possible adverse reactions if initiated by others.

## **8.22. Medications.**

- 8.22.1. Ensuring every patient has an ample medication supply to meet their individual requirements throughout the patient movement system is the responsibility of every care provider at every hand-off location. Variables such as the patient's inpatient or outpatient status, the geographic location, and the capability of the originating and final destination MTF, along with patient safety, must be considered when determining the required amount of medications. **(T-2)** The general intent is to minimize the logistical demand on deployed locations while meeting medication requirements for all patients en route to their final destination MTF and/or follow-up outpatient appointment.
- 8.22.2. Providers must use electronic order entry for prescriptions whenever available, IAW AFI 44-102, *Medical Care Management*. **(T-1)** If not using electronic order entry, use AF Form 781, *Multiple Item Prescription*, or equivalent computer-generated means via an AF approved system.
- 8.22.3. Inpatients should receive controlled substance medications from the IFK or patient staging narcotics, when available. MTF's will send those medications not maintained in the in-flight kit. **(T-2)** MTFs should not send a supply of those medications available in the IFK with the patient. **(T-2)** If the inpatient will be traveling via CAA, MTFs will check with the

PMRC arranging transport to determine what medications will need to accompany the patient. **(T-2)**

8.22.3.1. Staging Facility patient care providers and AECMs are responsible for the accounting and administration of all controlled and non-controlled medications prescribed to inpatients.

8.22.4. Self-administration of medications (SAM) patients.

8.22.4.1. An outpatient may carry their own supply of controlled substances, if determined by the sending provider to be competent to self-medicate and when designated by the clearing FS. **NOTE:** Outpatient mental health patients (5C) will only be cleared to self-medicate after consultation by a provider licensed or credentialed in Mental Health. **(T-2)**

8.22.4.2. When a patient is allowed to self-administer his/her own medications, AECMs do not have to count them and those medications should remain under the patient's control. Medications are prescribed, dispensed, and accounted for by the dispensing pharmacy.

8.22.4.3. Qualified health care providers will counsel the patient with instruction and information regarding their prescribed medication. **(T-2)** Education will be documented in the health record. **(T-2)**

8.22.4.4. Patients who self-administer will ensure their medications are not stored/kept where other individuals have access to them and they will not leave them in their checked bags. **(T-2)**

8.22.4.5. Prior to flight, a RN must personally interact with the patient to verify the patient's understanding and knowledge, and provide additional education, as appropriate, on proper SAM. **(T-2)** This process begins with the ERPS/MTF and continues throughout the AE system.

8.22.4.6. Healthcare professionals should remain cognizant of potential abuse and misuse of controlled medications and follow this guidance as applicable. Outpatients deemed compliant and competent to self-medicate may carry and administer their own supply of controlled and non-controlled medications if the following is clearly documented on the AF Form 3899 or EHR equivalent. **(T-2)**

8.22.4.6.1. Provider's order for "SAM."

8.22.4.6.2. "Will self-medicate" boxes must be marked on the front and reverse of the AF Form 3899 or EHR equivalent. **(T-2)**

8.22.4.6.3. The following statement written and signed by the verifying provider or nurse stating that the patient is compliant and competent to self-medicate: "Patient is hand-carrying medication(s); has been instructed on self-administration of (list medication name[s]) and verbalizes understanding."

8.22.4.6.4. At a minimum, SAM patients will be reassessed at every hand-off for continued competency and compliance. **(T-2)**

8.22.4.7. If an outpatient is deemed not compliant and/or not competent to SAM at any point of the patient movement process, the respective care provider (e.g. MCD, FN, ERPS personnel) will: **(T-2)**

8.22.4.7.1. Immediately assume responsibility for and administration of that patient's medication(s). **(T-2)**

8.22.4.7.2. Clearly document the change in the patient's SAM status on the AF Form 3899 or EHR equivalent. **(T-2)**

8.22.4.7.3. Verbally communicate changes in status to the accepting care provider at the next patient hand-off. **(T-2)**

8.22.4.7.4. Initiate a DD Form 2852 and submit to AMC Patient Safety representative. **(T-2)**

8.22.4.8. MTFs at en route stops will refill the controlled substance as required for onward movement. **(T-2)** This will reduce excessive quantities of controlled medications being moved through the PM system. All medication will be appropriately labeled with the patient's name and directions for administration by the sending facility. **(T-2)**

8.22.4.9. Deployed locations should send a 1-day supply for all patients moving from a role 2 to a role 3 facility in the combat operations theater and a 2-day supply for all patients moving from the role 3 to the role 4 medical center. Refer to Joint Publication 4-02 *Health Service Support*.

#### 8.22.5. Medication quantities required for PM.

8.22.5.1. Outside the continental United States (OCONUS) to CONUS PM.

8.22.5.1.1. Inpatients moving directly from an OCONUS MTF to port of entry accepting MTF/Final Destination require a 2-day supply (e.g. Landstuhl Regional Medical Center [LRMC]) to Walter Reed National Military Medical Center.

8.22.5.1.2. Inpatients moving from an OCONUS MTF to port of entry ERPS, RON and then move on to accepting MTF/Final Destination require a 3-day supply (e.g. LRMC to Andrews ERPS to Fort Benning).

8.22.5.1.3. All outpatients require a 5-day supply.

8.22.5.2. CONUS to CONUS. The majority of CONUS to CONUS moves are completed in an 8-12 hr. time frame; therefore a 1-day supply of medication is adequate.

8.22.5.3. CONUS to OCONUS. Inpatients follow Section 8.22.5.1., and outpatients follow Section 8.22.5.1.3. Variations to this policy regarding amount and type of medication to be sent with outpatients are authorized only if transportation is arranged using an alternate mode of travel such as commercial air, rail or ground movement based on anticipated length of travel. IAW DoDI 6000.11, documentation in TRAC2ES for all PM greater than 100 miles is mandatory, regardless of conveyance.

#### 8.22.6. Administration of medication.

8.22.6.1. General information. Administer medications in-flight on the same schedule as in the originating MTF, or as near as possible. The goal of administering any type of



medication or treatment in the AE system is to maintain the continuity of care from the originating MTF to the destination MTF without significant delays.

8.22.6.2. Prior to departing the ERPS or MTF, the patient will be assessed for pain and given pain medications needed within 1 hr. of departure. **(T-2)** If required, administer other medications within 1 hr. of departure. Consider adjusting dosing schedule for diuretics to ensure patient restroom access.

8.22.6.3. Administration of medication according to established protocols. In emergency situations, the AECM initiates care based on individual competency, level of knowledge and skill. Refer to the Nursing Drug Handbook in the in-flight kit and follow refer to current AHA ACLS guidelines for cardiac arrest.

8.22.6.4. 4N0s/X4N0s trained IAW the AFMS medication administration program will be allowed to administer medications IAW with the most current work center authorized drug list. **(T-1)** The AE authorized drug list is the allowance standard. Applicable areas of CFETP will be signed off, to include, routes of administration and schedule of medications commensurate with skill level. **(T-1)**

8.22.6.5. AETs will not be team lead or fill the FN position on cardiac arrest or ACLS emergencies, regardless of level of certification held. **(T-0)**

8.22.6.6. Controlled medications.

8.22.6.6.1. A controlled drug accepted by the healthcare provider becomes his/her responsibility for accountability, control, safeguarding, and disposition. Nurses are responsible for daily/mission accountability of patient narcotics on each applicable AF Form 3899 or EHR equivalent. Annotate drug and number available on the AF Form 3899 or EHR equivalent during patient hand-off. **WARNING:** enlisted ground personnel may only take control of Schedule II through V medications after they have been trained and certified by someone appointed by the MTF or equivalent commander IAW the CFETP.

8.22.6.6.2. If controlled medication is stored at a remote location other than a pharmacy (e.g. a nurse's station), a nurse and another qualified person must count them at change of shift or the beginning/end of every mission and when accessed for patient use and document on AF IMT 579, *Controlled Substances Register*, or in automated equipment logs (e.g. Pyxis ® log), as appropriate. **(T-1)** This form will be included in the narcotics box for all controlled medications. **(T-2)**

8.22.6.6.3. When controlled medications are brought onboard the aircraft, the MCD/FN and MTF representative together will complete an inventory. **(T-2)**

8.22.6.6.3.1. The name and quantity of medications are noted and signed for on the AF Form 3899A, (Front). **(T-2)**

8.22.6.6.3.2. If these medications are returned to the MTF, the representative and FN must annotate the AF Form 3899A or EHR equivalent with the statement "Refused and Returned," and both persons sign the form. **(T-2)**

8.22.6.6.4. During RONS, controlled medications will be secured at all times and are the responsibility of the FNs when a DoD MTF is not located at the RON site. **(T-2)**

8.22.6.6.5. All controlled medications, not in the IFK, will accompany the patient to the destination MTF. **(T-2)**

8.22.6.6.6. Upon termination of the mission, all unaccompanied/unserviceable controlled medications are documented on the AF Form 3859, *Turn-In of Unaccompanied Narcotics*, and turned into the medication room for disposition per local policy and annotate AF Form 3829. **(T-2) NOTE:** If controlled medications are off loaded at the incorrect MTF, notify C2 for immediate tracking. **(T-2)**

8.22.6.6.7. Controlled medications missing/unaccounted for during mission execution.

8.22.6.6.7.1. As soon as the FN realizes controlled medications are missing, report the loss immediately to the PIC.

8.22.6.6.7.2. As soon as possible, the FN creates a memorandum for record or affidavit documenting the circumstances surrounding the loss, type, and quantities of medications missing. If possible, obtain written statements or affidavits from any persons having knowledge of the circumstances surrounding the loss. This is submitted to the chief nurse for review.

8.22.6.6.7.3. Contact C2 as soon as possible and prior to landing at the next en route stop or final destination. **(T-2)**

8.22.6.6.7.4. C2, in consultation with the governing PMRC, should notify the Office of Special Investigations or the security police to ensure appropriate steps are taken upon landing. **(T-2)**

8.22.6.6.7.5. If the medications are still not located, the investigating agency will dictate follow on actions. A DD Form 2852 will also be completed. **(T-1)**

8.22.7. Anaphylaxis. Refer to **AE Clinical Protocol – Anaphylactic Reaction**.

8.22.7.1. Anaphylaxis is a severe, systemic, allergic reaction involving the respiratory and/or cardiovascular system. It is an immediate, life-threatening reaction caused by injection, ingestion, inhalation, insect stings or bites. It usually occurs within 30 minutes of exposure but may take up to 2 hours to develop.

8.22.7.2. Signs and symptoms may occur within minutes of exposure to allergen and may include flushing of the skin, itching, hives, edema (primarily of face, tongue, laryngeal), bronchospasm, cough, wheezing, stridorous breathing, retractions, hypotension, tachycardia, arrhythmia, palpitations, pallor, dizziness, syncope, anxiety, lethargy, sudden loss of consciousness, seizures, and coma.

8.22.7.3. Documentation will include subjective and objective data for giving the medication; VS, if indicated; known allergies; for women of childbearing years: date of last menstrual cycle; date and time of administration, notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 “(Insert name of drug) was administered IAW **AE Clinical Protocol – Anaphylactic Reaction**. Complete and submit DD Form 2852. **(T-0)**

8.22.7.4. Performance improvement monitoring using the patient’s medical record will include: the anaphylactic reaction is identified and treated within the parameters of

current AE Clinical Protocol – Anaphylactic Reaction, documentation of notification to the VFS and AOC/AECT agency; documentation of the event, intervention, and outcome on patients AF Form 3899 or EHR equivalent and completion of the DD Form 2852. (T-2)

#### 8.22.8. Documentation.

8.22.8.1. All patients will have an up-to-date medication administration record (MAR) to ensure accurate and timely medication administration is conveyed and documented throughout the continuum of care. (T-2)

8.22.8.2. Every effort will be made to ensure the MAR, as well as the electronic forms in the TRAC2ES, are in agreement. (T-2) **Exception:** Outpatients traveling via commercial air do not need a MAR. However, all medications ordered for and carried by the outpatient must be documented in TRAC2ES. (T-2)

8.22.8.3. The sending MTF or staging facility is responsible for ensuring the MAR is completed and sent with the patient.

8.22.8.4. En route MAR documentation will be completed at the MTF, ERPS, and in-flight. (T-2) Any changes must be updated on the MAR and annotated in TRAC2ES by the clinician initiating the change utilizing the electronic AF Form 3899A within TRAC2ES. (T-2) If changes occur in-flight or at an en route staging or RON facility, the PMCC will be notified to update the AF Form 3899A in TRAC2ES. (T-2)

#### 8.22.9. OTC medication administration.

8.22.9.1. **NOTE :** This AFI provides the registered nurse with the ability to administer OTC medication to patients, without notifying a physician in advance. The medication will be documented on the AF Form 3899 or EHR equivalent and the DD Form 2852 (T-2); Patient Movement Event/Near Miss Report. In emergency situations, the RN initiates care based on individual competency, level of knowledge and skill. Refer to the current edition of the Nursing Drug Handbook or Physicians' Desk Reference. Medications may be administered one time, unless otherwise stated, by a trained and competent RN. Once treatment is started, concurrently contact the validating flight surgeon and AOC/AECT/PMRC for further physician orders. Refer to **AE Clinical Protocol – Over-the-Counter Medications Administration**.

8.22.9.2. Documentation will include subjective and objective data for giving the medication; VS, known allergies, for women of childbearing years: date of last menstrual cycle, assessment, complaint, pain control management, pertinent past treatment/medication, date and time of administration and notification of a physician, and the outcome. (T-0) The following statement will be documented on AF Form 3899 or EHR equivalent “(Insert name of drug) was administered IAW **AE Clinical Protocol - Over the Counter Medication Administration**.” Complete and submit DD Form 2852. (T-2)

8.22.9.2.1. Use paper or electronic MAR. Document all medication administration times in ZULU.

8.22.9.2.2. If patient arrives without an AF Form 3899, but instead with a NATO, DD Form or service specific medical document, then the information from those

documents will be transcribed onto an AF Form 3899 or EHR equivalent, the original documentation will be attached to the AF Form 3899 or EHR equivalent, and will become a permanent part of the patient's medical record. **(T-2)**

8.22.9.2.3. Performance Improvement Monitoring.

8.22.9.2.4. Documentation the medication alleviated the symptoms in the patients' medical record.

8.22.9.2.5. Documentation of the medication administered on the AF Form 3899I or EHR equivalent.

8.22.9.2.6. Completion of the DD Form 2852. **(T-2)**

#### 8.22.10. High alert medications.

8.22.10.1. High alert medications have a heightened risk of causing patient harm if they are used in error. The Institute for Safe Medication Practices provides a listing of high alert medications. The more common high alert medication in the AE system includes (but not limited to): IV narcotics/opiates, IV anticoagulants, total parenteral nutrition, and all epidurals and PNBs.

8.22.10.2. Conduct and document independent double-checks with all high-alert IV medications, all PCA's, epidurals, and PNBs. Documentation of double-checks will be reflected by 2 signatures on required forms/flow sheets. **(T-2)** This is applicable to ERPS, ERCC team and AECMs. **NOTE:** Documenting "Checked with (other clinicians)" in an EHR current field is adequate.

8.22.10.2.1. An independent double-check is defined as two authorized medical persons familiar with the process/equipment/medication (at least one being a RN), independently verifying the practitioner's/provider's orders, medication hanging, and the correct set up of PCA or IV pump in use (rate, dose, volume to infuse, medication concentration, basal rate, bolus lockout, etc.).

8.22.10.2.2. Double-checks are conducted and documented when initiating high alert medications, during hand-offs of care, following a change in orders, and when a new bag is started.

#### 8.22.11. Unconscious/Difficult to Arouse Patients

8.22.11.1. Various factors may lead to an unconscious/difficult to arouse patient in the AE environment. Opiate/narcotic or sedating medication overdose will produce inadequate ventilation/respiration and an altered mental status. For unconscious/difficult to arouse patients, due to a suspected narcotic or benzodiazepine overdose, refer to the **AE Clinical Protocol - Narcotic or Benzodiazepine**. Otherwise, provide basic life support and immediately contact C2/VFS for guidance.

8.22.11.2. For all unconscious/known or suspected narcotic overdose notify the validating flight surgeon and AOC/AECT for guidance, treatment options and possible diversion. **(T-2)**

8.22.11.3. Signs and symptoms of a narcotic overdose.

8.22.11.4. Mental status changes.

8.22.11.5. Hypotension/hypertension.

8.22.11.6. Decreased or absent respiratory rate or tachycardia.

8.22.11.7. Pinpoint pupils, and seizures. Normal pupil examination does NOT exclude opioid intoxication. Users of meperidine and propoxyphene may present with normal pupils. The presence of coingestants (such as sympathomimetics or anticholinergics) may make pupils appear normal or large.

8.22.11.8. If on a PCA (regional or epidural pump) and patient suddenly becomes difficult to arouse; turn pump off and continue BLS management.

8.22.11.9. Do not rely on patient history of ingestion, especially in patients with psychiatric history.

8.22.11.10. Make sure patient is not still carrying other medications or has any weapons.

8.22.11.11. Symptoms of opioid withdrawal can include nausea/vomiting, hyperactivity, increased pain, and combativeness.

8.22.11.12. Documentation will include subjective and objective data for giving the medication; VS, if indicated, known allergies; for women of childbearing years: date of last menstrual cycle, date and time of administration and notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 or EHR equivalent “(Insert name of drug) was administered IAW **AE Clinical Protocol - Narcotic or Benzodiazepine Overdose.**” Complete and submit DD Form 2852. **(T-2)**

8.22.11.13. Performance Improvement Monitoring.

8.22.11.13.1. A narcotic overdose is identified and treated within the parameters of this AE Clinical Protocol.

8.22.11.13.2. Documentation of notification to the VFS and AOC/AECT agency.

8.22.11.13.3. Document event, intervention and outcome on patients AF Form 3899 or EHR equivalent.

8.22.11.13.4. Completion of the DD Form 2852. **(T-2)**

## **8.23. IV Therapy.**

8.23.1. Stresses of flight.

8.23.1.1. Barometric pressure changes: Air expansion at altitude may cause some IV rates to fluctuate.

8.23.1.2. Situations potentially dangerous to a patient are a sudden surge of fluid, unregulated flow to the patient, and air bubbles in the administration tubing.

8.23.1.3. Critical area of consideration: Accurate administration of IV therapy poses one of the greatest concerns in-flight. If the IV is not regulated by the use of an IV infusion pump, drip rates will be reevaluated once cruise altitude is reached, frequently throughout the flight, after descent, and after a rapid decompression. **(T-0)** **NOTE:** “Dial-a-flows” will not be used to regulate IV rates in-flight. **(T-0)**

8.23.2. IV containers.

8.23.2.1. Plastic IV containers: Plastic solution containers are preferred for in-flight use because they are easy to handle and secure, do not break, and expand/contract with changes in barometric pressure without venting.

8.23.2.2. Glass IV containers: IV glass bottles without integral venting rods do not allow for the escape of expanding air. The expansion of air will force the fluid out of the bottle or the IV will not drip at all. **NOTE:** Do not use glass bottles without venting them.

8.23.2.3. Venting procedures: Any rigid plastic or glass IV bottle requires venting.

8.23.2.3.1. Insert an 18-gauge needle through the bottle cap into the lumen of the integral air rod of the bottle.

8.23.2.3.2. Remove the cap from the air vent on the drip set and insert a sterile 3 ml syringe into the vent.

8.23.2.3.3. Secure the syringe and plunger into the vent by running a strip of tape over the plunger of the syringe and around the neck of the IV bottle. As the air of the bottle expands it leaves via the needle inserted into the air rod; the syringe acts as a plug, held in place by the tape, and prevents fluid from pouring out of the bottle.

8.23.2.3.4. Non-vented drip sets: When non-vented drip sets are used, it is necessary to insert a needle only into the integral air rod of the IV bottle.

8.23.2.3.5. Volutrol (metered drip sets constructed of pliable plastic): The meter chamber is filled and clamped off between the bottle and the chamber. (Since the meter chamber collapses as it empties, air does not enter or expand in the chamber.)

8.23.2.3.6. Metered drip sets constructed of rigid plastic: Systems with air vents in the metering section of the drip set allow air in the tubing during rapid decompression and will not be used.

8.23.3. IV therapy: Preflight/in-flight considerations.

8.23.3.1. Document the IV start time, site, catheter gauge, and the last dressing change, if known.

8.23.3.2. Label IV bag with solution, date, start and stop times and initials. Do not use markers because they are absorbed into the plastic bag.

8.23.3.3. Infusion pumps will be used for heparin, cardiac and vasoactive medications, neonatal/ pediatric patients, and TPN. **(T-1)** Refer to AFI 10-2909.

8.23.3.4. Ensure line is patent.

8.23.3.5. Assess insertion site and evaluate for infection/irritation: Redness/red streaks at insertion site, warmth, edema, purulence/drainage, and pain.

8.23.3.6. Ensure patient has enough IVs, medications, and supplies to reach the destination facility.

8.23.3.6.1. When patient medical supplies and PMI are coordinated with the AE system in advance, most items will be provided from the AE staging base. **(T-2)**

8.23.3.6.2. Without advance coordination, the originating facility will be responsible for providing these items and should provide a 1-day minimum of supplies, except for

patient movement from theater to CONUS and within CONUS where a 3-day minimum should be provided. **(T-3)**

8.23.3.7. Place patients receiving IV therapy in the middle to low tier to facilitate IV flow, if possible (if the IV is not managed with an IV infusion pump).

8.23.3.8. After a rapid decompression, the following difficulties may be encountered: Bags/bottles break, drip sets pop out, blood backs up into tubing, and excessive air and fluid is forced into patient.

8.23.3.9. AECM actions following a rapid decompression: Clamp tubing, check infusion site, bottle or bag, infusion pump (if applicable), and tubing. Assess for signs and symptoms of infiltration. Clear the tubing of air and resume infusion if not clotted or infiltrated.

## **8.24. Management/Administration of Blood and Blood Products .**

8.24.1. All blood products carried in the AE system will be transported as rapidly as possible at the appropriate temperature, in standard blood shipping boxes consisting of an outer cardboard box with a Styrofoam insert. Blood temperature during transport needs to be maintained between 1-10 degrees C for liquid RBCs. Fresh frozen plasma and frozen cryoprecipitate must maintain frozen state (it is usually shipped in dry ice). **NOTE:** The blood product may be in aircraft refrigerators, if maintained in the blood shipment box, to prevent the ice from thawing as fast. **NOTE:** AE usually does not transport blood shipments which is handled through class VIII B channels.

8.24.2. Blood shipping containers will not be exposed to extreme temperatures (below 1 degree C or over 27 degrees C). **(T-0)** All blood components will remain securely packed in the approved container for the duration of the flight or administered. **(T-0)** The container should be secured at all times during transport. **(T-0)**

8.24.2.1. Either DD Form 1502, *Frozen Medical Material Shipment*, or DD Form 1502-I, *Chilled Medical Material Shipment*, will be posted on the front of all blood shipping boxes. **(T-1)**

8.24.2.2. All blood products will be packed IAW with sending facility protocols. **(T-3)**

8.24.2.3. Re-icing is the responsibility of the originating and RON MTF. If there is an en route delay of more than 48 hrs., the MCD, or the carrier agent, will call the special handling department on the flight line for guidance and will assure the re-icing of the blood products. **(T-2)** The re-icing is annotated on DD Form 1502 or DD Form 1502-I. The PMRC should be informed of any blood product transfer so arrangements can be made with any en route MTF(s) for re-icing. **WARNING:** Dry ice, salted wet ice, water frozen in polyurethane bags, super cooled canned ice, and commercial "blue ice" containers will not be used for re-icing liquid blood product shipments. **(T-0)**

8.24.3. AECMs/Specialty team will only accept blood components that are:

8.24.3.1. To be administered during the AE transition. **(T-2)**

8.24.3.2. In an approved blood shipment container, which can be opened briefly and checked for the correct amount and components according to the written order. **(T-2)**

**NOTE:** The blood products check includes comparison of the blood products with 3 identifiers for the patient (full name, DOB, SSN) and the written order.

8.24.3.3. With adequate ice. Do not accept a container of blood with little or no visible ice.

8.24.3.4. All discrepancies will be brought to the immediate attention of the person(s) shipping the container. **(T-0)** If the discrepancies are not resolved, the MCD may refuse to transport the blood products. **(T-0)** Notify the PMRC. **(T-2)**

8.24.4. Blood and blood product administration guidelines.

8.24.4.1. A provider must write the order for administration of blood or blood components. **(T-0)**

8.24.4.2. Use standard precautions when handling blood and blood products.

8.24.4.3. Pre-administration of blood products will include: Current patient consent for transfusion, documentation of patient understanding of blood transfusion reason, and potential side effects. **(T-0)**

8.24.4.4. Verify patient identification with another clinician by patient stating full name, DOB, SSN. This information is checked against the wrist band.

8.24.4.5. Verify patient identification and blood product label. Compare the name, date of birth, and SSN number on the wristband with the bag tag. Compare blood group and rhesus factor compatibility by comparing the bag label, bag tag, medical record, and transfusion form. **NOTE:** Check bag label for expiration date and satisfactory serologic testing.

8.24.4.6. Document on transfusion record names of persons starting the infusion and stopping infusions.

8.24.4.7. Utilize blood transfusion tubing and filter as prescribed. Prior to initiation of blood product take a full set of VS to include temperature. No medications or solutions should be added to or transfused concurrently with blood components except NS.

8.24.4.8. The total volume infused must be documented on available intake and output record. **(T-2)**

8.24.4.9. Start infusion slowly (i.e. 2 ml/minute). Note the time from the time the blood begins infusing at the IV port site. Remain with the patient for 15 minutes and assess vital signs IAW [paragraph 8.24.5.4.1](#). **NOTE:** Currently there are no blood warmers approved for use in the AE environment.

8.24.4.10. Reassess patient for signs and symptoms of transfusion reaction (i.e. acute hemolytic, anaphylactic) at least hourly. **NOTE:** Transfusion reactions usually occur within the first 50-100 ml.

8.24.4.11. Acute reactions can occur at any time during the transfusions.

8.24.4.12. Documentation of assessment is required. **NOTE:** For all blood component infusions, it is imperative that the patient be closely monitored for acute reactions.



8.24.4.13. Whole blood, RBC, and fresh frozen plasma (FFP) will be hung within 30 minutes of removal from the blood-shipping container. **(T-0)**

8.24.4.14. Whole blood and RBCs must be transfused within 4 hrs. and at the prescribed rate. **(T-0)**

8.24.4.15. FFP infused at the rate prescribed. The infusion may be completed within 15 to 30 minutes depending on total volume.

8.24.4.16. Cryoprecipitate, once thawed, must be infused immediately. **(T-0)** Run over 3 - 15 minutes.

8.24.4.17. Platelets may be transported at room temperature between 20-24° C or 68 - 75.2° F. The transfusion may be completed within 20-60 minutes depending on total volume.

8.24.4.18. Blood and blood components may be administered during emergent contingency and wartime ground and in-flight operations, and consent for transfusion is implied.

8.24.5. Blood transfusion reactions. Unexpected complications can occur in any blood transfusion recipient. These adverse reactions can be categorized as immunologic, infectious, chemical, and physical, and some are further subdivided into acute and delayed reactions. The most clinically important adverse effects of transfusion are infectious or immunological occurrences. Stringent screening requirements have drastically reduced the risk of transfusion acquired pathogens such as Hepatitis B, HIV and Hepatitis C thereby resulting in a marked reduction in infectious related reactions. Additionally, infectious complications and delayed hemolytic transfusion reactions generally manifest themselves 3-7 days post transfusion and therefore are outside of the scope of this AE Clinical Protocol.

8.24.5.1. The classic transfusion reactions are immunologic in nature. Acute reactions occur in 1% to 2% of transfused patients. Severe transfusion reactions are most likely to occur during the first 15 minutes of infusion. Therefore, to facilitate early recognition of potentially life-threatening complications, patients should be monitored closely upon initiation of any blood transfusion product. Examples of classic immunologic transfusion reactions include febrile non-hemolytic transfusion reactions (FNHTR); acute hemolytic transfusion reaction (AHTR) and allergic reactions (urticarial and anaphylactic allergic reactions). Refer to **AE Clinical Protocol - Reaction to Blood Products**.

8.24.5.2. For all known or suspected blood transfusion reactions notify the validating flight surgeon and AOC/AECT for guidance and possible diversion to a MTF capable of handling the situation.

8.24.5.3. Documentation of any blood product reaction includes subjective and objective data for giving medication; VS, known allergies, women of child bearing years: date of last menstrual cycle; date and time of administration and notification of a physician, and the outcome. **(T-0)** The following statement will be documented on AF Form 3899 or EHR equivalent “(Insert name of drug) was administered IAW **AE Clinical Protocol - Reaction to Blood Products**.” Complete DD Form 2852. **(T-2)**

8.24.5.4. Process improvement monitoring includes:

8.24.5.4.1. Documentation of VS. Baseline vital signs will be documented within 30 minutes of start of transfusion; 15 minutes after start of transfusion and then every 60 minutes until transfusion is complete. Post transfusion vitals will be documented 60 minutes after transfusion is complete.

8.24.5.4.2. Document any reaction on the AF Form 3899 or EHR equivalent.

8.24.5.4.3. Document any medication administration on the AF Form 3899I or EHR equivalent and completion of the DD Form 2852. **(T-2)**

## **8.25. Infection Control.**

8.25.1. Infection control can be difficult in the dynamic physical environment of AE. Therefore, originating physicians should remain vigilant for the presence of communicable diseases that could spread to other patients, the crew, or the destination MTF community.

8.25.2. General principles of infection control.

8.25.2.1. The guidelines for personnel and recommended standards of patient care are contained in the most current Center for Disease Control (CDC) guidelines and in local cleaning directives. Enhance local protocols by monitoring the CDC's website at <http://www.cdc.gov/nciDoD/dhqp/index.html>.

8.25.2.2. All medical personnel in the AE environment will implement Standard Precautions with all patients coupled with Transmission Based Precautions and will keep aircrews informed, as required. **(T-0)** AFMAN 44-156, *Treatment of Biological Warfare Agent Casualties*, is available for additional guidance. **(T-1)**

8.25.2.3. Brief all infectious patients and their attendants on isolation procedures and precautions.

8.25.2.4. Each aircraft and mission is unique. Environmental lighting in most cases will be poor, making the visualization of blood and body fluids highly uncertain. The practice of infection control within the AE setting will adhere to the following principles:

8.25.2.4.1. The aircraft is considered a dirty environment. Normally dressings will be reinforced unless there is evidence of significant blood loss. **(T-2)**

8.25.2.4.2. Medical personnel with "actively" exudative lesions or weeping dermatitis should not be scheduled for mission until resolved/cleared by FS. **(T-2)** If excess drainage occurs during flight, bandage the wound area and limit patient care until seen by FS. **(T-2)**

8.25.2.4.3. Fingernails must comply with AFI 44-108, *Infection Prevention and Control Program*. **(T-1)**

8.25.2.4.4. NOMEX/leather gloves will not be worn while administering patient care. **(T-0)**

8.25.2.4.5. Eating, drinking, applying cosmetics, and handling contact lenses is prohibited in work areas where there is a likelihood of exposure to blood and body fluids (BBF). **(T-0)**

8.25.2.4.6. Food and drinks are prohibited on countertops where blood and other potentially infected material are stored or placed. **(T-0)** **Exception:** On cargo aircraft

this may not be feasible. Ensure the loadmaster/boom operator is notified of the storage/placement of such items, in order that they may disseminate the information to the rest of the crew.

8.25.2.5. Patient assignment and placement of patients. **NOTE:** The airflow of each aircraft will govern litter and seat assignments for high risk immune compromised patients or patients on airborne or droplet precautions. **(T-0)** Refer to [Attachment 14](#).

8.25.2.5.1. High-risk patients (e.g. those particularly susceptible to infection: leukemia, cancer and post-op patients) must be located as far as possible from infectious patients. **(T-0)** All efforts should be made to limit the number of care givers to either highly infectious or neutrophilic patient populations. Consider the direction of airflow in the aircraft and having the high-risk patient wear the N-95 mask en route.

8.25.2.5.2. Known or suspected infectious patients should be in the lowest litter position.

8.25.2.5.3. When feasible, assign a single caregiver to infectious patients or to those who are at high-risk for infection. Avoid mixing infectious patients and those at high-risk for infection, whenever possible.

8.25.2.5.4. Patients with known or suspected wound infections should not be placed in the same area as patients with clean wounds.

8.25.2.5.5. Infectious ambulatory patients will be seated away from other patients if possible. **(T-0)**

8.25.2.5.6. In the event there are patients who have active infections with the same disease (e.g., TB, measles, tularemia, cholera, etc.), they may be moved as groups or cohorted in another area of the aircraft that meets safe ventilation and airflow requirements for Airborne Precautions.

8.25.2.5.7. In austere ground operation settings with limited airflow (e.g., AMBUS, Humvee, tentage), the infectious patient will wear a N95 mask, if applicable. **(T-1)** The patient will be placed to the greatest extent possible downwind, near the airflow exit and away from other patients. **(T-0)** **NOTE:** When in confined areas and/or in areas with poor air circulation, both the patient and the health care worker (HCW) will wear a N95 mask. **(T-1)**

### 8.25.3. Standard precautions.

#### 8.25.3.1. Handwashing.

8.25.3.1.1. Handwashing is the single most important method for preventing the spread of infection.

8.25.3.1.2. Handwashing will be accomplished with soap and running water, if available. **(T-0)**

8.25.3.1.3. AE approved waterless hand cleaners/antiseptics may be used as an adjunct to routine hand washing or when hand washing facilities are inadequate, inaccessible, or when there is an interruption in the water supply. Waterless hand antiseptics may come in a foam, gel, or towelette. **NOTE:** If visible soiling is present

on the hands, a towelette will offer the physical removal of the dirt and should be the first choice for hand antisepsis. **(T-0)** Follow manufacturer's directions for use. **(T-0)**  
**NOTE:** Waterless hand cleaners/antiseptics are not effective against all organisms (e.g. C. Difficile)

8.25.3.1.4. Wash hands or use hand antiseptic before and after each patient contact; immediately after removing gloves or other personal protective attire (e.g. gowns, masks, goggles); before dispensing medications, performing invasive procedures, touching wounds or touching patients who are susceptible to infection; before serving meals; and after sneezing, coughing, eating, and performing personal hygiene.

8.25.3.2. Personal protective equipment (PPE). Worn appropriate for the task, whenever exposure to BBF is anticipated.

8.25.3.2.1. **Gloves.**

8.25.3.2.1.1. Use disposable, single-use gloves.

8.25.3.2.1.2. Change gloves after contact with contaminated materials, even if care of that patient is not complete.

8.25.3.2.1.3. Change gloves between each patient.

8.25.3.2.1.4. Wear gloves while serving/handling patient's food.

8.25.3.2.1.5. Remove gloves promptly after use and before touching non-contaminated items/surfaces.

8.25.3.2.1.6. Wash hands immediately after removing gloves.

8.25.3.2.2. **Gowns.**

8.25.3.2.2.1. Fluid-repellent gowns are worn to protect skin and prevent soiling of clothing during procedures and patient care activities likely to generate splashes or sprays of BBF. In the event the HCW clothing is contaminated with BBF, a gown may be worn for a short duration to prevent cross-contamination.

8.25.3.2.2.2. Promptly discard BBF contaminated disposable gowns after use in designated biohazard trash bags.

8.25.3.2.3. **Goggles and masks.**

8.25.3.2.3.1. Goggles, safety glasses with side shields or mask with a visor will be worn anytime splashing of BBF is anticipated. **(T-0)** Normal eyeglasses are not considered protective apparel. **(T-0)** When worn for PPE, masks and goggles protect the wearer from splashes or sprays of BBF. **(T-0)**

8.25.3.2.3.2. Fluid resistant surgical masks are appropriate and will be changed when moist; as a general rule, change after 2 hrs. of wear or when wet. **(T-0)**

8.25.3.2.3.3. The N95 respirator is approved for in-flight wear and will be worn by all caregivers when providing immediate care to a patient with a suspected or actual airborne transmissible infection. **(T-1)** Additionally, the N95 is worn by the patient for whom the disease is suspected.

8.25.3.2.3.3.1. The N95 mask will be fit tested for all AECMs by a local

Bioenvironmental Engineer or a certified fit-tester IAW AFOSHSTD 48-137; *Respiratory Protection Program* and local policy prior to wear by medical personnel. **(T-1) NOTE:** Per manufacturer's guidelines, patients, mission, and ground personnel who wear this mask do not require an official fit-testing but the medical aircrew member will evaluate the "fit" of the mask to the patient's face, and assure there are no gaps or leaks. **(T-1)**

8.25.3.2.3.3.2. All personnel and patients will change the N95 mask whenever wet or contaminated with BBF, if the straps are loose or if the mask is damaged, and by personnel after completing direct patient care. **(T-1) NOTE:** The N95 mask will not be reused once it is removed. **(T-1)**

8.25.3.2.3.4. Use a resuscitation mask or bag-valve mask to avoid mouth-to-mouth contact.

#### 8.25.3.3. Needles and syringes/sharps.

8.25.3.3.1. Do not recap used needles. **NOTE:** Recapping is acceptable if blood is drawn and no blood tubes are available, use a one-handed scoop technique. Secure the cap with tape.

8.25.3.3.2. Do not bend or break needles.

8.25.3.3.3. Place needles in a puncture resistant container maintained as close to the point of use as possible.

8.25.3.3.4. After securing the sharps container in the closed position, off-load sharps container according to local policy.

#### 8.25.3.4. Bio hazardous waste .

8.25.3.4.1. Bio hazardous waste is defined as liquid or semi-liquid blood or other potentially infectious materials, contaminated items that would release blood, or other potentially infectious materials, in a liquid or semi-liquid state if compressed. Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling; contaminated sharps (see above for disposal of sharps), or pathological and microbiological wastes containing blood or other potentially infectious materials.

8.25.3.4.2. Place a red biohazard bag at the end of the patient's litter, if BBF is expected. Biohazard bags will not to be used for trash that is not contaminated with BBF waste.

8.25.3.4.3. Double-bag waste, if there is a potential for leakage.

8.25.3.4.4. Off-load with the patient for disposal at the local MTF.

#### 8.25.3.5. Linen.

8.25.3.5.1. All used linen will be handled as if potentially infectious. **(T-0)**

8.25.3.5.2. Handle used linen as little as possible, with a minimum agitation, to prevent the potential dissemination of microorganisms.

8.25.3.5.3. Place soiled linen in a clear plastic bag to offload with the patient unless contaminated with BBF. Linen contaminated with BBF is placed in a red bag.

**8.25.3.6. Urine and feces.**

8.25.3.6.1. Urine and feces from all patients, including those on isolation precautions, can be flushed down the aircraft toilet.

8.25.3.6.2. Disposable urinals are used as needed and discarded in the proper waste bag.

8.25.3.6.3. The equipment table of allowances for bedpans is limited. If unavoidable, use of bedpans for several patients is accomplished by lining bedpans with a plastic bag and taping securely to prevent slippage and spillage. For truly immobile patients, the patient stage of MTF should provide a bed pan per patient.

8.25.3.6.4. Dispose of waste in aircraft toilet, then carefully remove bag, keeping the soiled portion of the bag to the inside, roll/gather bag closed and dispose in the proper waste bag.

**8.25.3.7. Laboratory/human specimens.**

8.25.3.7.1. Standard precautions will be used in the procurement and the handling of all BBF. **(T-0)** A separate cooler will be available for storing blood products and specimens; follow packing instructions for temperature control. **(T-0)** Normally, blood and other specimens are not collected during flight. **(T-0) NOTE:** As a minimum, wear gloves. **(T-0) NOTE:** Blood products & specimens will not be maintained in the same cooler. **(T-0)**

8.25.3.7.2. Avoid contamination of the outside of the container.

8.25.3.7.3. All blood/body fluid specimen containers will be labeled with patient information and placed in a small biohazard bag or a zip-lock bag that has a biohazard label on it. **(T-0)**

8.25.3.7.4. Do not place specimens in the refrigerator with medications or food.

**8.25.3.8. Cleaning/disinfecting . NOTE:** Performed by AECMs.

8.25.3.8.1. Routine cleaning IAW CDC guidelines/recommendations of contaminated areas of the cabin that come in direct contact with patients will help prevent the spread of microorganisms. **(T-0)**

8.25.3.8.2. PPE will be worn appropriate for the task. As a minimum, gloves will be worn. **(T-0)**

8.25.3.8.3. Use AE approved detergent/disinfectant to clean and disinfect patient care areas IAW CDC guidelines/recommendations.

8.25.3.8.4. Clean/disinfect surfaces using a damp cloth/disposable washcloth or AE approve pre-package kits; allow to air dry.

8.25.3.8.5. Areas used for medication and food preparation areas will be cleaned/disinfected prior to use. **(T-0)**

8.25.3.8.6. **BBF spill clean-up.**

- 8.25.3.8.6.1. Place an absorbent material over spill.
- 8.25.3.8.6.2. Blot up and dispose of in a red biohazard bag.
- 8.25.3.8.6.3. Pour/spray/clean area with AE approved disinfectant/detergent.
- 8.25.3.8.6.4. Allow to air dry.

**8.25.3.8.7. BBF contamination of seats/cushions.**

- 8.25.3.8.7.1. Coordinate with loadmaster/crew chief IAW local policy.
- 8.25.3.8.7.2. Remove web seat/seat cushion and seat back and place in a red biohazard bag.
- 8.25.3.8.7.3. Label with suspected/known BBF source.

**8.25.3.8.8. Off-loading patients.**

- 8.25.3.8.8.1. Send all used disposable patient care items with the patient, or as directed by AMC/SG.
- 8.25.3.8.8.2. There is no need to “decontaminate” the interior of the aircraft for routine transport of patients. If using transmission-based precautions, clean surfaces the patient had immediate contact with by wiping area off using a cloth containing the approved detergent/disinfectant. Seat cushions and litters may need cleaning depending on the level of contamination.

**8.25.3.8.9. Contaminated reusable patient care equipment.**

- 8.25.3.8.9.1. Place in biohazard bag and label with type of contaminants.
- 8.25.3.8.9.2. AE equipment dedicated to patients will follow the patient to final destination. **(T-2)** Aeromedical standard allowance PMI equipment remains with the AE crew and will be decontaminated IAW sq. policy. **(T-2)**
- 8.25.3.8.9.3. If mission RONS, remove equipment and transfer to the staging facility or supporting MTF for decontamination or IAW local policy.
- 8.25.3.8.9.4. Decontaminate equipment prior to servicing or shipping. When this is not feasible, equipment must be in a labeled universal biohazard bag. **(T-0)** A listing of contaminated portions of equipment must be specified. **(T-0)**
- 8.25.3.8.9.5. In the staging facility, cleaning is accomplished using a germicidal/fungicidal liquid solution IAW local policy.

**8.25.3.8.10. Aircraft decontamination.** Not an AECM duty. In the event of suspected or known contamination, the PIC and the MCD will notify C2; the airlift agency will contact the governing PMRC and the TVFS for further guidance. **(T-2)**

**8.25.3.9. Irrigation fluids, multi-dose vials, and sterile supplies .**

- 8.25.3.9.1. Irrigation fluids – If used on an AE mission, discard at the end of the mission. If used in the ERPS, label with date and time and use for only 24 hrs.; discard remainder after 24 hrs.
- 8.25.3.9.2. Multi-dose vials – If a multi-dose has been opened or accessed (e.g. needle-punctured), the vial should be dated and discarded within 28 days unless the

manufacturer specifies a different (shorter or longer) date for that opened vial. If a multi-dose vial has not been opened or accessed (e.g. needle-punctured), it should be discarded according to the manufacturer's expiration date. Open and follow manufacturer's suggestion for disposal. **NOTE:** Some vials may appear to be multi-dose when in fact, they are single dose (e.g. NS). **NOTE:** Dispose of vials whenever sterility is compromised or questionable or if there is any sign of or known contamination, color change, or foreign particles found.

8.25.3.9.3. Sterile supplies - check prior to flight for expiration dates, tears, evidence of liquid spills, and/or color change.

8.25.3.9.3.1. Expired disposable items are not reprocessed.

8.25.3.9.3.2. Shelf-life (sterility) is either event-related and/or time-related:

8.25.3.9.3.3. Event-related sterility means that as long as an "event" has not occurred to compromise sterility, the item is considered sterile. An event may include any of the following: the package is torn, ripped open, compromised in a way that causes the healthcare worker to question the integrity of the contents.

8.25.3.9.3.4. Date-related sterility is based on the type of packaging and will have a tag with an expiration date. **(T-0)**

8.25.3.9.4. Disposable items are not reused or reprocessed.

8.25.4. The following patient movements will be specially coordinated by the PMRC and GPMRC. **(T-2)** Multi-drug resistant Mycobacterium Tuberculosis (MDR-TB), Congo Crimean Hemorrhagic Fever (CCHF), plague, smallpox, cholera, yellow fever, typhus, ebola, malaria, polio, influenza, and any other diseases under special surveillance by the CDC. GPMRC will notify TCSG, AMC/SG or when applicable, the CDC. **(T-0)** Plague, smallpox, hemorrhagic fevers require approval of the destination country, over-flight privileges, and approval of any country where the aircraft will land for servicing or where the patient will remain overnight. **(T-2)** Coordination between the Geographic Combatant Commander, USTRANSCOM/CC and TCSG and the Department of State is required.

8.25.5. **Transmission based isolation precautions.** There are 2 tiers to isolation. The first is the use of Standard Precautions with every patient contact. The second tier is the transmissions based precautions for isolating known or suspected pathogenic microorganisms, communicable diseases, or colonized pathogenic microorganisms. For further guidance, AFI11-2AE V3 and AFMAN 44-156.

8.25.6. **Airborne precautions.** Airborne Precautions prevent transmission of suspended infectious agents that remain infectious over long distances through very small particles or droplet nuclei. When they are inhaled by a susceptible individual, they enter the respiratory tract and can cause infection. Since air currents can disperse these particles or droplet nuclei over long distances, airborne transmission does not require face-to-face contact with an infected individual. Airborne transmission only occurs with infectious agents that are capable of surviving and retaining infectivity for relatively long periods of time in airborne particles or droplet nuclei. Only a limited number of diseases are transmissible via the airborne route. Two examples of airborne transmissible agents include Mycobacterium tuberculosis which causes tuberculosis (TB) and the rubella virus which causes measles.



8.25.6.1. Isolate to the greatest extent possible. Patient placement should be in a low traffic area, downwind in the airflow circulation cycle and near the aircraft's airflow exit, if possible.

8.25.6.2. The aircraft airflow ([Attachment 14](#)) will determine patient placement. (T-2) Minimum isolation requirements are to position no other patients within ten feet of the patient. A litter is optional and will be placed in the lowest position in the tier. (T-2) Ambulatory patients should be seated next to the sidewall. (T-2)

8.25.6.3. The CDC recommends the use of filtering devices that have N, P, or R series filters with minimum filter efficiency of 95 percent, such as the N95 filtering face piece (N95 mask). Required protective procedures are outlined below:

8.25.6.3.1. The patient will wear a N95 mask at all times. (T-1) This mask need not be fit tested but should not have noticeable gaps. **NOTE:** Patients requiring airborne precautions and O2 may wear the N95 mask over the nasal cannula (1-4 LPM). Patients requiring higher levels of O2 may require a cabin altitude restriction or may wear a non-rebreather O2 mask. **WARNING:** The lowest O2 percent of the non-rebreather mask is 60%, and the patient must be able to tolerate high levels of O2 for the duration of the flight. (T-0) This mask does not have High Efficiency Particulate Air (HEPA) capability but has the smallest exhalation openings of the O2 masks. Patients using the non-rebreather will be placed as close as possible to the aircraft's exhalation port during the flight. (T-0)

8.25.6.3.2. HCWs will wear a fit-tested N95 mask while within ten feet of the patient or while providing direct patient care. Refer to AFI 44-108, *Infection Prevention and Control Program*. (T-1)

8.25.6.4. Unless directed by the theater director of air operations and the theater surgeon and/or TCSG; other crewmembers, attendants and passengers do not require respiratory protection unless they are within ten feet of the patient. When within 10 feet of the patient, the N95 mask for these individuals does not need to be fit-tested but should not have noticeable gaps.

8.25.7. **Strict airborne precautions.** Some infectious agents, and the patient's overall clinical condition, may require strict airborne precautions on a designated/devoted mission with limited crew and with no other patients or passengers on board. **Exception:** In extreme instances, the theater surgeon and the director of theater airlift operations will determine the use of the above aircraft for AE intratheater operations. (T-2) Theater surgeons will receive approval from destination MAJCOM/CC and MAJCOM/SG, and the USTRANSCOM/CC and TCSG to use these aircraft during AE intertheater operations. (T-2) **NOTE:** Consider regional medical intelligence reports and threats when validating and planning AE transport. **WARNING:** MDR-TB and infectious ventilated patients pose the highest risk to the HCW, crew and passengers due to the potential for aerosolization of respiratory secretions and droplet nuclei.

8.25.7.1. The patient, MAs, and all mission crewmembers (e.g. loadmaster, boom operator, etc.) in the cargo/passenger compartment will wear a N95 mask for the entire mission. (T-1) HCWs and AECMs will wear a fit tested N95 mask. (T-1) The patient and

nonmedical crewmembers do not need to be fit-tested for a N95 mask but the mask should not have noticeable gaps.

8.25.7.2. The flight deck crew in aircraft with forward to aft airflow do not require N95 masks unless in the cargo/passenger compartment; the N95 mask does not need to be fit-tested but should not have noticeable gaps. The MCD will coordinate mission N95 mask requirements with the PIC and flight deck.

8.25.7.3. On an aircraft with aft to forward airflow or an aircraft with mixing cargo/passenger compartment air, flight deck personnel will wear a N95 mask for the entire mission; the N95 mask does not need to be fit tested but should not have noticeable gaps. **(T-1)**

8.25.7.4. The N95 mask will not be removed to eat or drink. **(T-1)** Mission planning should incorporate this requirement. A straw may be used for oral fluids or an IV may be ordered for hydration.

8.25.7.5. C-17 crewmembers, in the flight deck and crew rest areas, can remove the N95 mask as long as the door to the cargo compartment is closed and the environmental system is operating in the "high-flow" mode.

8.25.7.6. The flight deck crew may optionally use the aircraft O2 supply and wear the aviator mask with the regulator set at normal which delivers 100% O2.

8.25.7.7. Ventilators will have a HEPA filter connected to the ventilator's expiratory port. **(T-1)** Secure ventilation tubing connections and use in-line suctioning. **NOTE:** High PEEP settings may not be possible using a HEPA filter.

8.25.7.8. Cleaning of patient care area will occur as outlined. **(T-1) NOTE:** No one will enter the aircraft without a N95 filter mask until the aircraft is aired out. **(T-1)** MCD will coordinate via the off-load message N95 mask requirements with mission ground support personnel. **(T-3)** All mission personnel and medical personnel will follow-up after mission completion at their local MTF or IAW local policy. **(T-3)**

#### **8.25.8. Airborne precautions: Pre-mission and post-mission requirements.**

8.25.8.1. The MCD will coordinate mission N95 mask requirements with the PIC and medical support personnel. **(T-3)**

8.25.8.2. Instruct the crewmembers and ground personnel on the correct fitting and wear of the N95 mask IAW Bioenvironmental Engineer guidance. Refer to AFI 44-108.

8.25.8.3. Pre-mission planning includes sufficient number of N95 masks and PPE to meet mission requirements, including replacements due to contamination, damage, and limits of the mask. Planning should also include extra N95 masks for ground support personnel.

8.25.8.3.1. The use of cough suppressants may be indicated for patients who are actively coughing.

8.25.8.3.2. Patients will wear a N95 mask prior to leaving the MTF's isolation room and will wear the mask until admitted to the receiving MTF's or RON MTF's isolation room. **(T-1)**

8.25.8.4. At mission termination, the following information will be submitted to the PMRC and the unit infection control or public health officer: Mission number/date, total time the patient was on the aircraft, personnel's name, rank, unit of assignment and phone number; mission position, and approximate time in direct patient care. **(T-2)**

8.25.8.4.1. Upon mission termination, all exits and doors are opened and the interior of the aircraft is aired out. Refer to AFMAN 10-2503, *Operations in a Chemical, Biological, Radiological, Nuclear, and High-Yield Explosive (CBRNE) Environment*, aircraft decontamination section. This may be done at home station but all personnel must continue to wear masks until airing-out is complete. **(T-1)**

8.25.8.4.2. The exposed individual's home station public health office will evaluate the need for follow-up testing and prophylaxis. If not at home station, contact C2 of the mission. **(T-2)**

8.25.8.4.3. All mission and medical personnel will have a follow-up Purified Protein Derivative (PPD) 90 days after mission completion at their local MTF or IAW local policy, if patient had diagnosis of TB. **(T-3)** Results will be forwarded to the PMRC 100 days post-mission. **(T-2)** The PMRC will then review and forward personnel mission data to AMC/SGP. **(T-2)**

8.25.8.5. Transport of patients with known TB; including infants and young children.

8.25.8.5.1. Patients with pulmonary TB responding to treatment (known drug sensitivity and clinical signs of improvement) may be safely transported on any aircraft without respiratory protection when they meet all of the following criteria:

8.25.8.5.1.1. Have negative sputum smears on three consecutive days.

8.25.8.5.1.2. Received at least 14 or more days of appropriate treatment. **NOTE:** Patients with laryngeal TB will receive at least 30 days of therapy with appropriate treatment regardless of smear status. **(T-0)**

8.25.8.5.1.3. Are not coughing.

8.25.8.5.2. Use standard and airborne precautions if the above criteria are not met or in undiagnosed pulmonary infectious disease processes in which TB is suspected or possible. **Refer to Attachment 15.**

8.25.8.5.3. HIV infected patients going for evaluation of a new undiagnosed pulmonary process will be transported as possible active TB.

**8.25.9. Droplet Precautions.** Use with patients who have infections spread by large particle droplets generally larger than 5 $\mu$  in size, generated by the infected patient during coughing, sneezing, talking, or during respiratory-care procedures. This includes microorganisms such as pneumonic plague, tularemia, CCHF, rubella, diphtheria, mumps, pertussis, influenza, and adenovirus.

8.25.9.1. Spreads via droplets through the air by coughing, sneezing or talking.

8.25.9.2. Droplets can travel up to 3 feet.

8.25.9.3. Transmitted through mucosal surfaces (conjunctiva, nasal, and oral mucosa).

8.25.9.4. Instruct the patient on the wear of the N95, the use and disposal of tissues in the appropriate waste bag, and washing hands.

8.25.9.5. All caregivers and AECMs within 3 feet of the patient care area will follow Standard, Droplet, and Contact Precautions (N95 mask, gown, gloves, and goggles). (T-0)

8.25.9.6. Follow the guidelines for Airborne Precaution Guidelines to position on aircraft.

8.25.10. **Contact precautions.** Use with patients who are infected or colonized by a microorganism that spreads by direct contact (skin-to-skin) or indirect contact (touch) with a contaminated object in patient's environment. (e.g. GI, respiratory, skin or wound infections, antimicrobial resistant microorganisms such as vancomycin and methicillin resistant bacteria, scabies, pediculosis, and *Acinetobacter baumannii* are in this category). Follow Standard Precaution Guidelines. **NOTE:** Use N95 mask, gown, and gloves when providing direct care.

8.25.10.1. Suspect multi-drug resistant organisms in patients, who sustained a wound during combat or while deployed, have been hospitalized more than one week, were in a critical care setting, are recovering from multiple traumas, have indwelling catheters, and multiple tubes.

8.25.10.2. A clean sheet or chux may be placed over the wound site to prevent contamination of litter or seat. Treat all linens as infectious.

8.25.10.3. Suspect *C. Difficile* if the patient has a history of recent antibiotic use, loose stools greater than 3 in 24 hours and/or elderly.

#### 8.25.11. **Infection control special interest items .**

8.25.11.1. **Vaccinia patients.** Vaccinia virus infections are complications of smallpox vaccination. This infection should not be confused with smallpox disease, caused by variola virus. While vaccinia is a contact transmission hazard (i.e. contagious), it is significantly less infectious and pathogenic than variola (smallpox).

8.25.11.1.1. Vaccinia patients are contact transmission hazards and require standard/contact transmission based precautions, including:

8.25.11.1.1.1. Thorough hand washing after patient contact is the most important.

8.25.11.1.1.2. Wear of PPE (gloves, gowns, and, depending on lesion site, goggles).

8.25.11.1.1.3. Handle of BBF as infectious for blood-borne pathogens.

8.25.11.1.1.4. Terminal cleaning of the patient area.

8.25.11.1.1.5. There is no airborne/droplet threat so respiratory masks are not required.

8.25.11.1.1.6. A clean sheet or chux will be placed over the site to prevent contamination of the litter or seat; treat all linens as infectious. (T-0)

8.25.11.1.2. For those directly caring for a vaccinia patient, the following additional screening criteria may be considered, but is not mandatory:

8.25.11.1.2.1. No immunosuppression due to medication or underlying medical condition.

8.25.11.1.2.2. No history of eczema, atopic dermatitis or active skin disease (including psoriasis, moderately severe acne, and other forms of dermatitis).

8.25.11.1.2.3. Not pregnant or attempting to become pregnant.

8.25.11.1.2.4. No recent photorefractive keratectomy (PRK) or use of ophthalmic steroid drops.

8.25.11.1.2.5. Not breastfeeding.

8.25.11.1.3. Recent smallpox vaccination is highly recommended for all medical personnel, including AECM, ERCC team, and MA directly caring for vaccinia patients to prevent complications of vaccination at unintended body sites (i.e. fingers, hands, face).

8.25.11.1.4. Vaccinia wounds must be covered, preferably with dry, cotton gauze dressings, and are reinforced in-flight, as needed. **(T-0)** Occlusive dressings should be avoided. Do not change dressings in-flight; reinforce only.

8.25.11.1.5. Requires dedicated PMI.

8.25.11.1.6. Minimize potential for cross-contamination of non-vaccinia patients. When feasible, assign a single caregiver. If operationally feasible, personnel caring for vaccinia patients should not be assigned to care for patients with the following medical conditions: Immunosuppression, to include HIV, cancer, burns, sepsis, autoimmune disorders, trauma, steroid use, skin disease, pregnancy, breast-feeding, or recent PRK.

8.25.11.2. Managing suspected highly communicable diseases. Refer to the TCSG Interim Policy on Movement Regulation of Aeromedical Evacuation of Bioterrorism and Centers for Disease Control and Prevention Bioterrorism Agents/Diseases; and rule out clinical (ROC) list. <https://intelshare.intelink.gov/sites/ustcsg/SitePages/Home.aspx>.

8.25.11.2.1. Transported on a dedicated mission with the minimum number of crew members.

8.25.11.2.2. If possible, place a N95 or surgical mask on the patient to contain droplets expelled during coughing. If this is not possible (i.e., would further compromise respiratory status, difficult for the patient to wear), have the patient cover the mouth/nose with tissue when coughing.

8.25.11.2.3. Oxygen delivery with a non-rebreather face mask may be used to provide oxygen support during transport. If needed, positive-pressure ventilation should be performed using a resuscitation BVM, preferably one equipped to provide HEPA or equivalent filtration of expired air. If a patient has been mechanically ventilated before transport, HEPA or equivalent filtration of airflow exhaust will be used. **(T-2)**

8.25.11.2.4. Healthcare providers who directly handle a patient infected with a highly pathogenic respiratory illness, such as pandemic influenza and severe ARDS, or who are in the compartment with the patient will wear PPE as recommended for Standard, Contact, and Airborne Precautions. **(T-0)** This includes: disposable isolation gown, gloves, eye protection, and N95 mask. **(T-0)**

8.25.11.2.5. Immediate post-exposure follow up for flight, support and medical personnel according to the TVFS.

#### 8.25.12. Contaminated and/or contagious patients.

8.25.12.1. Patients known or suspected to be infected with a communicable disease will be treated-in-place in nearly all situations. **(T-0)** Under rare circumstances, the movement of one or 2 patients ill with an infectious disease may be essential to meet critical operational objectives. These situations include infections with a pathogenic agent that may pose a potential threat to national security, require special public health actions, and/or have the potential to cause public panic and social disruption. In such cases, the geographic combatant commanders (CCDRs) will coordinate requests for movement of a potentially contagious patient with TCSG and Office of the Secretary of Defense with the approval residing with the United States Department of Health and Human Services Assistant Secretary for Administration and Management (in coordination with the CDC). **(T-0)** Additionally, the DoD concurrence for movement of a contagious patient will be made in consultation with DoD medical authorities (including TCSG, AMC/SG; all parties must concur in order for the movement to occur). **(T-0)**

8.25.12.2. Safe transportation of AE patients, who are ill with an a droplet or airborne transmitted contagious disease, will be accomplished utilizing the Patient Isolation Unit (PIU). **(T-0)** The patient requiring the isolation will be transported to a facility with the appropriate bio-containment level for identification of the infectious agent. **(T-0)** The isolation will include a specially trained ERCC team to care for the patient. **(T-0)**

8.25.12.3. Natural outbreaks of previously unknown diseases, which are highly contagious, such as severe acute respiratory syndrome and H1N1 influenza, are likely to occur. Bio-warfare pathogens remain easy to procure and cheap to manufacture, making their use by terrorists a significant threat to military and civilian populations.

8.25.12.3.1. National security, global health concerns, or political considerations may necessitate movement of one or 2 highly contagious patients for evaluation or treatment or development of methods for prevention and treatment.

8.25.12.3.2. The AE/ERCC team capability to move contagious patients will only be used in extreme circumstances where it is necessary to transport 1 or 2 such patients to a diagnostic center with an appropriate level of bio-containment for identification of the infectious agent. **(T-0)** These dedicated AE missions do not transport any other patients.

8.25.12.3.3. The PIU is designed to provide isolation of a contagious patient during air transport and has been approved for flight. However, potential exposure of aircrew, patients, aircraft, and the surrounding environment to contagious pathogens may occur.

8.25.12.3.4. Use of the PIU will be governed by the Initial Capability Document for the AMC PIU CONOPS. (T-2)Refer to <https://private.amc.af.mil/a3/a3v/publications.aspx>.

#### **8.25.13. Healthcare Worker Blood and Body Fluid Post-Exposure Plan.**

8.25.13.1. This AFI provides guidance for Post-Exposure Plan (PEP) regimens comprised of 3 (or, when appropriate, more) antiretrovirals, consistent with currently recommended treatment guidelines. Persons receiving PEP should complete a full 4-week regimen. The majority of data concerning adverse events has been reported primarily for persons with established HIV infection receiving prolonged antiretroviral therapy and therefore might not reflect the experience of uninfected persons who take PEP. The term HCW refers to all paid and unpaid persons working in en route care settings who have the potential for exposure to infectious materials, including body substances (e.g., blood, tissue, and specific body fluids), contaminated medical supplies and equipment, and contaminated environmental surfaces.

8.25.13.2. The most important strategy for preventing occupationally acquired human immunodeficiency virus (HIV) infection and other blood-borne pathogens is to implement Standard Precautions coupled with Transmission-Base Precautions. For instances in which an occupational exposure has occurred, appropriate post-exposure management is an important element of workplace safety. The risk of acquiring an infection depends upon the type of injury, the volume of material, and the patient's virus titer. An exposure that might place HCW at risk for an infection is defined as a percutaneous injury (e.g. a needle stick or cut with a sharp object) or contact of mucous membrane or nonintact skin (e.g. exposed skin that is chapped, abraded, or afflicted with dermatitis) with blood, tissue, or other body fluids (i.e. semen and vaginal secretions) potentially infectious. The following fluids are also considered potentially infectious but the risk for transmission is unknown: cerebrospinal fluid, synovial fluid, pleural fluid, peritoneal fluid, pericardial fluid, and amniotic fluid. Feces, nasal secretions, saliva, sputum, sweat, tears, urine, and vomitus are not considered potentially infectious unless they are visibly bloody.

#### **8.25.13.3. Additional guidelines.**

8.25.13.3.1. Primary prevention of occupational exposures.

8.25.13.3.2. Prompt management of occupational exposures and, if indicated, initiation of PEP as soon as possible after exposure.

8.25.13.3.3. Selection of PEP regimens that have the fewest side effects and that are best tolerated by prophylaxis recipients.

8.25.13.3.4. Anticipating and preemptively treating side-effects commonly associated with taking antiretroviral drugs.

8.25.13.3.5. Attention to potential interactions involving both drugs that could be included in PEP regimens and other medications that PEP recipients might be taking.

8.25.13.3.6. Consultation with experts on post-exposure management strategies (especially determining whether an exposure has actually occurred and selecting PEP

regimens, particularly when the source patient is antiretroviral treatment-experienced).

8.25.13.3.7. Testing of source patients (without delaying PEP initiation in the exposed provider) using methods that produce rapid results.

8.25.13.3.8. **Counseling and follow-up of exposed HCW.**

8.25.13.4. The current PHS guidance recommends prescribing 3 (or more) tolerable drugs as PEP for all occupational exposures to BBF. Medications included in a PEP regimen should be selected to optimize side effect and toxicity profiles and a convenient dosing schedule to encourage HCW completion of the PEP regimen. In instances of an occupational exposure to drug-resistant HIV, administration of antiretroviral agents, to which the source patient's virus is unlikely to be resistant, is recommended for PEP.

8.25.13.5. The challenge to BBF exposure in the AE system is the HCW may not be in a facility. They may be in flight, in a high threat forward location, or in a temporary ERPS geographically separated from a fixed medical facility.

8.25.13.6. The Public Health Service guideline has removed exposure codes. Contact the Patient Movement Requirements Center and the VFS as soon as operationally feasible.

8.25.13.7. **Initial Treatment.** Refer to **AE Clinical Protocol - HCW BBF PEP.**

8.25.13.7.1. Information to relay to the PMRC and VFS includes: Name, SSN, date/time of injury/exposure, unit of assignment, phone, home phone, date of last hepatitis B vaccine, and results of last antibody/titer screening, if known, source of BBF and how the exposure occurred, protective items worn, volume, duration, severity of exposure, and cite number of the source patient.

8.25.13.7.2. Determine demographics of the source patient with the VFS if possible.

8.25.13.7.3. The exposed HCW should report to a medical treatment facility, as soon as possible after the exposure, to address treatment options for the risk of hepatitis B virus exposure. If the HCW was immunized against hepatitis B virus but had anti-HBs of less than 10 mIU/mL after vaccination, the source patient should be tested for HBsAg. If the source patient is HBsAg positive or unknown the HCW (with anti-HBs of less than 10 mIU/mL) should receive 2 doses of hepatitis B immunoglobulin (HBIG). The first dose should be administered as soon as possible after exposure and the second dose administered 1 month later.

8.25.13.7.4. Administration of PEP for HIV should not be delayed while waiting for test results. If the source patient is determined to be HIV negative, PEP should be discontinued, and no follow-up HIV testing for the exposed provider is indicated.

8.25.13.7.5. PEP is most effective when begun as soon as possible after the exposure and PEP becomes less effective as time from the exposure increases. Occupational exposures to HIV should be considered urgent medical concerns and treated immediately. PEP is not justified for exposures that pose a negligible risk for transmission, thus making the communication to the VFS critically important to establishing the need for PEP.



8.25.13.7.6. The PHS now recommends Emtricitabine (FTC) plus TDF (these 2 agents may be dispensed as Truvada, a fixed-dose combination tablet) plus Raltegravir (RAL) as PEP for occupational exposures to BBF.

8.25.13.7.7. HCW, who has experienced occupational exposure to BBF, should receive follow-up counseling, post exposure testing, and medical evaluation regardless of whether they take PEP. The psychological impact of needle sticks or exposure to blood or body fluid should not be underestimated for HCW. Exposed personnel should be advised to use precautions (e.g., use of barrier contraception and avoidance of blood or tissue donations, pregnancy, and, if possible, breast-feeding) to prevent secondary transmission, especially during the first 6–12 weeks after exposure. Providing HCW with psychological counseling should be an essential component of the management and care of exposed HCW.

8.25.13.7.8. If PEP is used, HCW should be monitored for drug toxicity by testing at baseline and again 2 weeks after starting PEP. In addition, HCW taking antiretrovirals should be evaluated if any acute symptoms develop while receiving therapy. Exposed HCW, who choose to take PEP, should be advised of the importance of completing the prescribed regimen.

8.25.13.7.9. Refer to **AE Clinical Protocol - HCW BBF PEP** for drug prescriptions.

8.25.13.7.10. The PIC, MCD, and AECMs will assess the situation and the condition of the HCW to determine if the mission will continue or divert to a MTF capable of handling the situation. **(T-3)**

8.25.13.7.11. Documentation includes: Completion of the DD Form 2852. **(T-2)** The HCW will maintain a copy of all paperwork. **(T-2)** The HCW will follow up with their local or home base military MTF. **(T-2)**

8.25.13.7.12. Performance Improvement monitoring includes validating the HCW exposure follows the AE Clinical Protocol guidelines, notifying the VFS as soon as operationally possible. Initial treatment should begin within 15 minutes of exposure, complete and submit DD Form 2852. **(T-2)**

## Chapter 9

### PATIENT MOVEMENT PATIENT SAFETY PROGRAM (PMPS)

**9.1. General** . This chapter defines the requirements and responsibilities for the PMPS Program as it applies to the AE system. TCSG in conjunction with AMC/SG, has the lead in establishing PMPS program requirements. All AE units and staging personnel must be actively involved in PMPS program. **(T-2)** The intent is to provide a structure and process for engaging all MAJCOMs, service components, DoD, and Unified Commands to support and promote a culture of safety outlined in the objectives below. The PMPS utilizes Patient Movement Quality-Report (PMQ-R) tab to input the AE patient safety data in the TRAC2ES system. Additional patient safety resources are listed in [Attachment 2, A2.2](#).

**9.2. Objectives include but not limited to:**

- 9.2.1. Advance a culture of patient safety (PS) throughout the AE system.
- 9.2.2. Promote transparency, teamwork, and communication.
- 9.2.3. Establish policy/standards to incorporate PS initiatives at all levels.
- 9.2.4. Promote an open, receptive, and non-punitive event reporting environment.
- 9.2.5. Provide an ongoing and systematic approach for system improvement and risk reduction.
- 9.2.6. Reduce potential or actual patient harm events.
- 9.2.7. Disseminate PS data and initiatives for ongoing learning and involvement.
- 9.2.8. Track and trend patient satisfaction within the AE system for purpose of improvement.

**9.3. Responsibilities:**

**9.3.1. TCSG.**

- 9.3.1.1. Responsible for the implementation of a PMPS program and process improvement across the PM system.
- 9.3.1.2. Appoints a PMPS program director.
- 9.3.1.3. Directs the appropriate level of investigation or review of a PM/AE event. Directs Medical Incident Investigations (MII) or an event review process IAW this publication.
- 9.3.1.4. Provides a data collection tool for data reporting.
- 9.3.1.5. Collaborates with AMC/SG to determine the need for a CCMD directed event review or investigation following a patient safety event that occurs within the En Route Care system. If warranted, TCSG and AMC/SG will jointly conduct an event review (root cause analysis) of the event. **(T-2)** TCSG will facilitate the coordination of requests for participation of personnel and/or information from CCMDs, MAJCOMs, service components and/or other agencies necessary for the timely and efficient completion of an event review. **(T-2)** If the TCSG determines a event review (RCA) is not warranted at the CCMD level, the AMC/SG may choose to conduct a event review (RCA) based on their

own authority. **(T-2)** TCSG will facilitate the dissemination of all reviews, lessons learned, updated guidance, and other relevant information. **(T-2)**

#### **9.3.2. Geographic Combatant Command (GCC).**

9.3.2.1. Responsible for the implementation and oversight of a PMPS program within their theater and coordinates this with TCSG.

9.3.2.2. Appoints a theater level PMPS representative.

9.3.2.3. Maintains awareness of PS events within their Theater and coordinates with TCSG on the appropriate level of investigation/review based on the event classification.

9.3.2.4. Collaborates with TCSG in conducting investigations/reviews and participates in the investigation out brief.

9.3.2.5. Provides all final investigation reports and event reviews to TCSG for AE system-wide transparency and process improvement.

9.3.2.6. Disseminates and implements “lessons learned” within their Theater.

#### **9.3.3. AMC/SG.**

9.3.3.1. Responsible for quality and safe delivery of medical care in the AE system.

9.3.3.2. Appoints an AMC AE Patient Safety Program Director.

9.3.3.3. Collaborates with the TCSG to determine the appropriate level of review or investigation of AE PS events based on organizations involved ([Table 9.1.](#)) and AFI 44-119. Coordinates with MAJCOM/SGs where MII is conducted.

#### **9.3.4. AMC/SG AE PSM.**

9.3.4.1. Reports to the AMC/SG and is responsible for the management of the worldwide AE PS Program. Activities include but are not limited to:

9.3.4.2. Ensures a comprehensive and integrated AE PS Program is established to support DoD PS principles. Coordinates with other safety programs such as CRM/ASAP to communicate issues.

9.3.4.3. Identifies actual and potential risks for the purpose of system improvement and risk reduction.

9.3.4.4. Coordinates/prepares instructions with TCSG, MAJCOM/SG, MAJCOM/A3 and functional experts for appropriate DoD and Air Force publications, SG Notice to Airmen (NOTAM), FCIF, COPSA, and policy letters.

9.3.4.5. Reviews, categorizes, and trends all AE reported events in TRAC2ES PMQ-R system and provides guidance to all theater and service components for the reporting, collection, storage, retrieval, and analysis of AE PS data and information. **(T-2)** Any patient movement events involving PMRC or other services will be discussed with USTRANSCOM PSM for appropriate disposition. **(T-2)**

9.3.4.6. Provides the AF/SG, AMC/SG and/or A3 and AE Clinical Working Group (AECWG) with trend analysis and recommendations for a course of action to prevent identified AE PS issues. Serves as AE PS resource for all levels and theaters of personnel

working within the AE system and provides presentations and briefings as needed for meetings and conferences.

9.3.4.7. Facilitates the initiation of fact gathering, team selection, orientation of the MII or Event Review teams, out brief to leadership and implementation of recommendations.

9.3.4.8. Facilitates dissemination of AE “lessons learned” and PS initiatives through TCSG, AMC/SG and AMC/A3.

9.3.4.9. Develops and teaches PSM training for AE Squadrons and ERPS based on of DoD PS Program principles adapted to the AE system.

9.3.4.10. Maintains expertise in healthcare PS and incorporates those principles in the AE PSP.

#### **9.3.5. AMC/A3.**

9.3.5.1. Communicates information to AMC/SGK regarding clinical trends in training and evaluation.

9.3.5.2. Updates policy and operational guidance based on clinical and PS lessons learned.

9.3.5.3. Acts as advisor and liaison to TCSG and AMC AE PS process improvement. Member of the AECWG.

9.3.5.4. Manages aircrew operationally related events submitted in TRAC2ES PMQ-R as appropriate.

#### **9.3.6. Theater MAJCOM SG.**

9.3.6.1. Responsible for oversight of the Command AE PS Program, actively supports investigations, event reviews, and process improvement efforts within the theater and across the system.

9.3.6.2. Appoints a command-level PSM. This role may be delegated to the squadron level although authority and oversight is maintained at the MAJCOM level.

9.3.6.3. Notifies AMC/SG of any significant clinical AE events or any medical issue requiring command surgeon action. All units/PMRCs will have access to reports in their theater. **(T-2)**

9.3.6.3.1. Coordinates and works with TCSG and AMC/SG on the scope and direction of investigation/level of review needed for significant AE Events based on classification of events (**Table 9.1.**).

9.3.6.3.2. Provides all final investigation reports and event reviews to TCSG and AMC/SGK for system-wide transparency and process improvement.

9.3.6.3.3. Implements Event Review/MII approved recommendations within respective theater of operation and disseminates “lessons learned.”

#### **9.3.7. Theater MAJCOM PSM.**

9.3.7.1. Required for commands and theaters with owned or gained AE assets (even if dual role). Responsible for managing the MAJCOM PMPS Program to include but not limited to:

9.3.7.2. Works closely with the Theater PMRC PSM to maintain awareness of theater-level events, trends, issues, and provides updates to MAJCOM SG.

9.3.7.3. Actively promotes and supports PS across the theater.

9.3.7.4. Acts as a MAJCOM/Theater advisor for AE PS requirements to unit level programs and a liaison to the TCSG Director PMPS Program and the AMC/SG AE PSM.

9.3.7.5. Evaluates events in assigned theater to determine if an Event Review or MII is needed. Collaborates with TCSG Director PMPS Program and the AMC/SG AE PSM to coordinate and conduct the review/investigation process.

9.3.7.6. Implements Event Review/II approved recommendations within respective theater of operations and disseminate “lessons learned” to appropriate communities.

**9.3.8. Commander, AES/OIC/Senior Officer/Flight Commander of ERPS.**

9.3.8.1. Will establish an organizational culture that promotes PS event and near miss reporting, event review, analysis, and prevention of events that caused, or have potential to cause, patient harm during operational missions, exercises, and training missions to include Aeromedical Readiness Missions (ARM). **(T-1)** ARMs use simulated patients to prepare for the wartime movement of patients.

9.3.8.2. Ensures local policies and procedures governing the management of the AE PS Program are established and provide oversight of the program.

9.3.8.3. Appoints a PSM and ensures member receives TCSG and AMC/SG approved AE PS Manager training within six months of starting the position.

9.3.8.4. Reviews Unit PSMs internal quarterly reports and elevates concerns or issues to HHQ and AMC/SG AE PSM.

9.3.8.5. Reviews and approves Unit PS program appraisal of the past calendar year and the annual plan for the new calendar year. This can be 2 separate reports or addressed in one report. See Section 9.3.9.15. for details of report and due dates. Ensures completion of the Annual Appraisal according to guidelines.

9.3.8.6. Defines an internal coordination process for reviewing unit submitted events and other relevant events to ensure unit corrective action and follow-up are taken as needed and recorded in the PMQ-R.

9.3.8.7. Ensures annual PS training is conducted for all members of the unit IAW AFI 44-119 *Medical Quality Operations*, **Chapter 2**.

9.3.8.8. Appoints members of unit-level AE Event Review team as determined either locally or by higher headquarters.

9.3.8.9. Ensures reporting of all information concerning significant events (typically those classified as A-B-C) into the PMQ-R and to the MAJCOM AE PSM, the AMC/SG AE PSM and the TCSG Director PMPS Program.

9.3.9. PSM for AES and ERPS Units. Responsible for the administration of the unit PS program. Activities include but are not limited to:

9.3.9.1. Reviews and evaluates DD Form 2852 for completeness and entry into the TRAC2ES PMQ-R web-based system. ERPS PSM must work with associated medical unit PS manager. **(T-2)** For events that occur in the ERPS, reporting may need to be done in both the TRAC2ES PMQ-R system and the Medical Unit Patient Safety Report (PSR) system.

9.3.9.2. All PSMs and/or designees will maintain an operational and exercise TRAC2ES account with PMQ-R access for inputting PS events occurring during operational missions, exercises, and training missions, to include ARMs. **(T-2)**

9.3.9.3. AES/ERPS Units will input a minimum of 4 training DD Form 2852 events, per semi-annual period, into the exercise TRAC2ES PMQ-R system. **(T-2)**

9.3.9.4. Ensures Medical Class A, B and C events are reported to the Unit Commander and submitted in the TRAC2ES PMQ-R system within 24 hrs. of the event occurring. All other event classifications will be submitted no more than 5 days of the incident (**Table 9.1.**). **(T-2)**

9.3.9.5. Obtains additional information, as needed, when reviewing events and initiates appropriate level of review, follow-up, and action as determined locally and/or by higher headquarters.

9.3.9.6. Uses a locally developed coordination process to document review and resolution of events by working with involved functional areas, units or agencies as needed (Wing/OG/A3V/ A3T/NAF/MAJCOM, TPMRC, Wing Safety, MDG, etc.).

9.3.9.7. Analyzes PS event data to identify trends, actual issues/concerns and takes action to improve processes/reduce risk within the units' span of influence or control.

9.3.9.8. Provides additional event information and actions taken in comments section of the PMQ-R event in TRAC2ES or by e-mail to AMC AE PSM.

9.3.9.9. Maintains communication on squadron/theater level issues with local leadership, when applicable, MAJCOM PMPS Program Manager, AMC/SG AE PSM and TCSG Director PMPS Program.

9.3.9.10. Develops a unit level PS instruction/plan to guide the program.

9.3.9.11. Provides a quarterly report to the unit commander on event trends, PS issues and follow-up on actions taken.

9.3.9.12. Provides feedback to unit personnel on PS issues, trends and actions or "lessons learned."

9.3.9.13. For management of completed DD Form 2852, see Section 9.4.5.

9.3.9.14. Monitors operational trends and acts on patient satisfaction survey data or comments as it relates specifically to patient safety.

9.3.9.15. Provides AE PS annual appraisal. Each January, the unit will prepare an appraisal signed by the unit commander of its PS program for the past calendar year and submit it to AMC/SG AE PSM, through the respective MAJCOM. **(T-2)** Suspense for submission of this report is 1 March. At a minimum, the following areas will be addressed: **(T-2)**

9.3.9.15.1. PS training statistics for the past year. Include total number personnel trained/total number personnel requiring training. This includes initial training and annual training. Include an action plan to address personnel not trained.

9.3.9.15.2. Statistical review and analysis of actual event reports submitted by the unit for the past year. Identify trends internal and/or external to the unit and any local actions taken to address internal trends/issues. **NOTE:** Air Reserve Component (ARC) Units may provide an analysis of training events from the exercise TRAC2ES database, depicting classification, category of events, and provide a summary evaluating the completeness of the DD Form 2852. **(T-2)**

9.3.9.15.3. Describe local PS initiatives done or special training topics related to PS, local trends and/or the National Patient Safety Goals and AE System Patient Safety Goals.

9.3.9.15.4. Unit actions taken in response to any applicable SG NOTAMs, COPSAs, FCIF and/or PS related policy memos.

9.3.9.15.5. Identify the top PS concern(s) or area(s) for improvement at the local level and/or the larger AE system along with recommendations for improvement.

9.3.10. AES and ERPS unit personnel:

9.3.10.1. Reports all AE related system events using the DD Form 2852 IAW squadron/unit policy. **(T-2)**

9.3.10.2. If equipment or supplies are involved in an event while on a patient, remove it from the patient, tag it appropriately as explained in section 12.5., and turn it into the appropriate agency. Contact AMC AE PSM for guidance with non-equipment supply issues (mislabelled IV bags or medication bottles, etc.). **NOTE:** Do not clear the history or data from any malfunctioning equipment (i.e. history, settings, volume infused, etc.) as this is important to the biomedical review of equipment.

9.3.10.3. Attends annual PS training taught by the unit PSM, incorporates PS initiatives and alerts into practice and participates with event reviews or investigations conducted for the purpose of system improvement.

9.3.11. **MCD.**

9.3.11.1. Responsible for in-flight medical mission management for the AE crew, ERCC team members, medical attendants, and patients.

9.3.11.2. MCD immediately reports all Medical Class A, B, and C events (**Table 9.1**) to C2 with phone patch to the PMRC. **(T-2)** During the end of mission report, MCD completes and faxes necessary paperwork.

9.3.11.3. MCD will complete the mission termination process IAW AFI 11-2AE V3. **(T-2)**

9.3.11.4. At the end of mission, submits completed DD Form 2852s to Unit or Squadron PSM, Detachment, or as locally defined, for entering into the TRAC2ES PMQ-R web-based reporting system. **(T-2)**

9.3.12. **PMRC.**



9.3.12.1. During mission, provides initial assistance and medical direction, as needed, when notified of a Medical Class A, B or C event. Supports TCSG and AMC/SG in reviewing or conducting an Event Review or MII as required. Each PMRC identifies a PSM to assist in the following activities including but not limited to:

9.3.12.2. Notifies the following of any A, B, or significant C events or concerning medical issues within 24 hours of occurrence: TCSG patient safety office via e-mail to [transcom.scott.tcsг.mbx.patient-movement-safety-program@mail.mil](mailto:transcom.scott.tcsг.mbx.patient-movement-safety-program@mail.mil). AMC/SG patient safety office via e-mail to [amc.sgk.ae\\_pt\\_safety@us.af.mil](mailto:amc.sgk.ae_pt_safety@us.af.mil); and the GCC/Theater SG.

9.3.12.3. Provides all relevant documentation, information, and originals of any form documenting validation, regulation, patient care, log entries related to a PS event for the purpose of quality assurance protected PS reviews or investigations. Assists as needed in obtaining copies of any paper AF Form 3899 medical records of the patient from the receiving facility.

9.3.12.4. Identifies potential problem areas in patient regulation and validation through analysis of data and review of internal processes.

9.3.12.5. Provides consultative support on PS issues to the theater surgeon.

9.3.12.6. Provides PM expertise and information/data to the TCSG Director PMPS and the AMC/SG AE PSM upon request.

9.3.12.7. Incorporates and disseminates “lessons learned” from clinical AE Event reviews and other alerts, as applicable.

9.3.12.8. Initiates and participates in process improvement activities.

#### **9.4. Patient Movement Event/Near Miss Reporting Process (DD Form 2852).**

9.4.1. PMPS Event. An incident or unexpected change in patient status (may also include crew member/ERCC team/MA or passenger), occurring in the AE system, that reached the patient and may or may not have resulted in harm.

9.4.2. Near Miss Event. A PMPS incident or situation that did not reach the patient (may also include crew member/ERCC team/MA or passenger), either by chance or timely intervention, but could have resulted in harm, or the potential for harm, had it reached the patient.

9.4.3. PMPS event reporting boundaries. PMPS boundaries start with clinical and/or administrative validation activities and end 24 hours after transfer of care at the final destination.

9.4.4. All AE PMPS events will be submitted into the PMQ-R web-based data collection tool located in TRAC2ES. (T-2) Events occurring within the medical unit and ERPS may also need to be reported into the PSR system, depending on the event and local policy.

9.4.4.1. Anyone throughout the AE system can report an event by filling out a DD Form 2852 and providing the form to a Unit/MTF PSM or designee to enter the form into PMQ-R. (T-2)



9.4.4.2. Class A,B, C events will be entered within 24 hours and all other event classifications will be entered no more than 5 days of the incident. **(T-2)**

9.4.5. Do not document in the patient record that a DD Form 2852 or event report was completed. Information on the DD Form 2852 is protected by the Privacy Act and from disclosure, except as specifically authorized, under Federal Statute 10 U.S.C 1102.

9.4.6. Guidelines for completing DD Form 2852 are identified IAW this AFI. For questions/assistance, contact the Theater PMRC, TCSG Director PMPS, or AMC AE PSM.

9.4.7. Scan and send in an encrypted email the original DD Form 2852 for any actual patient events classified as A, B, and C. **(T-2)** In addition, include any related original documentation concerning the event (i.e. memorandums for record, patient record, biomedical equipment reports, etc.). PMQ-R system does not accept encrypted documentation. Scan and send encrypted to AMC/SGK PSM. If unable to scan please send by certified mail to: (See [Figure 9.1](#))

**Figure 9.1. AMC/SGK PSM.**

AMC/SGK Patient Safety Manager  
709 Ward Drive, Building 1990  
Scott AFB, IL 62225

9.4.8. DD Form 2852s, for actual patient events classified as A-B-C, will be maintained at AMC/SGK for 10 years. **(T-2)** Units will keep a digital file copy or paper original of all DD Form 2852s in a secured location for 1 year and then destroy. **(T-2)** **NOTE:** All related documents or reports will be stamped or marked with the following statement: “Quality Assurance Document Exempt from Discovery except as specifically authorized IAW 10 U.S.C. section 1102.” **(T-2)**

## **9.5. Event Classification.**

9.5.1. Events are classified A through F based on degree of harm or severity of status change. See [9.1](#). The submitting unit indicates the initial classification. **(T-2)** TCSG Director of the PMPS or AMC/SG AE PSM will make the final event classification determination. **(T-2)**

9.5.2. All events must have a classification. **(T-2)**

**Table 9.1. Event Classification.**

Event Classification	Description
Medical Class A.	Event involving immediate death, near death or major permanent loss of function. Immediate notification to C2 and PMRC. <b>(T-2)</b> The PMRC will notify TCSG and AMC/SGK Patient Safety. <b>(T-2)</b> Submit DD Form 2852 into TRAC2ES PMQ-R database within 24 hrs. <b>(T-2)</b>
Medical Class B.	Serious temporary patient harm or status change resulting in initial or prolonged hospitalization. Immediate notification to C2 and PMRC. <b>(T-2)</b> The PMRC will notify TCSG and AMC/SGK Patient Safety. <b>(T-2)</b> Submit DD Form 2852 into TRAC2ES PMQ-R database within 24 hrs. <b>(T-2)</b>

Medical Class C.	Event involving temporary patient harm or status change requiring emergency evaluation and treatment. Immediate notification to C2 and PMRC. <b>(T-2)</b> Submit DD Form 2852 into TRAC2ES PMQ-R database within 24 hrs. <b>(T-2)</b>
Medical Class D.	Event did not result in patient harm, but increased monitoring is required. Submit DD Form 2852 into TRAC2ES PMQ-R database within 5 days of the incident. <b>(T-2)</b>
Medical Class E.	Event reached the patient but did not result in patient harm or need for increased monitoring. Submit DD Form 2852 into TRAC2ES PMQ-R database within 5 days of the incident. <b>(T-2)</b>
Medical Class F.	Event did not reach patient and did not result in patient harm but, is a potential system issue, hazardous condition or has the potential to cause harm. Submit DD Form 2852 into TRAC2ES PMQ-R database within 5 days of the incident. <b>(T-2)</b>

## 9.6. Event Categories.

9.6.1. There are multiple categories and subcategories listed on the DD Form 2852 or in the TRAC2ES PMQ-R system.

9.6.2. More than one category and sub-category may be selected, however, each selection must be supported in the narrative event description. **(T-2)** See [Attachment 15](#).

## 9.7. Reporting a Medical Class A, B, or Significant C event.

9.7.1. These events result in serious patient harm or change in patient condition. Patient care and safety come first and will be managed before beginning the reporting process. **(T-2)** Reporting involves contacting appropriate C2 as soon as possible and completing a DD Form 2852. **(T-2)** The reporting process involves:

9.7.2. DD Form 2852 (front and back) is used to document events that resulted in or had the potential to result in harm to anyone in the AE. A DD Form 2852 is completed by any AECMs, ERCC team, MTF, ERPS personnel, etc., who witnesses an event. **(T-2)** The overall purpose is to capture AE patient safety and process trends.

9.7.2.1. Complete the form with as much detail and specifics as possible.

9.7.2.2. Patient Movement Quality Report (PMQ-R) Generated Log Number will be obtained from TRAC2ES by unit patient safety personnel when DD Form 2852 is entered in TRAC2ES system. **(T-2)**

9.7.2.3. If the DD Form 2852 is completed by patient staging or MTF staff, follow local MTF incident reporting policy in addition to completing this form. **(T-2)**

9.7.3. Notify C2 of the event, steps taken to rectify and DD Form 2852 documentation in the most expedient manner available (e.g. radio, telephone, fax, e-mail). **(T-2)**

9.7.4. All verbal notifications will be followed up with written documentation of event using DD Form 2852 and submitted into the TRAC2ES PMQ-R IAW [Table 9.1](#). **(T-2)**

9.7.5. The governing PMRC will collect and review all internal PMRC records (i.e. TRAC2ES audit history, PMR, all internal notes, daily log entries, and mission tracking

records) regarding validation prior to movement within 3 hours of notification of a Medical Class A, B, or C event. **(T-2)**

9.7.6. If no formal review is required, the relevant organizational and patient safety representatives will collate reported event details in a written summary and submit to respective leadership for awareness.

## **9.8. PM Event Review.**

9.8.1. The goal of the Event Review is to identify systems factors that led to the event and solutions to prevent or reduce the likelihood of similar events in the future. The product of the Event Review is a written team report consisting at a minimum of a timeline of events across the continuum, identified contributing factors with root causes, and an action plan designed to eliminate or minimize the root causes of the event and improve safety of the process. The focus is on human factors, processes, and systems rather than individual blame. Any concern for professional competence should be identified by the leadership for appropriate Standard of Care review separate from the Event Review process.

9.8.2. Authority: An Event Review may be requested by any level of leadership in the AE system.

9.8.3. The Event Review is a quality assurance document and is exempt from discovery or further disclosure except as specified in 10 U.S.C. Section 1102.

9.8.4. The team composition will be determined by the type and severity of the event and will be comprised of selected subject matter experts as determined by the event. **(T-2)**

9.8.5. TCSG Director of the PMPS and AMC/SG AE PSM will provide Event Review Team training and assist the Review Team with the process. **(T-2)**

9.8.6. For system level event reviews, the event review team will send the final written report to the respective GCC/Theater SG PSM, TCSG Director of the PMPS and AMC/SG AE PSM within 120 days of being directed to conduct an event review. **(T-2)**

9.8.7. Leadership who directed the Event Review, will determine requirements for a formal outbrief. **(T-2)**

## **9.9. PM Medical Incident Investigation (MII).**

9.9.1. A formalized structured investigation process with a primary purpose to find out how the system contributed to the adverse outcome by thoroughly investigating the facts in a non-punitive way. The ultimate goal is to learn from the event and improve healthcare by recommending system changes to reduce the risk of recurrence, thereby decreasing harm to patients. While differences exist between a MTF and a PM/AE MII, it is still a medical incident investigation under 10 U.S.C. Section 1102. **(T-2)** A PM/AE MII may involve multiple geographic locations, services, and systems of care, which may complicate and significantly lengthen the investigative process.

9.9.2. Authority: TCSG, AMC/SG, GCC/SG, or Service SG may direct a MII. Upon initiation, the TCSG, as the single-manager for patient movement, will take the lead for all MII within the AE. **(T-2)** The PM/AE MII is a quality assurance document exempt from discovery or release IAW 10 U.S.C. Section 1102.

9.9.3. The team compliment will be selected by TCSG and AMC/SG. **(T-2)** If AFRC/ANG AECMs are involved, the respective MAJCOM will be contacted for appropriate team representation. **(T-2)** TCSG Director of the PMPS and AMC/SG AE PSM will provide MII Team training. **(T-2)**

9.9.4. The final written report with timeline, findings, and recommendations will be forwarded to the respective TCSG, GCC/Theater SG, and AMC/SG within 90-days of team selection. **(T-2)**

9.9.5. A formal out brief will be required. **(T-2)** Attendees to the out brief will be determined by the TCSG and AMC/SG. **(T-2)** At a minimum, Air Force Medical Operations Agency (AFMOA)/CC and the involved Theater/SG will be a part of the out brief. When possible, if ARC personnel are involved in the event, the ARC leadership will be contacted for team inclusion **(T-2)**

9.9.6. All events (particularly A, B, C) will be evaluated for the requirement or need of an event review process (MII vs Event Review). **(T-1)** At a minimum, an appropriate level of review will be done on all sentinel events (as defined by The Joint Commission and DoD). **(T-1)** The following events may warrant a MII (list is not all-inclusive):

9.9.6.1. Any event or series of events which either caused, or could cause, significant harm or death.

9.9.6.2. Events where an objective evaluation cannot be accomplished by an internal team.

9.9.6.3. Events with media attention or high-level interests.

9.9.6.4. Patient suicide, attempted suicide, or self-harm.

9.9.6.5. Hemolytic transfusion reaction involving inappropriate administration of blood or blood products.

9.9.6.6. An event resulting in unanticipated death or major permanent loss of function, not related to natural course of patient's illness or underlying condition.

#### **9.10. Clinical Operations Patient Safety Alert (COPSA).**

9.10.1. A COPSA is a patient safety alert issued by TCSG and/or AMC/SG in order to address a critical patient safety trend or a high-risk low-volume concern. The directions and guidelines will be followed by personnel in the AE system. **(T-2)**

9.10.2. Current COPSAs are available at <https://eim.amc.af.mil/org/amcsg/AMCSG%20Policies/Forms/AllItems.aspx> or through TCSG or AMC/SG.

## Chapter 10

### MISSION IRREGULARITIES

#### 10.1. Cabin Altitude restriction.

10.1.1. Cabin altitude restrictions may be required with clinical conditions associated with retained air such as head injuries, eye injuries, or decompression injuries. If an altitude restriction is required it should be input on the patients PMR and document on the AF Form 3899 or EHR equivalent prior to validating the patient.

10.1.2. Cabin altitude restriction could lengthen the flight time and increased turbulence may occur. The PRMC communicates the cabin altitude restriction to the governing AOC.

#### 10.2. Medical Emergency/Change in Patient Status .

10.2.1. In the absence of direct physician contact/supervision, RNs will immediately start interventions following the most current AHA ACLS algorithms, if appropriate. **(T-1)** All IV solutions will be either LR or NS. **(T-1)**

10.2.1.1. FN/AET refers to AFI 11-2AE Vol 3 for operational information. ERPS personnel follow MTF guidelines.

10.2.1.2. Do not use any personal identifying information when transmitting medical information. Only use the patient's cite number for identification purposes.

10.2.2. Be ready to communicate demographical and medical information quickly and succinctly. Also, report any treatment/intervention and the outcome. Be prepared to request/receive orders, mission deviation/divert, etc. to expedite meeting patient and mission requirements.

10.2.3. If instructed to divert or expedited landing is required, ensure proper off-load message using AF Form 3858, *Aeromedical Evacuation Off-Load Message*, is provided to the airfield with equipment and personnel requirements.

10.2.4. Anytime a patient is removed from a flight or the staging facility for clinical evaluation or a significant change in status, the MCD/Chief Nurse will notify C2 and complete DD Form 2852. **(T-2)** C2 will contact the governing PMRC ASAP. **(T-2)**

10.2.5. A qualified member of the medical crew should accompany the patient to the MTF, if needed, to maintain the same level of care and to provide report to the MTF accepting privileged provider.

10.2.5.1. In some instances, a civilian ambulance will respond to transport the patient to the MTF and the local memorandum of agreement may not permit military medical personnel to ride in the ambulance. **(T-2)**

10.2.5.2. If a member of the medical crew cannot accompany the patient to the MTF, report will be provided to the accepting MTF privileged provider via radio or telephone. **(T-2)** The cite number will be used on the radio or telephone to identify the patient due to HIPAA regulations. **(T-1)**

10.2.5.2.1. The original AF Form 3899 and other medical records will accompany the patient to the MTF. **(T-2)**

10.2.5.2.2. Whenever possible, the MCD will ensure a copy of the AF Form 3899/DD Form 602 is faxed to the PMRC. **(T-2)** If the AF Form 3899 cannot be copied, provide detailed information on AF Form 3829, and complete DD Form 2852. **(T-2)**

### **10.3. Death In-flight/Do Not Resuscitate (DNR).**

10.3.1. For Death in Flight refer to AFI 11-2AE V3 for AECMs.

10.3.2. DNR orders. AE/ERPS can accept DNR patients with approval from the Theater VFS and will be matched with the appropriate level of care. **(T-2)** If a patient death is anticipated while a patient is in the AE system and a decision has been made not to resuscitate, an AF Form 3838 will be completed and attached to AF Form 3899. **(T-1)** Attending physicians should address DNR status of peacetime AE patients facing imminent death or classified as very seriously ill, recognizing that the stresses of flight may pose significant risk for precipitating death. The theater VFS reserves the authority to deny movement by AE of peacetime patients for whom AE poses an unacceptable risk of death or injury. Patients may also be moved for organ donation or family requests when a DNR would not be appropriate.

10.3.2.1. The originating physician will provide the following documentation before flight: **(T-2)**

10.3.2.1.1. A completed AF Form 3838.

10.3.2.1.2. “Do Not Resuscitate” order on the AF Form 3899 or EHR equivalent. DNR orders will not be written more than 72 hrs. before the originating flight. **(T-2)**

10.3.2.2. Prior to flight, verify the order with the patient and/or the patient’s family.

10.3.3. Countermeasures should aim to reduce the risk of precipitating the onset of death to the greatest extent allowed by mission constraints. The goal of AE for DNR patients is to successfully and safely deliver them to the requested destination ensuring highest level of comfort possible. Consequently, supportive supplemental oxygen therapy, IV hydration to combat dehydration, en route MAs, and a cabin altitude restriction should not be automatically ruled out because the patient is a “DNR.”

### **10.4. Mission Delays.**

10.4.1. Refer to AFI 11-2AE V3. The medical crew is responsible for the welfare, safety and clinical care when patients are deplaned for comfort during ground operations. Patient care will continue without degradation through the delay; on the aircraft if delay is expected to be less than one hour or in the nearest medical facility if the delay exceeds three hours. MTF/ERPS personnel will assist if available. **(T-2)**

10.4.2. AECMs should consider: Medical orders for treatments, medications and diet should be followed if applicable. Before continuing mission after delay, ensure enough medication, supplies (if available), and nourishment for remainder of mission. **(T-2)**

10.4.3. If a mission delay occurs while the patient is under the responsibility of the ERPS personnel, the ERPS personnel in collaboration with the MCD, will evaluate the best location for the patient. (i.e. remain on the ambus or return to the staging area). **(T-3)**

### **10.5. Medical Delays.**

10.5.1. Placing patients on medical hold. In the event of changes in the patient's condition, the FS may place a patient on medical hold, not to exceed 72 hrs. Patients with status changes may require admission to a MTF whereupon the FS will arrange for hospitalization and a continuation PMR will be initiated. **(T-2)** ERPS personnel will notify the PMRC of interruption of PM. **(T-2)**

10.5.2. In the event the MCD/Chief Nurse is concerned a patient is at significant risk for flight, or requires care beyond the scope of the AE crew or ERPS, the MCD or Chief Nurse will call C2. **(T-2)** The airlift agency will contact the governing PMRC for additional MAs, support or re-evaluation. Depending on the contingency/tactical environment, refusing a patient for flight may not be a viable solution. **(T-2)**

#### **10.6. In-Flight Refueling Considerations .**

10.6.1. Refer to AFI 11-2AE Vol 3 for operational information.

10.6.2. During mission planning if in-flight refueling is required, the VFS will approve. **(T-2)**

10.6.3. Patients prone to motion sickness (i.e. pregnancy, GI disturbances), anxiety, and pain from surgical or orthopedic injuries may require medication 20-30 minutes prior to refueling.

10.6.4. Patients with head and spinal injuries, and those requiring advanced life-support, should be reassessed just prior to refueling.

#### **10.7. En Route Diversions.**

10.7.1. Should a request for diversion, unrelated to patient needs, be received, and the MCD determines this would place a patient(s) in jeopardy, immediate communication will be established with C2. **(T-2)** The airlift agency will contact the governing PMRC to discuss and resolve the situation. **(T-2)** The MCD is responsible for determining what is beneficial for, or detrimental to patients on board.

10.7.2. All patients on the mission will be briefed on the change in itinerary and the reasons for diversion. **(T-2)**

10.7.3. AECMs should take into consideration equipment, medications, supplies, and nourishment for patient care due to diversion.

10.7.4. If available, Patient Staging personnel will assist as necessary. **(T-3)**

#### **10.8. Scheduled and Unscheduled RONS.**

10.8.1. Refer to AFI 11-2AE V3.

10.8.2. AE missions may require either scheduled or unscheduled RON stops. MTF commanders at locations where RONS occur are responsible for the care of patients, securing medical records and narcotics.

10.8.3. RON in the MTF or other facilities. If patients need to RON in the MTF or other agency while transiting the AE system, they shall not be formally admitted to the MTF. **(T-2)** The MTF FS, or designee, will manage the medical care of such patients and will reaffirm their readiness for flight. **(T-2)** Patients in RON status at a civilian medical facility may be admitted, but the ERPS will retain them administratively as ERPS RON patients. **(T-2)**

10.8.4. Unscheduled RONS.

10.8.4.1. See 11-2AE V3.

10.8.4.2. MCD will coordinate with C2 for assistance with facility points of contact to assure patient needs are met. **(T-2)**

10.8.5. Controlled medications will be stored in accordance with AFI 11-2 AE Vol 3 and section 8.22 of this regulation. **(T-2)**

10.8.6. MTFs at both scheduled and unscheduled RON stations will:

10.8.6.1. Assist with deplaning and enplaning patients. **(T-2)**

10.8.6.2. Admit and assign patients to the MTF (civilian or military) or billeting facility as appropriate. **(T-2)**

10.8.6.3. Provide food/meals for the patients. **(T-2)**

10.8.6.4. Prepare and manage records. **(T-2)**

10.8.6.5. Evaluate and maintain the continuum of care. **(T-2)**

10.8.6.6. Maintain/charge medical equipment. **(T-2)**

10.8.6.7. Provide medical supplies, medications and nourishment for the rest of the AE mission as needed. **(T-2)**

**10.9. Patients Requesting Release from the Aeromedical Evacuation System.**

10.9.1. Refer to AFI 11-2AE V3. AECMs/ Patient Staging personnel will document patient's condition on AF form 3899 or EHR equivalent prior to the patient being released. **(T-2)**

10.9.2. AECMs/ Patient Staging personnel will have the patient or guardian complete AF Form 3841, *Certification of Release*. **(T-2)**

**10.10. Prisoner-patients .**

10.10.1. If a prisoner-patient becomes ill or injured during flight, AECMs will immediately give care within scope of practice. **(T-2)** MCD will contact C2 as soon as possible to notify and receive orders and any other operational direction. **(T-2)** Refer to AFI 11-2AE V3.

10.10.2. The responsibility of the clinician is to provide safe clinical support during transportation.

10.10.3. Clinicians will refrain from stating names, dates, times or locations. **(T-2)**

10.10.4. The guard of the prisoner may consider blindfolding the prisoner-patient if indicated for personnel safety.

10.10.5. When possible the prisoner-patient should be assigned one caregiver.

10.10.6. When meals or snacks are provided do not allow handcuffs to be released except for range of motion. At the guard's discretion, the blindfold may be removed during meals. If meals are provided with no visual blind, only the direct caregiver and guard will be with the patient. **(T-2)** The area must be sanitized as much as possible. **(T-1)**

10.10.7. Prisoner-patients will be treated as humanely as possible; all treatment is accomplished in coordination of the guard. **(T-2)**



10.10.8. Offer toileting and liquids every 2 hrs. If ambulatory, the guard will assist to the bathroom. **(T-2)** The clinician will monitor the prisoner-patient for safety and care only and assist as clinically required. **(T-2)**

10.10.9. The prisoner-patient will be the last to enplane and first deplaned. **(T-2)**

10.10.10. If possible, attempt to seclude the patient away from other patients.

#### **10.11. Unaccompanied Minors/Incompetent Patients.**

10.11.1. Any unaccompanied minor, under the age of 18, or any unaccompanied non-active duty patient who is incapable of directing their own care, will have an applicable power of attorney, attached to the DD Form 602, *Patient Evacuation Tag*, or AF Form 3899. **(T-2)** The PMRC; coordination with the originating MTF, is responsible for obtaining consent before manifesting on AE missions.

10.11.2. Minors under the age of 14 will have an attendant. **(T-2)**

10.11.2.1. If a parent or guardian cannot accompany a minor under 14, the originating medical facility will send a responsible adult as the NMA. **(T-2)** This NMA will carry a written Power of Attorney to cover the time period the minor will be in the AE system. **(T-2)**

#### **10.12. Conflict Resolutions.**

10.12.1. Conflicts should be resolved at the lowest level possible prior to elevating to C2.

10.12.2. If AECMs or ERPS personnel experience conflicts with a patient in the AE system, contact C2, who in turn will contact the governing PMRC. **(T-2)** Document the incident on a DD Form 2852. **(T-2)**

#### **10.13. Credentials Considerations.**

10.13.1. All registered nurses (RN) and medical technicians shall be familiar with credentialing standards of nursing practice as described in current texts and references listed in this AFI. **(T-2)** The AECMs, specialty team members, Patient Staging personnel and any other MAs have a responsibility to notify the MCD or Chief Nurse of all incidents, accidents, and potential legal concerns detected during the mission. Such matters shall be carefully documented as close to the occurrence as possible in the DD Form 2852 and the AF Form 3829. **(T-2)**

10.13.2. The MCD is responsible for identifying and elevating the above issues to C2 and PMRC. **(T-2)** The PMRC will ensure notification to AMC/SG. **(T-2)**

10.13.3. Clinicians are subject to adverse clinical action in response to a threat to patient safety under AFI 44-119.

10.13.4. In the event a patient or attendant is injured while in the AE System, the AE/ Patient Staging personnel will document the injury and care rendered on the patient's medical record. **(T-2)** Complete and forward a DD Form 2852 to the unit patient safety manager. **(T-2)** Document occurrence on AF Form 3829. **(T-2)** These two forms are protected from disclosure under 10 U.S.C. Section 1102 and are not included in the patient's record.

10.13.5. Special considerations for patients who are seriously ill and those at significant risk. The RN may sign a document as required on behalf of an unconscious, incompetent or

infectious patient, and if physically unable. When signing for the patient, indicate “for unconscious patient, John Doe.” For other patients, an entry of “patient unable to sign” may be made. Two witnesses will sign the form in both instances. (T-2)

#### **10.14. Engine Running Off/On Loads (ERO).**

10.14.1. Refer to AFI 11-2AE V3. If an ERO is required, patient preparation includes: Eye protection, hearing protection, and securing all medical equipment or tubing accompanying the patient.

10.14.2. Explain to the patients what they can expect during this enplane/deplane procedure so as to minimize their anxiety.

#### **10.15. No and Low Light Conditions.**

10.15.1. Mobility aircraft used for AE typically provide poor to fair lighting for patient care. Flashlights or head-lamps may assist with lighting conditions. Certain circumstances may require night vision goggle compatible lighting, follow pilot in command, loadmaster, boom operator guidance for appropriate lighting color (red, green, blue). If care is indicated during low or no light conditions, use green lamps (flashlight or head-lamp) unless otherwise directed by PIC. Explain situation to the patients so as to minimize their anxiety.

#### **10.16. Service Animals and Emotional Support Animals .**

10.16.1. Service animals are working animals, not pets. Service animals are individually trained to perform specific tasks for people with disabilities such as guiding people who are blind, alerting people who are deaf, pulling wheelchairs, alerting/protecting a person who is having a seizure, or performing other special tasks.

10.16.2. Emotional support animals are companion animals that provide therapeutic benefit, such as alleviating or mitigating some symptoms of the disability, to an individual with a mental or psychiatric disability. Emotional support animals are typically dogs and cats, but may include other animals.

10.16.3. A service/emotional support animal is allowed to accompany a passenger/patient with a disability within the cabin on DoD aircraft or within Patient Staging area. Commercial aircraft chartered by DoD, or on behalf of DoD, may be subject to provisions of 14 CFR, Part 382, *Nondiscrimination on Basis of Disability in Air Travel*, relating to service animals.

10.16.4. Service/emotional support animals may be accommodated on other aircraft, subject to reasonable limitations required by configuration of aircraft and/or operational necessity.

10.16.5. Due to an animal's weight/size, State and foreign country restrictions may limit transport of service animal within the cabin and/or cargo hold.

10.16.6. Service/emotional support animal must be properly harnessed or leashed. (T-2)

10.16.7. To avoid creating a safety hazard, service/emotional support animals should not occupy aisles.

10.16.8. Service/emotional support animal will be permitted to accompany passenger in all areas in which persons without disabilities are normally allowed to go. (T-2)

10.16.9. If a service/emotional support animal cannot be accommodated at a seat location of passenger with a disability, offer the passenger the opportunity to move with the animal to

another seat location where the animal can be accommodated. A seat will not be booked for a service/emotional support animal. **(T-2)**

10.16.10. The handler/patient with the service/emotional support animal is responsible for all the needs of the service/emotional support animal including food, water, and toileting.

10.16.11. Certain unusual service/emotional support animals pose unavoidable safety and/or public health concerns and may not be transported (e.g., livestock, snakes, other reptiles, ferrets, rodents, and spiders). The need for the animal to accompany a patient will be evaluated on a case by case basis by the TVFS. **(T-2)**

10.16.12. Service animal certification documentation.

10.16.12.1. Passengers must have IDs or other written documentation, issued by an agency, accrediting organization, or other company or entity with sufficient knowledge to verify animal is trained and officially identified as service animal. **(T-2)**

10.16.12.2. PMRC, in coordination with the sending MTF, should ensure all documentation is complete and present.

10.16.13. Service animal removal from PM conveyance. If the owner does not control the animal, or the animal poses a threat to health or safety of others, every effort should be made to mitigate problem before excluding animal from terminal area or aircraft cabin.

**10.17. Military/Government Working Dogs** are authorized transport on all DoD missions. For further information on preparation/requirements, see AFI 11-2AE V3.

**10.18. Passenger Requiring Medical Attention.**

10.18.1. Passenger, crewmember or medical personnel may become ill, injured or otherwise become a patient.

10.18.2. In the event a passenger or crewmember becomes ill/injured during any type of AE mission, treat the medical emergency in accordance with current AHA ACLS guidelines, applicable AE clinical protocols, and the responding individual's AFSC scope of practice and licensure.

10.18.2.1. Notify your C2 agency who in turn will notify the governing PMRC. Be prepared to accept verbal orders from the Validating Flight Surgeon. **(T-2)**

10.18.2.2. If the ill/injured individual is in a crew position, remove them from the crew position and cover the duties as appropriate. Move to a litter if necessary.

10.18.2.3. If the ill/injured individual is a passenger, move to a litter if necessary.

10.18.2.4. Initiate an AF Form 3899 or EHR equivalent document any treatment provided and the patient's response/outcome to the treatment.

10.18.2.5. If this is an operational mission, adjust the AF Form 3830; Patient Manifest and AF Form 3829; Summary of Patients Evacuated by Air (or TRAC2ES generated product) to account for an additional patient. **(T-2)** If this is an ARM mission, C2 will direct required documentation to be turned in. **(T-3)** Complete a DoD Form 2852 fully outlining circumstances leading to event, interventions, and outcomes for both operational missions and ARMs. **(T-2)**

10.18.2.6. At mission termination, ensure the patient's care is turned over to the responding emergency services or is seen by an appropriate medical provider. **NOTE:** AECMs must follow up with a FS. **(T-3)**

10.18.3. If the ill/injured individual is staging personnel, treat the medical emergency in accordance with current AHA ACLS guidelines and the responding individual's AFSC scope of practice and licensure. (Call local EMS in this situation)

10.18.3.1. Remove from the patient care area

## Chapter 11

### POST-MISSION PROCEDURES

**11.1. Post-Mission Responsibilities.** Prior to crew rest, the AECM will complete tasks for Mission Termination IAW AFI 11-2AE V3, as well as **(T-2)**:

**11.2. AECM will ensure:**

11.2.1. All medical documentation is completed and properly dispensed. **(T-2)**

11.2.2. Patient transfer report and care is given to a same or higher level of care provider. **(T-2)**

**11.3. AE Patient and Customer Satisfaction Survey. (T-2)**

11.3.1. The AE system will have a process, established by AMC/SGK, to solicit patient feedback and comments. The AE Patient and Customer Satisfaction Survey should be completed post-mission. See [Attachment 17](https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx) or at: <https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx>, AE clinical documentation and forms. **(T-2)**

11.3.2. AMC/SGK will develop and update as needed, the AE Patient and Customer Satisfaction Survey, as well as identify/provide a web-based system for entering satisfaction data. **(T-2)**

11.3.3. AESs conducting operational missions will distribute or make satisfaction surveys available to patients and attendants on flights greater than 90 minutes. **(T-2)**

11.3.3.1. This requirement may be impractical during contingency operations.

11.3.3.2. Each AES will identify an office responsible for reviewing all surveys for trends and identified concerns. **(T-2)** The AES will contact patients and customers requesting a response to comments. **(T-2)**

11.3.3.3. Completed surveys will be input into the identified patient and customer satisfaction survey website by each AES within 1 week of completing a live mission. **(T-2)**

11.3.3.4. Survey data, comment overviews, return calls and any actions taken will be reported and recorded as part of the quarterly AES/MTF Executive Management Meeting Minutes. **(T-2)**

11.3.3.5. Notify AMC/SGK for any concerns related to customer survey trends or concerns. **(T-2)**

11.3.3.6. The AES will identify and implement local training needs to ensure a successful patient and customer satisfaction program. **(T-2)**

11.3.3.7. In garrison or permanent staging facilities utilize the host MTF customer satisfaction surveys. Deployed ERPS do not conduct patient satisfaction surveys. **(T-2)**

11.3.4. AMC will review all AE system survey data for system trends or concerns for system improvement opportunities for action as indicated. **(T-2)** This will be reported to the AE Clinical Working Group. **(T-2)**

## Chapter 12

### MEDICAL LOGISTICS

#### 12.1. MEFPAK.

12.1.1. AMC/SG is the MRA for the Global PMI program and will develop and maintain the PMI CONOPS, will provide funding, management direction, and oversight in support of PMI Centers, and PMI operational support, training platforms.

12.1.2. Personnel with questions regarding the PMI program should contact AMC/SGXM at 1-877-286-1931, DSN: 779-6952 or commercial 618-229-6952 or email: [hqamcpmi@us.af.mil](mailto:hqamcpmi@us.af.mil).

12.1.3. AMC/SG is the MRA for Patient Staging and Aeromedical Evacuation capabilities. They develop and maintain materiel requirements, Tactics Techniques, and Procedures, training platforms and provide operational oversight.

#### 12.2. PMI Asset Tracking System (PMI-ATS).

12.2.1. The PMI-ATS is the joint tool for asset tracking and essential for timely AE equipment recycle support to prevent degradation of forward element medical capability. Personnel must work with the AE community in tracking assets for optimal utilization. **(T-2)** Guidance for PMI is in JP 4-02 and AFI 41-209. All medical personnel must be familiar with the many aspects of the Theater's PMI program, to include obtaining, storing, maintenance, tracking, and recycling practices of the PMI commodity. **(T-2)**

12.2.2. PMI-ATS tracking. All personnel working in PMI Centers, theater PMI Cell, ERPS units, and AE units will scan all PMI equipment in their area of responsibility in as Ready /OUT/quality assurance (QA) as applicable. **(T-2)** PMI equipment must be routinely scanned while in the unit and each time it moves or changes category. **(T-2)** Follow guidelines established in PMI Tracking Procedures for Center Operations and PMI Tracking Procedures for Ground Operations. Any unit receiving PMI is responsible for scanning PMI "in" in order to maintain in-transit visibility of PMI and scanning PMI "out" when recycling equipment back into the PMI system. Before returning the equipment to the PMI system, the receiving facility/ERPS is responsible for cleaning PMI items IAW AFI 44-108.

12.2.3. Training. All personnel working in PMI Centers, theater PMI Cell, ERPS units and AE units will complete PMI training (one time requirement) on the JKO website, US026-PMITS. **(T-2)** Once logged in, select "Staff Training" and search for "PMITS," then select "PMITS Overview and Basics Training." **(T-2)**

#### 12.3. PMI Levels.

12.3.1. PMI center levels are found in allowance standard 887P and managed by AMC/SGXM. PMI levels for deployed locations are established by the Combatant Commander's SG OPLANS. Sending facilities/ERPS will maintain initial quantities of approved PMI in appropriate medical assemblages and should not assume or plan for shortfalls of PMI being satisfied by USAF PMI centers. **(T-1)**

12.3.2. Some special equipment can be provided by the AE system if the referring MTF coordinates with the appropriate PMRC at the time the patient is reported for transportation,

and there is enough time to preposition the equipment. At other times, the referring facility works with the designated supporting PMI center/cell to establish local policies/procedures and maintain prepositioned levels of PMI equal to three (3) days of expected patient flow IAW TCSG and AMC/SGXM guidance.

#### **12.4. Equipment Responsibility.**

12.4.1. The host medical equipment maintenance activity provides organizational maintenance for all AE/ Patient Staging medical equipment as outlined in AFI 41-201, *Managing Clinical Engineering Programs* and AFI 41-209. This includes initial inspections, preventive maintenance inspections, calibrations, repairs, modifications, incident investigations, equipment defect reporting, and disposal.

12.4.2. All medical equipment coming from the staging or originating facility accompanying a patient will be preflighted IAW AFI 10-2909 or the equipment operating manual to ensure all components are present and the unit is operating/functioning correctly. **(T-2)**

12.4.3. PMI program information is outlined in JP 4-02 Appendix B, and AFI 41-209.

12.4.4. All AE certified and PMI equipment will have the AF Form 4033, *PMI/AE Certification Label*, and the DD 2163, *Medical Equipment Verification Certification* or AFTO Form 394 *TMDE Certification*. **(T-2)** The medical equipment maintenance activity will ensure AF Form 4033 is affixed to each AE or PMI medical equipment item certified for flight. **(T-2)** Biomedical maintenance individuals performing specific calibration or certification procedures must affix a completed AFTO form 394 on the item. **(T-2)**

12.4.5. Maintenance assistance for equipment repairs beyond the capability of the host MTF maintenance activity should be obtained from the regional medical equipment repair center (MERC) or designated deployed biomedical maintenance repair activity. The regional MERC or designated deployed biomedical maintenance repair activity will provides intermediate maintenance for all AE/Patient Staging medical equipment. **(T-1)** This includes support for organizational maintenance activities, special maintenance actions, and quality assurance actions, as required.

12.4.6. The medical logistics section with the AES/ Patient Staging will work with host logistics account/Medical Equipment Management Office (MEMO)/ Biomedical Equipment Technician (BMET) to ensure compliance/maintenance is completed and recorded on DD Form 2163, affixed to the equipment **(T-2)**

12.4.6.1. This includes establishing procedures to ensure defibrillator batteries are properly conditioned and annotated, ensuring proper operation and use of equipment, cleaning, minor operational adjustments, and replacement of consumable accessories.

12.4.6.2. AES/ Patient Staging ERCC team units in non-deployed status will ensure their unit owned equipment is maintained on unit assigned Defense Medical Logistics Standard Support accountable records. **(T-1)** Deployed AES/ERCC team equipment accountability is maintained on AMC SG FM4444 deployed MEMO account records.

12.4.7. PMI and AE/ Patient Staging equipment calibration requirement date will not be exceeded during the planned mission scenarios. These dates are recorded on the DoD Form 2163, affixed to the equipment. **(T-2)**

12.4.8. PMI and AE/ Patient Staging equipment will be made available for preventive maintenance inspections and calibration verification as required by the local BMET. (T-2)

12.4.9. Maintained in mission-ready status, to include clean, calibrated, charged, and with one complete set of required accessories. (T-2)

## 12.5. Equipment Malfunction/Failure.

12.5.1. If equipment malfunction/failure occurs during an operational mission, the MCD will ensure the following paperwork/actions are accomplished: (T-2)

12.5.1.1. When malfunctioning equipment is identified and removed from a patient, assess the patient for any harm. (T-0) Do not clear any settings from the malfunctioning equipment removed. (T-2) This will aide biomedical maintenance in their investigation.

12.5.1.2. Complete AF Form 4449, *En Route Care Malfunction Report Tag*. (T-2) See [Attachment 18](#). If unavailable, complete AFTO 350, *Repairable Item Processing Tag*.

12.5.1.2.1. Upon arrival to home station, immediately send tagged equipment and all accessories to host medical equipment maintenance activity/MTF. Medical equipment maintenance will impound the equipment and conduct the investigation. (T-2) **NOTE:** BMETs report equipment defects as Category I or II type complaints, IAW AFI 41-201, [Chapter 2](#). Applicable forms, with directions, are available at: <https://www.medical.dla.mil/Portal/Custom/ProductQualityDeficiency.aspx>.

Completion of forms alerts the Air Force Medical Operations Agency (AFMOA) of the incident. In addition, BMETs coordinate complaints involving aeromedical equipment with AMC/SGXM. AFMOA will provide disposition action direction. (T-2) If additional testing is required, AFMOA/SGAL will forward authorization to the AFLCMC/Aeromedical Test Laboratory for further evaluation. (T-2) AMC/SGXM will facilitate shipping arrangements.

12.5.1.2.2. Complete DD Form 2852 and turn into the squadron Patient Safety Monitor (PSM) who enters the event into the AE Patient Safety Database tool. (T-2)

12.5.1.2.3. Describe the problem as accurately as possible on the above forms. Provide circumstances leading to the event and include any pertinent information such as: O2 source, patient activity, turbulence, cabin altitude, trouble-shooting attempted, etc. Also provide names and contact information of individuals involved.

12.5.1.2.4. When equipment malfunction affects the aircraft, notify the Pilot-in-Command (PIC) and provide details of the incident to facilitate mishap reporting (to be forwarded to wing safety).

12.5.1.3. Upon arrival, immediately send tagged equipment and all items in the equipment chain of events (i.e. tubing, power cords, electrode sets, etc.) to the closest supporting biomedical maintenance organization. Ensure servicing Biomedical Maintenance Personnel are notified when equipment failed while in use on a patient. Medical maintenance will impound the equipment and conduct the investigation. (T-2)

12.5.1.3.1. Medical maintenance will input data on SF 380, *Reporting and Processing Medical Material Complaints Quality Improvement Report*, and notify AMC/SGXM. (T-2) Forms and directions are available online at: <http://www.dla.mil/Pages/default.aspx>. The entry of SF 380 on-line will alert Air



Force Medical Operations Agency (AFMOA) of the incident. (T-2) AFMOA will provide MERC with disposition action direction. (T-2) If additional testing is required, AFMOA/SGAL will forward authorization to appropriate testing agency for further evaluation. AMC/SGXM will facilitate shipping arrangements.

12.5.1.4. Complete DD Form 2852 and turn into the squadron PSM who enters the event into TRAC2ES within the PMQ-R section. (T-2)

12.5.1.4.1. Describe the problem as accurately as possible on the above forms. Provide circumstances leading to the event and include any pertinent information such as: Equipment serial number (within the event description), O2 source, patient activity, turbulence, cabin altitude, trouble-shooting attempted, as well as location equipment was offloaded, etc.

12.5.1.4.2. Provide names of individuals' involved and contact information. When equipment malfunction affects the aircraft, notify the PIC and provide details of the incident to facilitate mishap reporting (to be forwarded to wing safety).

12.5.1.5. Notify local or unit supported medical maintenance organization as soon as possible of unusual or repeated equipment failure and safety incidents

## **12.6. Procurement of medical material.**

12.6.1. AMC/SGXM, in conjunction with the AE Operations Directorate, will monitor policies and procedures established for the procurement of medical materiel needed to accomplish the AE mission. (T-2) At unit level, an officer will be designated to have responsibility for all medical logistics activities. (T-3) Medical allowance standards are located at the following medical logistics website: <https://medlog.us.af.mil>. (T-3) Contact your host MTF for resupply. (T-3) Medical equipment, requiring maintenance, must be serviced by the host medical equipment repair activity or designated MERC. (T-3)

12.6.2. Resupply will be accomplished through the host medical logistics activity IAW AFI 41-209 and locally established procedures. (T-3)

12.6.3. Medical Equipment requiring maintenance must be serviced by the host medical equipment repair activity or designated MERC IAW AFI 41-201 and locally established procedures. (T-1)

## **12.7. ERPS Medical Logistics.**

12.7.1. During peacetime operations, the property custodian orders medical and non-medical materiel through the medical logistics function of the supporting MTF IAW AFI 41-209 and locally established procedures. Local policies need to be followed regarding item selection, sources of supply, and funding support. Equipment will be requested through the medical equipment management office of the supporting MTF. (T-2)

12.7.2. During contingency operations, the ERPS property custodian orders supplies using the procedures established by the responsible theater medical logistics offices, and/or as directed in the OPORD/OPLAN for resupply procedures. These procedures should address obtaining medical re-supply, joint support activities, and the function of the TLAMM.

**12.8. Recommended changes** to the IFK Allowance Standard (AS) should be emailed to the POC at the pilot unit with a courtesy copy sent to the AMC/SGXM orgbox at: [AMC.SGXM@US.AF.MIL](mailto:AMC.SGXM@US.AF.MIL)

MARK A. EDIGER  
Lieutenant General, USAF, MC, CFS  
Surgeon General

## Attachment 1

## GLOSSARY OF REFERENCES AND SUPPORTING INFORMATION

*References*

- AFI 10-206, *Operational Reporting*, 11 Jun 2014
- AFI 10-2909, *Aeromedical Evacuation Equipment Standards*, 23 July 2013
- AFI 11-202 V2, *Aircrew Standardization/Evaluation Program*, 13 September 2010
- AFI 11-202 V2 AMC Supp, *Aircrew Standardization/Evaluation Program*, 2 March 2011
- AFI 11-2AE V3, *Aeromedical Evacuation Operations Procedures*, 15 August 2014
- AFI 13-207, *Preventing and Resisting Aircraft Piracy (Hijacking)*, 21 Jun 2010
- AFI 23-302, *Vehicle Management*, 26 June 2012
- AFI 24-301, *Vehicle Operations*, 1 November 2008
- AFI 33-332, *Air Force Privacy and Civil Liberties Program*, 12 January 2015
- AFI 41-106, *Medical Readiness Program Management*, 22 April 2014
- AFI 41-201, *Managing Clinical Engineering Programs*, 15 October 2014
- AFI 41-209, *Medical Logistics Support*, 6 October 2014
- AFI 44-102, *Medical Care Management*, 20 January 2012
- AFI 44-108, *Infection Prevention and Control Program*, 11 December 2014
- AFI 44-119, *Medical Quality Operations*, 16 August 2011
- AFI 46-101, *Nursing Services and Operations*, 30 January 2015
- AFI 48-116, *Food Safety Program*, 19 August 2014
- AFI 48-137, *Respiratory Protection Program*, 15 July 2014
- AFI 48-307 V2, *En Route Critical Care*, pending.
- AFI 48-307 V3, *En Route Care Documentation*, pending
- AFMAN 10-2503, *Operations in a Chemical, Biological, radiological, Nuclear, and High-Yield Explosive (CBRNE) Environment*, 7 July 2011
- AFMAN 31-229, *USAF Weapons Handling Manual*, 12 May 2004
- AFMAN 33-363, *Management of Records*, 1 March 2008
- AFMAN 44-144, *Nutritional Medicine*, 29 June 2011
- AFMAN 44-156, *Treatment of Biological Warfare Agent Casualties*, 17 July 2000
- AFPAM 10-1403, *Air Mobility Planning Factors*, 12 Dec 2011
- AFPD 10-29, *Worldwide Aeromedical Evacuation Operations*, 6 November 2012
- AFPD 41-1, *Health Care Programs and Resources*, 15 April 1994

**AFPD 46-1**, *Nursing Services*, 1 September 2011

**AFTTP 3-42.1**, *Health Service Support Command and Control in Expeditionary Operations*, 14 May 2004

**AFTTP 3-42.5**, *Aeromedical Evacuation*, 1 November 2003

**DoDI 6000.14**, *Patient Bill of Rights and Responsibilities in the Military Health System (MHS)*, 3 October 2013

**DoDI 5154.06**, *Armed Services Medical Regulating*, 2 October 2013

**DoDI 6000.11**, *Patient Movement*, 4 May 2012

**DoD 4515.13-R**, *Air Transportation Eligibility*, November 1994

**10 U.S.C. Section 1102**, *Confidentiality of medical quality assurance records: Qualified Immunity for Participants*, 7 January 2011

**14 CFR, Part 382**, *Nondiscrimination on Basis of Disability in Air Travel*, 12 November 2013

American Heart Association, Basic Life Support (BLS) for Healthcare Providers, 2010

American Heart Association, Advanced Cardiac Life Support (ACLS) Provider Manual, 2010

The Lippincott Manual of Nursing Practice, Philadelphia: J.B. Lippincott Co. 2013:

Mosby Nursing skills.

Skidmore-Roth, Linda, Mosby's Drug Guide for Nurses, 7<sup>th</sup> Edition, 2007.

### ***Prescribed Forms***

**AF Form 4449**, *En Route Care Malfunction Report Tag*

### ***Adopted Forms***

**AF Form 781**, *Multiple Item Prescription*

**AF Form 847**, *Recommendation for Change of Publication*

**AF Form 1053**, *Record of Patient Storing Valuables*

**AF Form 1094**, *Diet Order*

**AF Form 1225**, *Informed Consent for Blood Transfusion*

**AF Form 1297**, *Temporary Issue Receipt*

**AF Form 2519**, *All Purpose Checklist*

**AF Form 3066**, *Doctor's Orders*

**AF Form 3829**, *Summary of Patients Evacuated by Air*

**AF Form 3830**, *Patient Manifest*

**AF Form 3835**, *Aeromedical Mission Management Part 1*

**AF Form 3836**, *Aeromedical Evacuation Manifest Part 2*

**AF Form 3838**, *Do Not Resuscitate (DNR) Certification for Aeromedical Evacuation*

**AF Form 3841**, *Certification of Release*

**AF Form 3851**, *Patient Baggage Data*

**AF Form 3854**, *Receipt of Valuables*

**AF Form 3858**, *Aeromedical Evacuation Mission Offload Message*

**AF Form 3859**, *Turn-In of Unaccompanied Narcotics*

**AF Form 3860**, *Aeromedical Patient Record Data*

**AF Form 3891**, *Patients Report for Aeromedical Airlift Movement*

**AF Form 3892**, *Patients Holding for Aeromedical Airlift Movement*

**AF Form 3894**, *Aeromedical Mission Inbound Notification*

**AF Form 3899**, *Patient Movement Record*

**AF Form 3899A**, *Patient Movement Record Progress Note*

**AF Form 3899B**, *Patient Movement Record Physician Orders*

**AF Form 3899C**, *Patient Movement Record Physical Assessment*

**AF Form 3899D**, *Patient Movement Record Hemodynamic/Respiratory Flow sheet*

**AF Form 3899E**, *Patient Movement Intake/Output*

**AF Form 3899F**, *Patient Movement Physician Orders for Behavior Management and Restraints*

**AF Form 3899G**, *Patient Movement Restraint Observation Flow sheet*

**AF Form 3899H**, *Patient Movement Neurological Assessment*

**AF Form 3899I**, *Patient Movement Medication Record*

**AF Form 3899J**, *Patient Movement Rhythm/Hemodynamic Strip*

**AF Form 3899K**, *Patient Movement In-Flight Resuscitation Flow sheet*

**AF Form 3899L**, *Patient Movement Record En Route Critical Care*

**AF Form 3899M**, *Patient Movement Record PCA/PNB/Epidural Hand-Off Form*

**AF Form 3899N**, *Patient Movement Pain Adjunct Flow sheet*

**AF Form 4033**, *PMI/AE certification Label*

**AFTO Form 350**, *Repairable Item Processing Tag*

**AF IMT 579**, *Controlled Substance Register*

**AFTO Form**, *TMDE Certification*

**DD Form 600**, *Patient's Baggage Tag*

**DD Form 602**, *Patient Evacuation Tag*

**DD Form 1380**, *US Field Medical Card*

**DD Form 1502**, *Frozen Medical Material Shipment*

**DD Form 1502-I**, *Chilled Medical Material Shipment*

**DD Form 2163**, *Medical Equipment Verification Certification*

**DD Form 2852**, *Aeromedical Evacuation Event/Near Miss Report*

**SF 380**, *Reporting and Processing Medical Materiel Complaints Quality Improvement Report*

**SF 518**, *Blood or Blood Component Transfusion Record*

**SF 600**, *Health Record - Chronological Record of Medical Care*

***Abbreviations and Acronyms***

**μ**—Microns

**18 AF**—Eighteenth Air Force

**ABA**—American Burn Association

**ACLS**—Advanced Cardiac Life Support

**ADL**—Activities of Daily Living

**AE**—Aeromedical Evacuation

**AECM**—Aeromedical Crew Member

**AECT**—AE Control Team

**AELT**—Aeromedical Evacuation Liaison Team

**AEOT**—Aeromedical Evacuation Operations Team

**AEPSC**—Aeromedical Evacuation and Patient Staging Course

**AES**—Aeromedical Evacuation Squadron

**AES/CC**—Aeromedical Evacuation Squadron Commander

**AET**—Aeromedical Evacuation Technician

**AF/SG**—Air Force Surgeon General

**AECWG**—AE Clinical Working Group

**AE**—Air Force Aeromedical Evacuation

**AFI**—Air Force Instruction

**AFMAN**—Air Force Manual

**AFMS**—Air Force Medical Service

**AFPD**—Air Force Policy Directive

**AFRC**—Air Force Reserve Command

**AMC**—Air Mobility Command

**AMC/A3**—AMC Directorate of Operations

**AMC/A3TM**—AMC Aeromedical Evacuation Training and Operations

**AMC/A3VM**—AMC Aeromedical Evacuation Standardization and Evaluation

**AMC/SG**—AMC Command Surgeon

**AMC/SGK**—AMC En Route Medical Care Division

**AMC/SGP**—AMC Aerospace Medicine Division

**AMC/SGX**—AMC Medical and Aeromedical Evacuation, Readiness and Plans Division

**AMC/SGXM/SGXO**—AMC Medical Equipment Force Packaging

**AFSC**—Air Force Specialty Code

**AFTRANS**—18 AF Air Forces Transportation

**AFTTP**—Air Force Tactics, Techniques, and Procedures

**AHA**—American Heart Association

**ALSS**—Airborne Life Support System

**AMBUS**—Ambulance Bus

**AMD**—Air Mobility Division

**ANC**—Absolute Neutrophil Count

**ANG**—Air National Guard

**AOC**—Air Operations Center

**AOR**—Area of Responsibility

**ARDS**—Acute Respiratory Distress Syndrome

**ARM**—Aeromedical Readiness Mission

**ASTNA**—Air and Surface Transport Nurses Association

**BBF**—Blood and Body Fluids

**BLS**—Basic Life Support

**BMET**—Biomedical Equipment Technician

**BOS**—Base Operating Support

**BP**—Blood Pressure

**BVM**—Bag Valve Mask

**C2**—Command & Control

**CAA**—Commercial Air Ambulance

**CBRNE**—Chemical, Biological, radiological, Nuclear, and High-Yield Explosive

**CC**—Commander

**CCATT**—Critical Care Air Transport Team

**CCDR**—Combatant Commander

**CCHF**—Congo Crimean Hemorrhagic Fever  
**CCMD**—Combatant Command  
**C-Collar**—Cervical Collar  
**CDC**—Center for Disease Control  
**CFETP**—Career Field Education and Training Plan  
**CIWA**—Clinical Institute Withdrawal Assessment for Alcohol  
**CN**—Chief Nurse  
**C-NAF**—Component-Numbered Air Force  
**CNS**—Central Nervous System  
**COMAFFOR**—Commander, Air Force Forces  
**CONOPS**—Concept of Operations  
**CONPLANS**—Concept Plans  
**CONUS**—Continental United States  
**COPD**—Chronic Obstructive Lung Disease  
**COPSA**—Clinical Operations Patient Safety Alert  
**CPP**—Cerebral Perfusion Pressure  
**CPR**—Cardio—Pulmonary Resuscitation  
**CVA**—Cerebral Vascular Accident  
**DIRMOBFOR**—Director of Mobility Forces  
**DM**—Diabetes Mellitus  
**DNR**—Do Not Resuscitate  
**DoD**—Department of Defense  
**DoDI**—Department of Defense Instruction  
**DVPRS**—Defense and Veterans Pain Rating Scale  
**ECP**—Entry Control Point  
**EFB**—Electronic Flight Bag  
**EHR**—Electronic Health Record  
**ERCC**—En Route Critical Care  
**ERPS**—En Route Patient Stage  
**ERPSS**—En Route Patient Staging System  
**ETA**—Estimated Time of Arrival  
**FAA**—Federal Aviation Administration



**FCIF**—Flight Crew Information File  
**FFP**—Fresh Frozen Plasma  
**FHT**—Fetal Heart Tones  
**FiO<sub>2</sub>**—Fraction of Inspired Oxygen  
**FLACC**—Face, Legs, Activity, Crying and Consolability  
**FS**—Flight Surgeon  
**Ft**—Feet  
**G**—Gravitational  
**GCC**—Geographic Combatant Commanders  
**GCS**—Glasgow Coma Scale  
**GI**—Gastrointestinal  
**GPMRC**—Global Patient Movement Requirements Center  
**H&H**—Hemoglobin and Hematocrit  
**HCT**—Hematocrit  
**HCW**—Health Care Worker  
**HELLP**—Hemolysis, Elevated Liver Enzymes, and Low Platelets  
**HEPA**—High Efficiency Particulate Air  
**Hgb**—Hemoglobin  
**HHQ**—Higher Headquarters  
**HIPAA**—Health Insurance Portability Accountability Act  
**HMMWV**—High Mobility Multipurpose Wheeled Vehicles  
**hr**—Hour  
**I&O**—Intake and Output  
**IAW**—In Accordance With  
**ICP**—Intracranial Pressure  
**ICU**—Intensive Care Unit  
**IFK**—In—Flight Kits  
**IM**—Intramuscular  
**I-SBAR**—Identify, Situation, Background, Assessment, and Recommendation  
**ITV**—In-transit Visibility  
**IV**—Intravenous  
**IVF**—Intravenous Fluids

**JOA**—Joint Operations Area

**JPMRC**—Joint Patient Movement Requirements Center

**JSCP**—Joint Strategic Capabilities

**JTF**—Joint Task Force

**kg**—Kilogram

**LNO**—Liaison Officer

**LOC**—Level of Consciousness

**LPM**—Liters Per Minute

**LR**—Lactated Ringers

**LRMC**—Landstuhl Regional Medical Center

**MA**—Medical Attendants

**MAAS**—Motor Activity Assessment Scale

**MACE**—Military Acute Concussion Evaluation

**MAJCOMs**—Major Commands

**MAP**—Mean Arterial Pressure

**MAR**—Medication Administration Record

**MCA**—Maximum Cabin Altitude

**MCD**—Medical Crew Director

**MDG**—Medical Group

**MDR-TB**—Mycobacterium Tuberculosis

**MEFPAK**—Manpower and Equipment Force Packaging System

**MEMO**—Medical Equipment Management Office

**MERC**—Medical Equipment Repair Center

**MHS**—Military Health Services

**MII**—Medical Incident Investigations

**ml**—Milliliter

**mmHg**—Millimeter of Mercury

**MOS**—Military Occupational Specialty

**MRA**—MEFPAK Responsible Agency

**MRE**—Meals Ready to Eat

**MRF**—Medical Read File

**MTF**—Medical Treatment Facility

**NAF**—Numbered Air Force  
**NATO**—North Atlantic Treaty Organization  
**NC**—Nasal Cannula  
**NEC**—Naval Enlisted Classification  
**NG**—Nasogastric  
**NG/OG**—Nasogastric/Oral Gastric  
**NMA**—Non—Medical Attendants  
**NOTAM**—Notice to Airmen  
**NPO**—Nothing By Mouth  
**NPWT**—Negative-Pressure Wound Therapy  
**NS**—Normal Saline  
**OB**—Obstetrics  
**OCONUS**—Outside the Continental United States  
**OG**—Operations Group  
**OIC**—Officer in Charge  
**OPLANS**—Operational Plans  
**OPORD**—Operational Order  
**OPR**—Office of Primary Responsibility  
**ORM**—Operational Risk Management  
**OTC**—Over-The-Counter  
**P**—Priority  
**PACAF**—Pacific Air Forces  
**PAD**—Patient Administration Desk  
**PaO<sub>2</sub>**—Partial Pressure of Oxygen in Arterial Blood  
**PCA**—Patient Controlled Analgesia  
**PE**—Pulmonary Embolism  
**PEEP**—Positive End Expiratory Pressure  
**PHO**—Public Health Officer  
**PIC**—Pilot in Charge  
**PM**—Patient Movement  
**PMCC**—Patient Movement Clinical Coordinator  
**PMI**—Patient Movement Items

**PMITS**—PMI Tracking System

**PMOO**—Patient Movement Operations Officer

**PMPS**—Patient Movement Patient Safety

**PMQ-R**—Patient Movement Quality-Report

**PMR**—Patient Movement Request

**PMRC**—Patient Movement Requirements Center

**PNB**—Peripheral Nerve Block

**PO**—Oral/By mouth

**PPE**—Personal Protective Equipment

**PRK**—Photorefractive Keratectomy

**PRN**—As Needed

**PS**—Patient Safety

**PSM**—Patient Safety Manager

**PSR**—Patient Safety Report

**PTSD**—Post-Traumatic Stress Syndrome

**R**—Routine

**RBCs**—Red Blood Cells

**RNs**—Registered Nurses

**ROM**—Range of Motion

**RON**—Remain Overnight

**SAM**—Self-Administering Medication

**SCD**—Sequential Compression Devices

**SG**—Surgeon General

**SGH**—Chief of Medical Staff

**SGXM**—AMC Medical Readiness Logistics/MEFPAK Management Branch

**SITREP**—Situation Report

**SL**—Sea Level

**SOC**—Standards of Care

**SpO2**—Oxygen Saturation

**SSN**—Social Security Number

**Stan/Eval**—Standards and Evaluation

**TACON**—Tactical Control

**TAES**—Theater Aeromedical Evacuation System

**TB**—Tuberculosis

**TBI**—Traumatic Brain Injury

**TBSA**—Total Body Surface Area

**TCCET**—Tactical Critical Care Evacuation Team

**TCP**—Transcutaneous Pacing

**TCSG**—USTRANSCOM Command Surgeon

**TDY**—Temporary Duty

**TLAMM**—Theater Lead Agent for Medical Materiel Source

**TMDS**—Theater Medical Data Store

**TMO**—Travel Management Office

**TNCC**—Trauma Nurse Core Course

**TPMRC**—Theater Patient Movement Requirements Center

**TPMRC-A**—TPMRC-Americas

**TPMRC-E**—TPMRC-East

**TPMRC-W**—TPMRC-West

**TPN**—Total Parenteral Nutrition

**TRAC2ES**—Transportation Command Regulating and Command & Control Evacuation System

**TTP**—Tactics, Techniques, and Procedures

**TVFS**—Theater Validating Flight Surgeon

**U**—Urgent

**UOP**—Urine Output

**USAFE**—U.S. Air Forces Europe

**USAISR**—U.S. Army Institute of Surgical Research

**USAFRICOM**—United States African Command

**USCENTCOM**—United States Central Command

**USEUCOM**—United States European Command

**USNORTHCOM**—U.S. Northern Command

**USPACOM**—U.S. Pacific Command

**USSOUTHCOM**—U.S. Southern Command

**USTRANSCOM**—U.S. Transportation Command

**USTRANSCOM/CC**—United States Transportation Command Commander

**UTC**—Unit Type Codes

**V**—Volume

**VAP**—Ventilator Associated Pneumonia

**VCNCO**—Vehicle Control Non-Commissioned Officer

**VCO**—Vehicle Control Officer

**VFS**—Validating Flight Surgeon

**VS**—Vital Signs

**VS**—Vacuum Spine Board

**VTE**—Venous Thromboembolism

**WBCs**—White Blood Cells

**WRM**—War Reserve Material

**ZULU**—Greenwich Mean Time (Universal Time)

## Attachment 2

### HELPFUL RESOURCES

#### A2.1. AE Resources.

- A2.1.1. Aeromedical Evacuation Clinical Protocols:  
<https://cs1.eis.af.mil/sites/usafae/sg/SG%20Documents/Forms/AllItems.aspx>
- A2.1.2. JTS CPG site: <http://www.usaisr.amedd.army.mil/default.html>
- A2.1.3. Air Force Medical Equipment Development Laboratory websites:  
<https://eis.af.mil/cs/aeromed/default.aspx> or  
<https://cs3.eis.af.mil/sites/27468/default.aspx>
- A2.1.4. High Alert Medications:  
<http://www.ismp.org/Tools/highalertmedicationLists.asp>

#### A2.2. Helpful Patient Safety Internet Resources.

- A2.2.1. Agency for Healthcare Research and Quality: <http://www.ahrq.gov/>
- A2.2.2. Centers for Disease Control and Prevention: <http://www.cdc.gov/>
- A2.2.2.1. Centers for Disease Control hand hygiene: <http://www.cdc.gov/handhygiene/>
- A2.2.3. Commission of Accreditation for Medical Transport (CAMTS)  
<http://www.camts.org>
- A2.2.4. Department of Defense Patient Safety:  
<http://www.health.mil/DoDpatientsafety.aspx>
- A2.2.5. Institute for Safe Medication Practices: <http://www.ismp.org/>
- A2.2.6. The Joint Commission National Patient Safety Goals:  
[http://www.jointcommission.org/standards\\_information/npsgs.aspx](http://www.jointcommission.org/standards_information/npsgs.aspx)
- A2.2.7. National Accreditation Alliance of Medical Transport Applications (NAAMTA):  
<http://www.naamta.com/>
- A2.2.8. Patient Movement Event Reporting Database is the “PMQ-R” tab within TRAC2ES  
 TRAC2ES: <https://www.trac2es.ustranscom.mil/>
- A2.2.9. TRAC2ES Exercise Site:  
<https://extasp.trac2es.ustranscom.mil/Gateway/home.do>
- A2.2.10. AE Patient Safety Handbook:  
<https://kx2.afms.mil/kj/kx2/CQMPatientSafety/Documents/Forms/ShowFolders.aspx?RootFolder=%2Fkj%2Fkx2%2FCQMPatientSafety%2FDocuments%2FAeromedical%20Evacuation%2FAE%20Patient%20Safety%20Program%20Guide&FolderCTID=&View={5F3E73EA-C8FA-471D-8F20-8900E6F1B624}&InitialTabId=Ribbon%2EDocument&VisibilityContext=WSSTabPersistence>

#### A2.3. Safety References.

A2.3.1. *Clinical Quality Management Program (CQMP) in the Military Health Services System (MHS)*.

A2.3.2. *Commission on Accreditation of Medical Transport Systems (CAMTS)*

A2.3.3. DoD Manual 6025.13 *Medical Quality Assurance (MQA) and Clinical Quality Management in the Military Health System (MHS)* 29 Oct 2013

A2.3.4. DoDI 6025.13 *Medical Quality Assurance (MQA) and Clinical Quality Management in the Military Health System (MHS)* 17 Feb 2011 incorporating Change 1, Effective 2 Oct 2013

A2.3.5. Mosby Principles and Practice, Mosby's Clinical Nursing

A2.3.6. National Accreditation Alliance of Medical Transport Applications (NAAMTA)

A2.3.7. The Joint Commission Comprehensive Accreditation Manuals

A2.3.8. Lippincott Manual of Nursing Practice, 10th Edition.

A2.3.9. ASTNA Patient Transport Principles and Practice, 4th Ed.

A2.3.10. AHRQ; National Guideline Clearinghouse; US Dept of Health and Human Services ([www.guideline.gov](http://www.guideline.gov)).

A2.3.11. American Academy of Allergy Asthma and Immunology ([www.aaaai.org](http://www.aaaai.org)).

A2.3.12. ASTNA Patient Transport Principles and Practice, 4th Ed

A2.3.13. AHRQ; National Guideline Clearinghouse; US Dept of Health and Human Services ([www.guideline.gov](http://www.guideline.gov))

A2.3.14. USPHS Guidelines; September 2013.

A2.3.15. Geroge-Gay, & C. Chernecky, Clinical Medical-Surgical Nursing: A Decision-Making *Reference* (1 ed.). Philadelphia: W.B. Saunders. Retrieved April 2014, from Mosby's Nursing Consult [http://www.nursingconsult.com/nursing/books/0-7216-8532-3/full-text?isbn=0-7216-8532-3&eid=4-u1.0-B0-7216-8532-3..50023-8--cesec3&fromList=searchListPage&isPageEid=true#hash\\_4-u1.0-B0-7216-8532-3..50023-8--cesec3](http://www.nursingconsult.com/nursing/books/0-7216-8532-3/full-text?isbn=0-7216-8532-3&eid=4-u1.0-B0-7216-8532-3..50023-8--cesec3&fromList=searchListPage&isPageEid=true#hash_4-u1.0-B0-7216-8532-3..50023-8--cesec3)

A2.3.16. American Diabetes Association Position Statement. (2013, January). Standards of Medical Care in Diabetes - 2013. *Diabetes Care*, 26(Supplement 1), S11-S66. doi:10.2337/dc13-S011

A2.3.17. Cryer, P. (2013, September 18). *Management of Hypoglycemia During Treatment of Diabetes Mellitus*. (I. Hirsch, Ed.) Retrieved April 2014, from UpToDate.com: [http://www.uptodate.com/contents/management-of-hypoglycemia-during-treatment-ofdiabetesmellitus?source=search\\_result&search=management+of+hypoglycemia+during+treatment+of+diabetes+mellitus&selectedTitle=1%7E150](http://www.uptodate.com/contents/management-of-hypoglycemia-during-treatment-ofdiabetesmellitus?source=search_result&search=management+of+hypoglycemia+during+treatment+of+diabetes+mellitus&selectedTitle=1%7E150)



**Attachment 3****NON-MEDICAL, FAMILY OR NON-MILITARY ATTENDANT INFORMATIONAL  
SHEET****AEROMEDICAL EVACUATION (AE) MISSIONS**  
**NON-MEDICAL ATTENDANT (Family or Non-military)**  
**DUTY LIST**

PRIMARY DUTY is to support the needs of assigned patient

- ✓ Getting ready for flight ensure all personal items are secure

BRING personal items necessary for flight

- ✓ Required travel documentation (i.e. Id, passport, etc)
- ✓ Food & snacks

STAY with the patient to the ending destination

COMMUNICATE with the AE CREW for any patient needs or concerns

PLEASE ASK for assistance to help your patient with restroom needs

YOU NEED BREAKS TOO. Please COORDINATE breaks with the AE crew

AE ENVIRONMENT CAN HAVE EXTREME TEMPERATURE  
FLUCTUATIONS, NOISE, AND LIMITED SPACE  
TEAM WORK & COMMUNICATION ARE CRITICAL

THANK YOU FOR MAKING PATIENT SAFETY A PRIORITY

## Attachment 4

## MEDICAL ATTENDANT DUTY LIST

**AEROMEDICAL EVACUATION (AE) MISSIONS**  
**MEDICAL ATTENDANT**  
**DUTY LIST**

PRIMARY DUTY IS TO SUPPORT THE NEEDS OF YOUR ASSIGNED PATIENT(S):

- ✓ Getting ready for flight--ensure ALL personal items are secure prior to takeoff
- ✓ If you are on orders, your attendant time is considered "ON DUTY"
- ✓ Stay awake throughout flight unless relieved by an AE aircrew member—coordinate breaks with the AE crew
- ✓ Stay with the patient to the destination
- ✓ Communicate all concerns immediately to an AECM
- ✓ Ask for assistance to help your patient with restroom needs

BRING personal items necessary for flight

- ✓ Required travel documentation (i.e. Id, passport, orders, etc)
- ✓ Food & snacks

REVIEW assigned PATIENTS MEDICAL HISTORY prior to mission

- ✓ Know your patients and anticipate their potential needs ENSURE PATIENT

PREPARATION IS COMPLETE prior to flight including:

- ✓ All necessary equipment, supplies and medication are available for  
The patient
- ✓ Patient's 3899 paperwork is complete (orders, medication record, etc.) RECEIVE  
PATIENT HAND-OFF report from releasing facility
- ✓ Ask questions if information is not complete or clear

DOCUMENTATION on 3899 is your responsibility

- ✓ Sign all documentation & follow signature with "medical attendant"
- ✓ Review documentation requirements for patient's medical condition throughout  
transport with sending facility nurse or flight nurse

MEDICATION ADMINISTRATION & DOCUMENTATION is your responsibility

- ✓ If NOT certified to administer medications, notify flight nurse

**AE ENVIRONMENT CAN HAVE EXTREME TEMPERATURE FLUCTUATIONS,  
NOISE, AND LIMITED SPACE**

**TEAM WORK & COMMUNICATION ARE CRITICAL THANK YOU FOR MAKING  
PATIENT SAFETY A PRIORITY**

## Attachment 5

## NON-MEDICAL ATTENDANT DUTY LIST (MILITARY)

**AEROMEDICAL EVACUATION (AE) MISSIONS****NON-MEDICAL ATTENDANT (Military Personnel)**  
**DUTY LIST**

PRIMARY DUTY is to support the needs of assigned patient

- ✓ Getting ready for flight ensure all personal items are secure
- ✓ If you are on orders, your attendant time is considered “ON DUTY”

BRING personal items necessary for flight

- ✓ Required travel documentation (i.e. Id, passport, orders, etc)
- ✓ Food & snacks

STAY with the patient to the destination

COMMUNICATE with the AE CREW for any patient needs or concerns

ASK for assistance to help your patient with restroom needs

COORDINATE breaks with the AE crew

AE ENVIRONMENT CAN HAVE EXTREME TEMPERATURE FLUCTUATIONS, NOISE,  
AND LIMITED SPACE  
TEAM WORK & COMMUNICATION ARE CRITICAL

**AMC Patient Safety Managers**

## Attachment 6

## PATIENT PREP CHECKLIST

Figure A6.1. Example Patient Preparation Checklist.

EXAMPLE PATIENT PREPARATION CHECKLIST (not all inclusive; tailor to patient)		Date
Patient Name	Cite #	MSN #
<b>Initial each item after ensuring each item is complete</b> ___ Patient Identification Band on all patients and non medical attendants (Et wrist as appropriate) ___ Allergy Band (Et wrist as appropriate) for inpatients ___ Military Identification Card ___ Passport, as required ___ Orders (military) ___ Medical Records/X-Rays ___ Medication (documented last doses goes on AF 3899I) ___ If on litter, litter mattress, clean sheets, blankets and two litter straps. If back rest in place use 3 litter straps		
<b>AF INT 3899 – Patient Movement Record Series</b> ___ Narrative Summary ___ Patient weight (Green canvas NATO litter max 250 lbs, Green/Black DECON Litter max 350 lbs; if greater use CWL) ___ En route medical/special equipment approved for flight or waiver requested/approved by AMC ___ Appropriate Physician Treatments/Medications Ordered		
<b>AF INT 3899A – Patient Movement Progress Note and Appropriate AF INT 3899 series</b> ___ Documentation of all patient care encounters, (Vital Signs, Intake/Output Totals) ___ Risks for hypoxia in room (O2 for ground/rope transport, ventilator, suction). Consider O2 order. ___ Vital Signs/Temperature within normal limits ** ___ Pain Assessment and properly controlled ___ Adequate amount of medications provided per TRAHSCOM policy** ___ Assessment for Risk of Skin Breakdown (turn every 2 hours) ___ Bowel/Bladder toileting documented; urinary catheter if unable to void while on litter ___ Colostomy/Ileostomy/urinary drainage bag clean/empty ** ___ External fixator pin care done prior to flight ** ___ Plaster casts should be 48 hours old and beveled** ___ Adequate circulation/neuro status of all extremities** ___ Risks for DVT; prophylaxis considered ___ Negative pressure device operating/orders if applicable ___ Dressings changed within 12 hours of transport ** ___ IV tubing changed within 48 hours of transport ** ___ IV catheter changed within 48 hours of transport and patent** ___ IVs labeled/timed/on pump** ___ Fluids/needs as required; if NPO, IV fluids maintained ___ Infection Control Precautions (Contact Precautions required for all combat wounds) ___ Applicable lab work including pending cultures ordered		
<b>AF INT 3899I – Patient Movement Medication Record</b> ___ Self Administration of Medication (SAM) orders, known use and documented (AF 3899) (outpatient only) ___ Sufficient medication for the continuum, matches PMR and physician orders. Last doses documented ___ Sufficient IV solutions for the continuum, matches PMR and physician orders ___ IV medication labeled/timed/on pump ___ Plan for administering schedule medications/trape during ground/rope transport <b>Patient's Property:</b> ___ Weapons, explosives, lighters, matches identified/removed ___ Knives removed from patient's control and inventoried. Use AF Form 3854, Receipt of Valuables, and AF Form 1053. ___ Record of Patient Storing Valuables or Service Specific Litter ___ Items in excess of 60 pounds are inventoried and ___ Transportation is arranged by patient's service representative ___ Thorough anti-hijacking search of person and bags, and written Anti-hijacking Certification complete <b>Psychiatric Patients</b> ___ Search all baggage and person for sharp, matched, lighters and cigarettes, and medication ___ Items not allowed will be inventoried and accounted for in above ___ Litter (1A/1B) patients should travel in hospital clothing with a medical attendant; may carry eyeglasses, toothbrush, and a small amount of money (not to exceed \$25.00), wedding band, rings, wristwatch, ID card, and wallet. ___ Leather Restraints IAW AF INT 3899F, Patient Movement Physician Orders for Behavior Management and Restraints, and start AF INT 3899G, Patient Movement Restraint Observation Flow sheet. ___ Leather Restraints (not secured to litter) <b>Medical Attendant/Non-Medical Attendant</b> ___ Appropriate skill level healthcare provider; same sex if accompanying psychiatric patients ___ Coordinated/approved by FMRC ___ Military ID ___ Original deployment and travel orders to return to the AOR ___ Personal items/baggage IAW housing policy (carry on, duffel) ___ Received Point of Contact for arrival and departure, and planned itinerary/tickers back to duty station ___ No weapons, explosives, knives/sharp objects, matches or lighters ___ Thorough anti-hijacking search of person and bags, and written ___ Aware of duties/responsibilities to assigned patient/s		
<b>ORIGINATING FACILITY</b> Printed Name _____ Signature _____		<b>VERIFICATION (i.e. ASF/CASF Staff)</b> Printed Name _____ Signature _____

## Attachment 7

## PATIENT MOVEMENT INPATIENT HANDOFF REPORT WORKSHEET

Figure A7.1. Inpatient Handoff Communication Tool-Front.

PATIENT MOVEMENT INPATIENT HANDOFF REPORT WORKSHEET			
DATE/TIME:		CITE #:	PATIENT NAME:
CURRENT SENDING FACILITY:		RECEIVING FACILITY:	
HANDOFF TO AE CREW BY FACILITY		REPORT BY:	
<b>I</b> (Identify)	<b>HANDOFF BY AE CREW</b> <input type="checkbox"/> No change in status/situation Status changes: <input type="checkbox"/> A/O <input type="checkbox"/> Confused <input type="checkbox"/> Verbal <input type="checkbox"/> Pain <input type="checkbox"/> Unconscious Pt offload method: <input type="checkbox"/> Unassisted <input type="checkbox"/> Crutches/cane <input type="checkbox"/> Litter <input type="checkbox"/> Wheelchair Other information:		
<b>S</b> (Situation)	<b>HANDOFF BY AE CREW</b> <input type="checkbox"/> No change in medication Inflight: Last Pain Meds/Route/Time Given (zulu) _____ Last Antiemetic/Route/Time Given (zulu) _____ Last Antibiotics/Route/Time Given (zulu) _____ Other Meds/Time Given (zulu) _____ Other information:		
<b>B</b> (Background)	<b>HANDOFF BY AE CREW</b> <input type="checkbox"/> No change in medication Inflight: Last Pain Meds/Route/Time Given (zulu) _____ Last Antiemetic/Route/Time Given (zulu) _____ Last Antibiotics/Route/Time Given (zulu) _____ Other Meds/Time Given (zulu) _____ Other information:		
<b>A</b> (Assessment)	<b>HANDOFF BY AE CREW</b> Last Vitals: BP _____ P _____ R _____ SpO2 _____ T _____ Pain level: _____/10 Location/Description: _____ Airway: <input type="checkbox"/> No change <input type="checkbox"/> Changed to: _____ Breathing: <input type="checkbox"/> Spontaneous <input type="checkbox"/> Labored <input type="checkbox"/> Assisted Oxygenation: <input type="checkbox"/> Room Air <input type="checkbox"/> NC <input type="checkbox"/> NRB Rate: _____ LPM Circulation: <input type="checkbox"/> Adequate <input type="checkbox"/> Altered (location): _____ Skin: <input type="checkbox"/> Skin intact/No Pressure Ulcers (PU) or concerns <input type="checkbox"/> Braden Scale score: _____ IV: <input type="checkbox"/> 0.9% NS <input type="checkbox"/> LR <input type="checkbox"/> DSW <input type="checkbox"/> Other: _____ Rate: _____ ml/hour <input type="checkbox"/> Packed RBCs <input type="checkbox"/> Saline Lock Location: _____ <input type="checkbox"/> Fluids brought onboard w/ patient <input type="checkbox"/> Tubing/fluids/medications labeled Devices: <input type="checkbox"/> Suction <input type="checkbox"/> Orthopedic device <input type="checkbox"/> NG tube <input type="checkbox"/> PT Monitor <input type="checkbox"/> Restraints <input type="checkbox"/> Foley <input type="checkbox"/> Chest tube <input type="checkbox"/> IV pump <input type="checkbox"/> Cast <input type="checkbox"/> Neg Pressure Wound Therapy Device(s) x _____ SCDs <input type="checkbox"/> Feeding tube <input type="checkbox"/> Drain <input type="checkbox"/> Epidural <input type="checkbox"/> PCA pump <input type="checkbox"/> Peripheral Nerve Block <input type="checkbox"/> Other: _____ Pain equipment safety checks: <input type="checkbox"/> Site: _____ <input type="checkbox"/> Line patent <input type="checkbox"/> Functional <input type="checkbox"/> 3899H <input type="checkbox"/> Right Medication/concentration <input type="checkbox"/> Right infusion rate/settings <input type="checkbox"/> Tubing undamped Wound vac safety checks: <input type="checkbox"/> Site(s): _____ <input type="checkbox"/> Tube undamped <input type="checkbox"/> Pump functional Abnormal labs: <input type="checkbox"/> W/H <input type="checkbox"/> Cardiac enzymes <input type="checkbox"/> Other Other pertinent information:		
<b>R</b> (Recommendation/Request)	<b>HANDOFF BY AE CREW</b> <input type="checkbox"/> No change <input type="checkbox"/> Changed to: _____ at _____ ml/hour Devices: <input type="checkbox"/> No change <input type="checkbox"/> Changed to/Issues during flight: Output Amount: _____ Device safety checks completed: <input type="checkbox"/> Yes <input type="checkbox"/> No* * If "No" is checked, please explain why below. Other information:		
<b>Standard Patient Preparation Items Completed?</b> <input type="checkbox"/> Yes <input type="checkbox"/> No ** See back of checklist** As of 20160411 (page 1 of 2)			

PERSONAL DATA, Privacy Act 1974 (5 U.S.C. 552a), 01 August 2000 AFVA 205-15

Figure A7.2. Inpatient Hand-Off Communication Tool –Back.

AEROMEDICAL EVACUATION (AE) INPATIENT HANDOFF CHECKLIST (BACKSIDE)		SUPPORTING REGULATION
STANDARD AE PATIENT PREPARATION ITEMS (TO BE COMPLETED BY THE ORIGINATING FACILITY/PATIENT STAGE PRIOR TO ARRIVING AT THE AIRCRAFT)		
TASK	DESCRIPTION	
<b>Medication</b> <input type="checkbox"/> N/A <input type="checkbox"/> Adequate supply of medications given to the patient or flight nurse	Role 2 to Role 3 (i.e. Bastion to Bagram) movements in combat operations theater: <b>1-day minimum</b> ; Role 3 to Role 4 (i.e. Bagram to LRMIC) movements: <b>2-day minimum</b> ; inpatients from OCONUS MTF to port of entry MTF CONUS (i.e. LRMIC to Bethesda): <b>2-day minimum</b> ; inpatients from OCONUS MTF to other locations in CONUS with RON: <b>3-day minimum</b> ; all outpatient movements OCONUS to CONUS: <b>5-day minimum</b> ; CONUS to CONUS movements: <b>1-day minimum</b> . <ul style="list-style-type: none"> <li>• Pain medication within 1 hour of departure (if applicable)</li> <li>• Antiemetic (if applicable)</li> <li>• Medication that would be scheduled to be given during patient loading and through 1 hour after takeoff (if applicable)</li> <li>• Medication delivered to the aircraft is for the right medication for the right patient with the right time/frequency of administration annotated, and is the correct form/route</li> <li>• All medications are verified with order on AF Form 3899/DD Form 602</li> <li>• All medications have been documented and timed on MAR/PMR</li> </ul>	AFI 48-307, Vol 1, Aeromedical Evacuation Clinical Operations. AFI 10-2909, Aeromedical Evacuation Equipment Standards Approved AE Equipment: <a href="https://medlog.us.af.mil/">https://medlog.us.af.mil/</a>
<input type="checkbox"/> Patient is pre-medicated prior to flight	<ul style="list-style-type: none"> <li>• Pain medication within 1 hour of departure (if applicable)</li> <li>• Antiemetic (if applicable)</li> <li>• Medication that would be scheduled to be given during patient loading and through 1 hour after takeoff (if applicable)</li> </ul>	
<input type="checkbox"/> Patient medication verified	<ul style="list-style-type: none"> <li>• Medication delivered to the aircraft is for the right medication for the right patient with the right time/frequency of administration annotated, and is the correct form/route</li> <li>• All medications are verified with order on AF Form 3899/DD Form 602</li> <li>• All medications have been documented and timed on MAR/PMR</li> </ul>	
<b>Equipment</b> <input type="checkbox"/> N/A <input type="checkbox"/> Working condition confirmed <input type="checkbox"/> Approved for flight <input type="checkbox"/> Equipment waiver obtained <input type="checkbox"/> All auxiliary parts present	Equipment must work properly and battery must be fully charged prior to leaving facility. Originating MTF must use only flight-certified medical equipment for use on AE missions. All "approved equipment" questions must be directed to GPMRC or appropriate theater AECC/TPMRC. Power cords/adapters, canisters, litter brackets/securing device, tubing	
<b>Supplies</b> <input type="checkbox"/> N/A <input type="checkbox"/> Adequate amount of supplies given to the patient or flight nurse	Role 2 to Role 3 (i.e. Bastion to Bagram) movements in combat operations theater: <b>1-day minimum</b> ; Role 3 to Role 4 (i.e. Bagram to LRMIC) movements: <b>2-day minimum</b> ; inpatients from OCONUS MTF to port of entry MTF CONUS (i.e. LRMIC to Bethesda): <b>2-day minimum</b> ; inpatients from OCONUS MTF to other locations in CONUS with RON: <b>3-day minimum</b> ; all outpatient movements OCONUS to CONUS: <b>5-day minimum</b> ; CONUS to CONUS movements: <b>1-day minimum</b> .	
<b>Documentation</b> <input type="checkbox"/> Documentation verified	<ul style="list-style-type: none"> <li>• Physician has signed the AF 3899/DD Form 602</li> <li>• Flight surgeon has cleared the patient; documented on form</li> <li>• AF Form 3899/DD Form 602, medical record, x-rays placed in an envelope affixed with completed DD Form 2267 or with the following information: patient's name, rank/status, SSN, nationality (if not a US citizen), organization, date of departure, and destination)</li> <li>• Military ID card with the patient or in envelope listed above</li> <li>• ID bracelet on patient with last name, first name, middle initial, cite #, and date of birth</li> </ul>	
<b>Anti-hijacking/Baggage</b> <input type="checkbox"/> Completion confirmed	<ul style="list-style-type: none"> <li>• Patients, attendants, and their baggage are inspected with a hand-held or walk-through metal detector, x-ray machine, or physical check for weapons or explosives.</li> <li>• All baggage is tagged appropriately and baggage manifest is provided to the AE crew.</li> </ul>	

As of 20140430 (page 2 of 2)

\* This form is not a part of the patient's permanent medical record

PERSONAL DATA, Privacy Act 1974 (5 U.S.C. 552a), 01 August 2000 AFVA 205-15

## Attachment 8

## OUTPATIENT HAND-OFF COMMUNICATION TOOL

Figure A8.1. Outpatient Hand-Off Communication Tool.

PATIENT MOVEMENT OUTPATIENT HANDOFF REPORT WORKSHEET		MSN CALENDAR DATE/JULIAN DATE: _____	
<p>Pt Name: _____</p> <p>Enplane ICAO: _____ Deplane ICAO: _____ Classification: _____ Cite# _____</p> <p>Allergies: _____ Medical Attendant: <u>Y/N</u> Age: _____ DOB: _____</p> <p>Preflight VS: BP _____ P _____ R _____ SaO2 _____ T _____ Pain _____ /10 Location: _____</p> <p>Inpt Records: <u>Y/N</u> CD: <u>Y/N</u> Is patient a SAM? <u>Y/N</u> Narcotics: <u>Y/N</u> 3899 signed by FS: <u>Y/N</u></p> <p>3899 created for medications: <u>Y/N</u> Pt has all ordered medications: <u>Y/N</u> Pt &amp; Bags Anti-hijacked: <u>Y/N</u> Pt ID Band On: <u>Y/N</u></p> <p>Next Medication(s) due: _____</p> <p>Date of injury/surgery &amp; procedure: _____ Last dressing change: _____</p> <p>Saline Lock: <u>Y/N</u> Location: _____ O2 requirements _____</p> <p>Diet: NPO / regular / full liquid / clear liquid / cardiac / low Na / diabetic / other _____</p> <p>Equipment: Litter / IV pump / suction / backrest / glucometer / other _____</p> <p>Ambulatory Device: crutches / cane / walker / walking ear boot / other _____</p> <p>If applicable: date last seizure / chest pain / ETOH intake / Glucose _____</p> <p>Other pertinent info/treatments/labs: _____</p>	<p style="text-align: center;"><b>Handoff by AE CREW</b></p> <p><input type="checkbox"/> NO CHANGE</p> <p><input type="checkbox"/> CHANGE SUMMARY</p> <p>(Refer to patient record): _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		
<p>Pt Name: _____</p> <p>Enplane ICAO: _____ Deplane ICAO: _____ Classification: _____ Cite# _____</p> <p>Allergies: _____ Medical Attendant: <u>Y/N</u> Age: _____ DOB: _____</p> <p>Preflight VS: BP _____ P _____ R _____ SaO2 _____ T _____ Pain _____ /10 Location: _____</p> <p>Inpt Records: <u>Y/N</u> CD: <u>Y/N</u> Is patient a SAM? <u>Y/N</u> Narcotics: <u>Y/N</u> 3899 signed by FS: <u>Y/N</u></p> <p>3899 created for medications: <u>Y/N</u> Pt has all ordered medications: <u>Y/N</u> Pt &amp; Bags Anti-hijacked: <u>Y/N</u> Pt ID Band On: <u>Y/N</u></p> <p>Next Medication(s) due: _____</p> <p>Date of injury/surgery &amp; procedure: _____ Last dressing change: _____</p> <p>Saline Lock: <u>Y/N</u> Location: _____ O2 requirements _____</p> <p>Diet: NPO / regular / full liquid / clear liquid / cardiac / low Na / diabetic / other _____</p> <p>Equipment: Litter / IV pump / suction / backrest / glucometer / other _____</p> <p>Ambulatory Device: crutches / cane / walker / walking ear boot / other _____</p> <p>If applicable: date last seizure / chest pain / ETOH intake / Glucose _____</p> <p>Other pertinent info/treatments/labs: _____</p>	<p style="text-align: center;"><b>Handoff by AE CREW</b></p> <p><input type="checkbox"/> NO CHANGE</p> <p><input type="checkbox"/> CHANGE SUMMARY</p> <p>(Refer to patient record): _____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p>		

As of 20140910

PERSONAL DATA, Privacy Act 1974 (5 U.S.C. 557a), 01 August 2000 AFVA 205.15

This form is not a part of the permanent medical record



## Attachment 9

## BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK BY LEVEL OF RISK

Figure A9.1. Braden Scale For Predicting Pressure Sore Risk By Level Of Risk.

Patient's Name _____		Evaluator's Name _____		Date of Assessment _____	
<b>BRADEN SCALE FOR PREDICTING PRESSURE SORE RISK</b>					
<b>SENSORY PERCEPTION</b> ability to respond meaningfully to pressure-related discomfort	<b>1. Completely Limited</b> Unresponsive (does not moan, flinch, or grasp) to painful stimuli, due to diminished level of consciousness or sedation. OR limited ability to feel pain over most of body	<b>2. Very Limited</b> Responds only to painful stimuli. Cannot communicate discomfort except by moaning or restlessness. OR has a sensory impairment which limits the ability to feel pain or discomfort over 1/3 of body.	<b>3. Slightly Limited</b> Responds to verbal commands, but cannot always communicate discomfort or the need to be turned. OR has some sensory impairment which limits ability to feel pain or discomfort in 1 or 2 extremities.	<b>4. No Impairment</b> Responds to verbal commands. Has no sensory deficit which would limit ability to feel or voice pain or discomfort.	
<b>MOISTURE</b> degree to which skin is exposed to moisture	<b>1. Constantly Moist</b> Skin is kept moist almost constantly by perspiration, urine, etc. Dampness is detected every time patient is moved or turned.	<b>2. Very Moist</b> Skin is often, but not always moist. Linen must be changed at least once a shift.	<b>3. Occasionally Moist</b> Skin is occasionally moist, requiring an extra linen change approximately once a day.	<b>4. Rarely Moist</b> Skin is usually dry, linen only requires changing at routine intervals.	
<b>ACTIVITY</b> degree of physical activity	<b>1. Bedfast</b> Confined to bed.	<b>2. Chairfast</b> Ability to walk severely limited or non-existent. Cannot bear own weight and/or must be assisted into chair or wheelchair.	<b>3. Walks Occasionally</b> Walks occasionally during day, but for very short distances, with or without assistance. Spends majority of each shift in bed or chair.	<b>4. Walks Frequently</b> Walks outside room at least twice a day and inside room at least once every two hours during waking hours.	
<b>MOBILITY</b> ability to change and control body position	<b>1. Completely Immobile</b> Does not make even slight changes in body or extremity position without assistance.	<b>2. Very Limited</b> Makes occasional slight changes in body or extremity position but unable to make frequent or significant changes independently.	<b>3. Slightly Limited</b> Makes frequent though slight changes in body or extremity position independently.	<b>4. No Limitation</b> Makes major and frequent changes in position without assistance.	
<b>NUTRITION</b> usual food intake pattern	<b>1. Very Poor</b> Never eats a complete meal. Rarely eats more than 1/3 of any food offered. Eats 2 servings or less of protein (meat or dairy products) per day. Takes fluids poorly. Does not take a liquid dietary supplement. OR is NPO and/or maintained on clear liquids or IV's for more than 3 days.	<b>2. Probably Inadequate</b> Rarely eats a complete meal and generally eats only about 1/3 of any food offered. Protein intake includes only 3 servings of meat or dairy products per day. Occasionally will take a dietary supplement. OR receives less than optimum amount of liquid diet or tube feeding.	<b>3. Adequate</b> Eats over half of most meals. Eats a total of 4 servings of protein (meat, dairy products) per day. Occasionally will refuse a meal, but will usually take a supplement when offered. OR is on a tube feeding or TPN regimen which probably meets most of nutritional needs.	<b>4. Excellent</b> Eats most of every meal. Never refuses a meal. Usually eats a total of 4 or more servings of meat and dairy products. Occasionally eats between meals. Does not require supplementation.	
<b>FRICTION &amp; SHEAR</b>	<b>1. Problem</b> Requires moderate to maximum assistance in moving. Complete lifting without sliding against sheets is impossible. Frequently slides down in bed or chair, requiring frequent repositioning with maximum assistance. Squatting, contractions or agitation leads to almost constant friction.	<b>2. Potential Problem</b> Moves feebly or requires minimum assistance. During a move skin probably slides to some extent against sheets, chair, restraints or other devices. Maintains relatively good position in chair or bed most of the time but occasionally slides down.	<b>3. No Apparent Problem</b> Moves in bed and in chair independently and has sufficient muscle strength to lift up completely during move. Maintains good position in bed or chair.		
<b>Total Score</b>					



**Attachment 10****BURN CENTER REFERRAL CRITERIA**

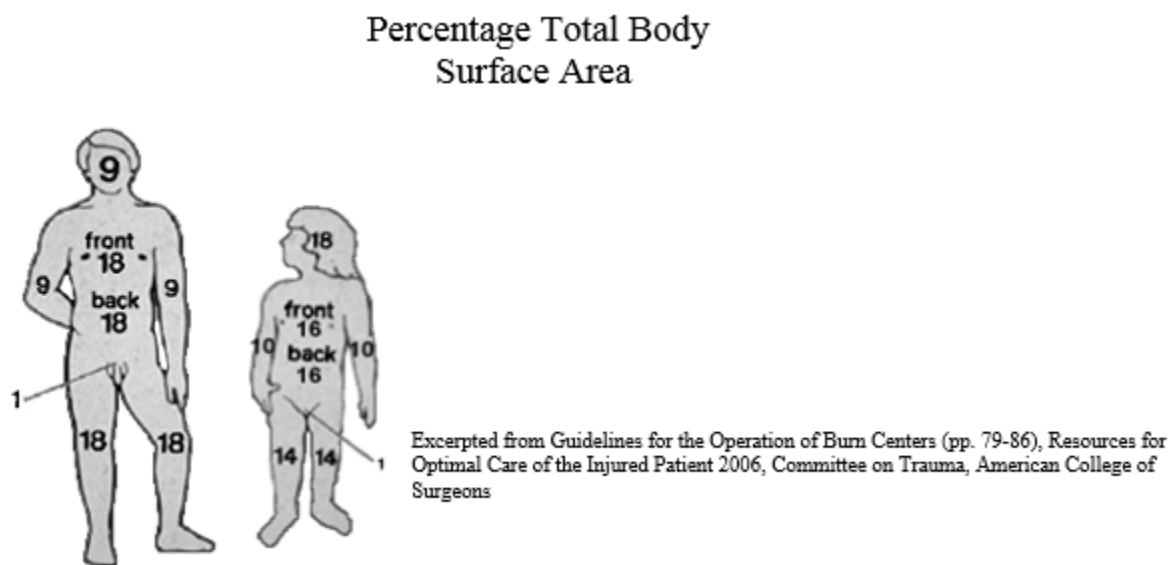
**A10.1.** A burn center may treat adults, children, or both. Burn injuries that should be referred to a burn center include:

- A10.1.1. Partial thickness burns greater than 10% TBSA.
- A10.1.2. Burns that involve the face, hands, feet, genitalia, perineum, or major joints.
- A10.1.3. Third degree burns in any age group.
- A10.1.4. Electrical burns, including lightning injury.
- A10.1.5. Chemical burns.
- A10.1.6. Inhalation injury.
- A10.1.7. Burn injury in patients with preexisting medical disorders that could complicate management, prolong recovery, or affect mortality.
- A10.1.8. Any patient with burns and concomitant trauma (such as fractures) in which the burn injury poses the greatest risk of morbidity or mortality. In such cases, if the trauma poses the greater immediate risk, the patient may be initially stabilized in a trauma center before being transferred to a burn unit. Physician judgment will be necessary in such situations and should be in concert with the regional medical control plan and triage protocols.
- A10.1.9. Burned children in hospitals without qualified personnel or equipment for the care of children.
- A10.1.10. Burn injury in patients who will require special social, emotional, or rehabilitative intervention.

**A10.2. Severity Determination**

- A10.2.1. First Degree (Partial Thickness) Superficial, red, sometimes painful.
- A10.2.2. Second Degree (Partial Thickness) Skin may be red, blistered, swollen. Very painful.
- A10.2.3. Third Degree (Full Thickness) Whitish, charred or translucent, no pin prick sensation in burned area.

**Figure A10.1. Percentage Total Body Surface Area.**



## Attachment 11

## MILITARY ACUTE CONCUSSION EVALUATION

**A11.1.** Completed at the MTF or ERPS prior to flight. Not an in-flight requirement.

**Table A11.1. Military Acute Concussion Evaluation.**

<b>Evaluation</b>	<b>Description</b>	<b>Score</b>
<b>History</b>	Mechanism of injury, amnesia, loss of consciousness, and symptoms	<b>None</b>
<b>Neurological Screening</b>	<b>Eyes:</b> Pupil response and tracking  <b>Verbal:</b> Speech fluency and word finding  <b>Motor:</b> Pronator drift (both arms extended shoulder level, palms upwards, eyes closed), gait/ coordination	<b>None</b>
<b>Immediate Memory</b>	A brief repeated list learning test.  A list of five words is read once and then the patient is asked then to repeat the list back, as many words as they can recall in any order.  Repeat 2 more times for a total of three trials, even if the patient scores perfectly on the first trial. (one word = one point)	<b>/15</b>
<b>Orientation</b>	One point for each: Month, Date, Time, Day of Week, Year	<b>/5</b>
<b>Concentration</b>	Reverse Digits: Patient restates a string of numbers (lengths of 3, 4, 5, 6 digits) , in reverse order. Two attempts allowed per string; successful string = one point  Reverse Months: Patient states the months of the year in reverse order (one point if correct)	<b>/5</b>
<b>Delayed Recall</b>	Patient is asked to repeat back the original list of five words, as many words as they can recall in any order. One point for each recalled word	<b>/5</b>
	<b>TOTAL SCORE</b>	<b>/30</b>

## Attachment 12

## ALCOHOL WITHDRAWAL ASSESSMENT SCORING GUIDELINES

Figure A12.1. Alcohol Withdrawal Assessment Scoring Guidelines.

**Alcohol Withdrawal Assessment Scoring Guidelines (CIWA - Ar)**

<p><b>Nausea/Vomiting</b> - Rate on scale 0 - 7</p> <p>0 - None</p> <p>1 - Mild nausea with no vomiting</p> <p>2</p> <p>3</p> <p>4 - Intermittent nausea</p> <p>5</p> <p>6</p> <p>7 - Constant nausea and frequent dry heaves and vomiting</p>	<p><b>Tremors</b> - have patient extend arms &amp; spread fingers. Rate on scale 0 - 7.</p> <p>0 - No tremor</p> <p>1 - Not visible, but can be felt fingertip to fingertip</p> <p>2</p> <p>3</p> <p>4 - Moderate, with patient's arms extended</p> <p>5</p> <p>6</p> <p>7 - severe, even w/ arms not extended</p>
<p><b>Anxiety</b> - Rate on scale 0 - 7</p> <p>0 - no anxiety, patient at ease</p> <p>1 - mildly anxious</p> <p>2</p> <p>3</p> <p>4 - moderately anxious or guarded, so anxiety is inferred</p> <p>5</p> <p>6</p> <p>7 - equivalent to acute panic states seen in severe delirium or acute schizophrenic reactions.</p>	<p><b>Agitation</b> - Rate on scale 0 - 7</p> <p>0 - normal activity</p> <p>1 - somewhat normal activity</p> <p>2</p> <p>3</p> <p>4 - moderately fidgety and restless</p> <p>5</p> <p>6</p> <p>7 - paces back and forth, or constantly thrashes about</p>
<p><b>Paroxysmal Sweats</b> - Rate on Scale 0 - 7.</p> <p>0 - no sweats</p> <p>1 - barely perceptible sweating, palms moist</p> <p>2</p> <p>3</p> <p>4 - beads of sweat obvious on forehead</p> <p>5</p> <p>6</p> <p>7 - drenching sweats</p>	<p><b>Orientation and clouding of sensorium</b> - Ask, "What day is this? Where are you? Who am I?" Rate scale 0 - 4</p> <p>0 - Oriented</p> <p>1 - cannot do serial additions or is uncertain about date</p> <p>2 - disoriented to date by no more than 2 calendar days</p> <p>3 - disoriented to date by more than 2 calendar days</p> <p>4 - Disoriented to place and / or person</p>
<p><b>Tactile disturbances</b> - Ask, "Have you experienced any itching, pins &amp; needles sensation, burning or numbness, or a feeling of bugs crawling on or under your skin?"</p> <p>0 - none</p> <p>1 - very mild itching, pins &amp; needles, burning, or numbness</p> <p>2 - mild itching, pins &amp; needles, burning, or numbness</p> <p>3 - moderate itching, pins &amp; needles, burning, or numbness</p> <p>4 - moderate hallucinations</p> <p>5 - severe hallucinations</p> <p>6 - extremely severe hallucinations</p> <p>7 - continuous hallucinations</p>	<p><b>Auditory Disturbances</b> - Ask, "Are you more aware of sounds around you? Are they harsh? Do they startle you? Do you hear anything that disturbs you or that you know isn't there?"</p> <p>0 - not present</p> <p>1 - Very mild harshness or ability to startle</p> <p>2 - mild harshness or ability to startle</p> <p>3 - moderate harshness or ability to startle</p> <p>4 - moderate hallucinations</p> <p>5 - severe hallucinations</p> <p>6 - extremely severe hallucinations</p> <p>7 - continuous hallucinations</p>
<p><b>Visual disturbances</b> - Ask, "Does the light appear to be too bright? Is its color different than normal? Does it hurt your eyes? Are you seeing anything that disturbs you or that you know isn't there?"</p> <p>0 - not present</p> <p>1 - very mild sensitivity</p> <p>2 - mild sensitivity</p> <p>3 - moderate sensitivity</p> <p>4 - moderate hallucinations</p> <p>5 - severe hallucinations</p> <p>6 - extremely severe hallucinations</p> <p>7 - continuous hallucinations</p>	<p><b>Headache</b> - Ask, "Does your head feel different than usual? Does it feel like there is a band around your head?" Do not rate dizziness or lightheadedness.</p> <p>0 - not present</p> <p>1 - very mild</p> <p>2 - mild</p> <p>3 - moderate</p> <p>4 - moderately severe</p> <p>5 - severe</p> <p>6 - very severe</p> <p>7 - extremely severe</p>

## Procedure:

1. Assess and rate each of the 10 criteria of the CIWA scale. Each criterion is rated on a scale from 0 to 7, except for "Orientation and clouding of sensorium" which is rated on scale 0 to 4. Add up the scores for all ten criteria. This is the total CIWA-Ar score for the patient at that time. Prophylactic medication should be started for any patient with a total CIWA-Ar score of 8 or greater (ie. start on withdrawal medication). If started on scheduled medication, additional PRN medication should be given for a total CIWA-Ar score of 15 or greater.
2. Document vitals and CIWA-Ar assessment on the Withdrawal Assessment Sheet. Document administration of PRN medications on the assessment sheet as well.
3. The CIWA-Ar scale is the most sensitive tool for assessment of the patient experiencing alcohol withdrawal. Nursing assessment is vitally important. Early intervention for CIWA-Ar score of 8 or greater provides the best means to prevent the progression of withdrawal.

## Attachment 13

## PAIN ASSESSMENT SCALES

## A13.1. Wong-Baker.

Figure A13.1. Wong-Baker.



**Brief word instructions:** Point to each face using the words to describe the pain intensity. Ask the child to choose face that best describes own pain and record the appropriate number.

**Original instructions:** Explain to the person that each face is for a person who feels happy because he has no pain (hurt) or sad because he has some or a lot of pain. **Face 0** is very happy because he doesn't hurt at all. **Face 1** hurts just a little bit. **Face 2** hurts a little more. **Face 3** hurts even more. **Face 4** hurts a whole lot. **Face 5** hurts as much as you can imagine, although you don't have to be crying to feel this bad. Ask the person to choose the face that best describes how he is feeling.

Rating scale is recommended for persons age 3 years and older.

Download [FACES scale](#)

April 2005

Wong's Clinical Manual of Pediatric Nursing, 8e (Clinical Manual of Pediatric Nursing (Wong)) Spiral-bound – September 1, 2011

## A13.2. FLACC.

Figure A13.2. FLACC Scale.

FLACC Scale

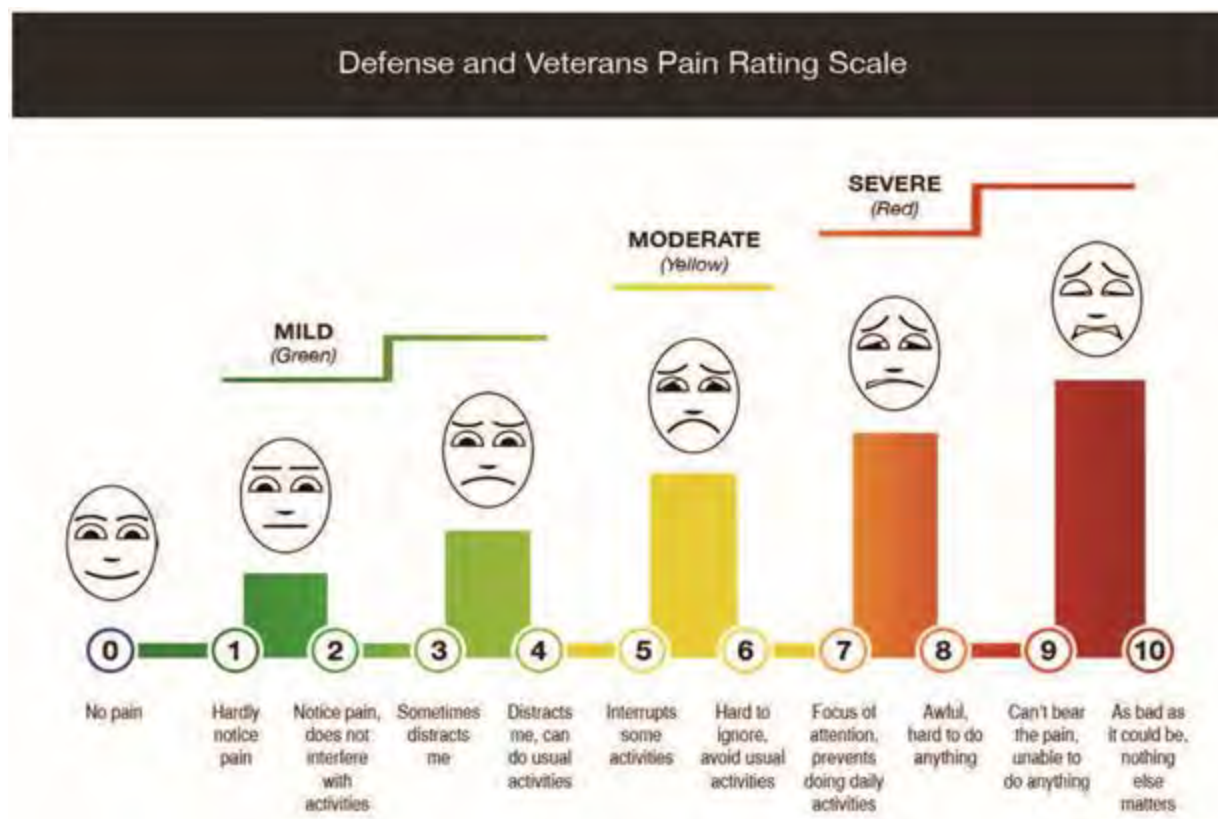
Category	Scoring		
	1	2	3
Face	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequent to constant quivering chin, clenched jaw
Legs	Normal position or relaxed	Uneasy, restless, tense	Kicking, or legs drawn up
Activity	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
Cry	No cry (awake or asleep)	Moans or whimpers, occasional complaint	Crying steadily, screams or sobs, frequent complaints
Consolability	Content, relaxed	Reassured by occasional touching, hugging or being talked to, distractible	Difficult to console or comfort

Each of the five categories (F) Face, (L) Legs, (A) Activity, (C) Cry, (C) Consolability is scored from 0-2, which results in a total score between zero and ten.

Hicks CL et al The Faces Pain Scale-Revised: toward a common metric in pediatric pain measurement. *Pain*, 2003;93:173-183.

### A13.3. Defense and Veterans Pain Rating Scale.

Figure A13.3. Defense and Veterans Pain Rating Scale.



A13.4. DoD/VA Pain Supplemental Questions.

Figure A13.4. DoD/VA Pain Supplemental Questions.

**DoD/VA PAIN SUPPLEMENTAL QUESTIONS**

For clinicians to evaluate the biopsychosocial impact of pain

1. Circle the one number that describes how, during the past 24 hours, pain has interfered with your **ACTIVITY**:

0 1 2 3 4 5 6 7 8 9 10

Does not interfere Completely interferes

2. Circle the one number that describes how, during the past 24 hours, pain has interfered with your **SLEEP**:

0 1 2 3 4 5 6 7 8 9 10

Does not interfere Completely interferes

3. Circle the one number that describes how, during the past 24 hours, pain has affected your **MOOD**:

0 1 2 3 4 5 6 7 8 9 10

Does not affect Completely affects

4. Circle the one number that describes how, during the past 24 hours, pain has contributed to your **STRESS**:

0 1 2 3 4 5 6 7 8 9 10

Does not contribute Contributes a great deal

\*Reference for pain interference: Cleeland GS, Ryan KM. Pain assessment: global use of the Brief Pain Inventory. *Ann Acad Med Singapore* 2002; 12:9-133, 1994.

v. 2.0



## Attachment 14

### AIRCRAFT AIRFLOW

**Table A14.1. Aircraft Airflow.**

Aircraft Type	Air Flow Direction	Ambient Air Intake and Exchange Rate (minutes)	Post-Mission Time Required to Obtain 99.9% Removal Efficiency*
C-130	Top to bottom/aft to forward. <b>NOTE 2</b>	4 (Sea level) - 8 (FL35)	1 Hr
C-17	Aft to forward	16-30	3.5 hrs.
C-21	Aft to forward	2.2	15 minutes
KC-135	Top to bottom	4-5 <b>NOTE 3</b>	35 minutes
KC-10	Top to bottom/forward to aft	7.5	1 hr.

**NOTES:**

A14.1. Cabin air in military aircraft usually does not recirculate or mix with flight deck air making HEPA filtering of air unnecessary. Cabin air in civilian aircraft may recirculate with flight deck air with or without HEPA filtering.

A14.2. There is mixing of cargo compartment air and flight deck air.

A14.3. Dependent on engine speed, altitude and pressurization.

\*AE adapted CDC recommendations for removal of TB airborne contaminants from isolation rooms. Upon mission termination when indicated, all exits and doors are opened and the interior

of the aircraft is aired for the prescribed time. The aircraft air conditioning will be running at maximum capacity during the airing out time period. Must also defer to AFMAN 10-2503 as stated in Aircraft Decontamination section. **(T-1)**

( Recirculating fans in cargo compartment direct front to back when turned on; however, the airflow directed aft is at the compartment ceiling and will eventually flow forward along the cabin floor. In normal operations, cargo compartment air recirculates through a non-HEPA filter, and then mixes with flight deck air. 100% ambient air (RAM Air) is available if required when “hi-flow” is selected on the cockpit environmental control panel.

(\* 50% of cabin air recirculates with ambient air through a HEPA filter and does not mix with flight deck air. 100% ambient air is available if required.

**WARNING:** Due to aircraft airflow characteristics (aft to forward) and the extreme risk of transmission of infectious airborne agents to all on board personnel, the C-17, C-21 and C-130 will not be used unless all the criteria for safe transport, based on agent, are met.

**Exception:** In extreme instances, the theater surgeon and the director of theater airlift operations will determine the use of the above aircraft for AE intra-theater operations. **(T-2)**

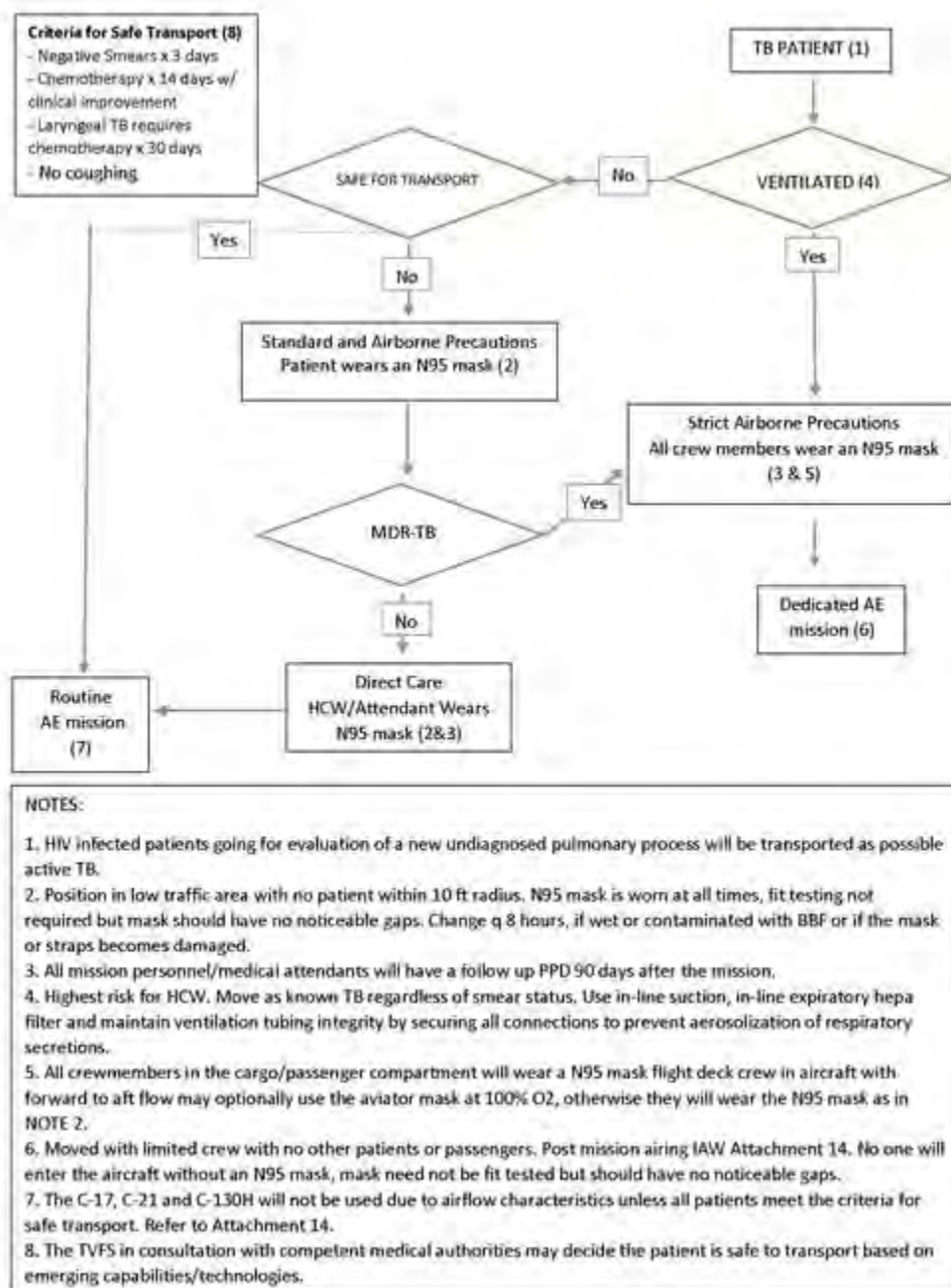
Theater surgeons will receive approval from destination MAJCOM/CC and MAJCOM/SG, and the TCSG/CC and TCSG to use these aircraft during AE inter-theater operations. **(T-2)**

All passengers, patients, medical crew and other crewmembers on these missions will wear a N95 mask throughout the mission, and will receive the recommended post-exposure follow-up for flight, support and medical personnel according to the TVFS. **(T-2)**

## Attachment 15

## AIRBORNE PRECAUTION GUIDELINES

Figure A15.1. Airborne Precaution Guidelines.



## Attachment 16

## PATIENT MOVEMENT SAFETY PROGRAM EVENT CATEGORIES

**A16.1.** Personnel should not belabor on the categorization; the unit Patient Safety Manager will designate both category and subcategory for the reported event.

**Table A16.1. Patient Movement Safety Program Event Categories.**

Event Categories	Category Definition	Sub-categories	Description
Anti-Hijack		Completed Incorrectly	Part of anti-hijacking not completed or completed incorrect.
		Not Completed	Anti-hijacking was not completed
Staging Facility/RON Specific	Involve patient transport to/from Staging Facility/RON sites only. Trans to/from MTF/civilian locations are categorized "Other: Transportation."	N/A	N/A
Equipment	Self-Explanatory	Not Approved for Flight	Equipment not approved and NO waiver obtained
		Waiver Required	Equipment requires a waiver and waiver obtained
		Failure/Malfunction	Equipment fails/malfunctions within the AE system. <b><u>Include name, model number, serial number and detailed description</u></b> of malfunction on DD Form 2852 Event Description.
Infection Control	Events that risk spreading infection	Blood or Body Fluid Exposure	Any exposure to blood/body fluids
		Transport of an infectious patient	Issues associated with transportation of an infectious patient
Injuries	Environmental injuries in/ around aircraft resulting in actual harm or potential for harm to a patient or crew member	Actual	Harm occurred
		Potential	No harm occurred

Medication	Medication issue that occurred after hand-off. Issues include those on aircraft or at any stops until the final destination. Includes Blood products.	Med Error	Wrong: Dose, med, time, route, or patient. While the patient is under control of the AECM/ERCC team/MA
Event Categories	Category Definition	Sub-categories	Description
		Narcotic Not Accounted For	Narcotics that are not accounted for at any point within the AE system patient meds.
		Med Not Ordered	Typically not used since this is a “Patient Prep: Orders” issue. Can be used if doctor in-flight gives verbal order in emergency situation but does not write an order afterwards.
		Self- Administration Issues	Issues associated with SAM patient. Event with a SAM patient who does not have medications should be categorized as <b>BOTH</b> “Medication (Self Administration Issue)” and “Patient Prep: Medication”
Other	Miscellaneous Events	Aircraft Amperage	Not enough amperage to operate all necessary equipment
		Aircraft Emergency	Self- Explanatory
		Aircraft Maintenance Delay	Delay related specifically to aircraft maintenance
		Baggage issues	Issues related to patient or attendant baggage
		Communication Issues	Communication issues/difficulties between all departments/crew supporting the AE system.
		Flight Crew Equipment/Mission/Duty	Issues involving crew problems with equipment, mission, duty.
		Individual Body Armor Issues	Missing or inappropriate body armor required in certain areas

		No Meals Supplied	Wrong or missing meal supplied
		Medical delay	Delay related to patient care
		PMRC	Issues related to PMRC
		Transportation Issues	Transportation issues arising from any source other than Staging Facility/RON
Event Categories	Category Definition	Sub-categories	Description
Patient Hand-off	Involves the transfer of information, authority and responsibility of patient(s) between care givers. Hand-off between MTF and Staging Facility; hand-off between Staging Facility and AE Crew; hand-off between AECMs for breaks; hand-off between medical attendants and AE crew etc.	Inadequate Patient Hand-off	Information was provided but inadequate, lacking or insufficient for what should have been communicated
		No Patient Hand-off	No report or hand-off information provided between care givers
Patient Prep	Dealing with the preparation of patient prior to the hand-off to the AE crew	Attendant Issues	Issues involving medical/non-medical attendant
		Documentation of Care	Any item that should be documented in the record (3899, Electronic Health Record, etc.) but isn't or is not documented correctly <b>prior</b> to hand-off to AE crew.
		Equipment	Durable equipment for transfer to AE crew
		Medication	Any medication related issue that occurred before hand-off to AE crew.
		Orders	Not written, signed, or complete; wrong orders

		Paperwork	3899 pages missing; administrative data (name, cite #, DOB, allergies etc.) missing or wrong; inpatient record missing.
		Supplies	Disposable, included, not provided, not approved, not compatible.
		Treatment(s) not done prior to flight	Dressing change, IV started/discounted etc., propaq not connected to pt., pain not addressed
Event Categories	Category Definition	Sub-categories	Description
Status Change		Allergic Reaction	Any allergic reaction to non-medication allergens
		AE Protocol Used	DO NOT USE---NOT USED
		Birth	Contraction and/or delivery while in AE system
		Cardiac/Respiratory Arrest	Code situations
		Chest Pain	While in AE system and not associated with surgery.
		Death in-flight	While in AE system
		Death within 24 hours	After release from AE system
		Medication Responses	Unexpected responses to medications given before or

			during flight
		Seizures	While in AE system
		Shortness of Breath	DO NOT USE---NOT USED
		Suicide	Includes suicidal ideation, gestures, attempts and/or suicide
		Transient/Mild Status Change	Any other status changes not reportable in another sub-category

## Attachment 17

# AEROMEDICAL EVACUATION (AE) PATIENT AND CUSTOMER SATISFACTION SURVEY

Figure A17.1. Aeromedical Evacuation (AE) Patient and Customer Satisfaction Survey.

DATE: \_\_\_\_\_

TO BE COMPLETED BY AE CREW  
 Pt Load (Lit-Amb-Air) \_\_\_\_\_  
 MSN # \_\_\_\_\_ C-  
 130 C-17 KC-135 C-21

**AEROMEDICAL EVACUATION (AE)  
 PATIENT AND CUSTOMER SATISFACTION SURVEY** v4.0  
*This form is subject to the Privacy Act of 1974 – Use blanket PAS – DD Form 2005*

**We want to know what you think!**  
 Please take a few moments to complete this survey. Your responses will let us know how we are doing and give us the valuable information we need to make improvements.

☐ Please check here if you have recently completed a survey, and you do not wish to provide more information at this time.

I am a (circle one): Patient Medical Attendant Non-Medical Attendant Family Member

	Agree	Neutral	Disagree	N/A
1. Were you satisfied with your overall experience.				
2. An AE Crew Member spoke to me about my medical condition.				
3. The AE crew addressed my needs.				
4. My pain was addressed.				
5. The AE crew was professional.				
6. I am wearing an identification wristband with my name for this flight.				
7. The AE Crew checked my identification wristband and asked me to say my name before I was given medication.				
8. I was provided adequate information about my flight by the Staging facility.				
9. My baggage was handled appropriately				

Departure Location: \_\_\_\_\_ Arrival Location: \_\_\_\_\_

Is there something the Staging Facility or AE crews could have done to improve your AE experience?  
 \_\_\_\_\_  
 \_\_\_\_\_

Is there anything that was particularly beneficial or positive about your AE flight?  
 \_\_\_\_\_  
 \_\_\_\_\_

If you would like a response to your comments, please write your name and address or e-mail:  
 Name: \_\_\_\_\_ Address/E-Mail: \_\_\_\_\_

Surveys can be mailed to: HQ AMC/SGON, 709Ward Dr., Scott AFB, IL 62225 Phone: Comm: 618-229-6036 DSN 779-6036



## Attachment 18

## EN ROUTE CARE EQUIPMENT MALFUNCTION REPORT TAG

Figure A18.1. En Route Care Equipment Malfunction Report Tag (Front).

En Route Care Equipment Malfunction Report Tag	
<b>SECTION I - EQUIPMENT INFORMATION</b>	
1. EQUIPMENT	
2. SERIAL NO.	3. EQUIPMENT TAG
4. MODEL	5. MFR
6. MALFUNCTION/PROBLEM	
7. LIST ALL EQUIPMENT CONTROL NO. (s) (if any)	
8. LIST SETTINGS/TIME OF THE (if set) (if any)	
9. IMMEDIATE ACTION TAKEN	
<b>SECTION II - LOCATION</b>	
10. DATE OF EVENT (YYYYMM)	11. TIME OF EVENT
12. LOCATION (if over the water)	
13. AIRCRAFT	14. AIRCRAFT (if any)
15. CREW (if any)	16. CREW (if any)
17. CREW (if any)	18. CREW (if any)
19. CREW (if any)	20. CREW (if any)
21. CREW (if any)	22. CREW (if any)
<b>*INSTRUCTIONS</b> 3. DEVICE SHOULD BE TAGGED WITH AN EQUIPMENT CONTROL NO. STICKER, IF NOT, USE PMITS BAR CODE NO. 7. ITEMS IN THE EQUIPMENT CHAIN SHOULD BE SEQUESTERED & APPROPRIATELY TAGGED. (Example: ECAS Cbk, Trig Cntrl, Vent tubing, IV pump cassettes, etc.) 8. EQUIPMENT CONTROLS/SETTINGS SHOULD REMAIN AS SET DURING THE MALFUNCTION/PROBLEM. 9. INCLUDE EQUIP/ACCESSORIES USED TO REPLACE FAILED EQUIPMENT PLUS ANY CORRECTIVE ACTIONS TAKEN PRIOR TO TURN IN. 12h. ORIGIN THEATER 12a. DESTINATION THEATER	

Figure A18.2. En Route Care Equipment Malfunction Report Tag (Back).

En Route Care Equipment Malfunction Report Tag	
1. WORK ORDER NO. (To the Event)	
2. PARALEL (Unit Pinc. (Grade))	3. ASSIGNED UNIT
4. EMAIL	5. PHONE NO.
6. PARALEL (Unit Pinc. (Grade))	7. ASSIGNED UNIT
8. EMAIL	9. PHONE NO.
SECTION III - ASSESMENT	
10. EOP FAILURE RESULT IN (NEAR) GOATH-HOBTALIZATION? YES <input type="radio"/> NO <input type="radio"/>	
11. PERSON AFFECTED/KEY AFFECTED BY MALFUNCTION (X appropriate) ***AN "A" EVENT MUST BE REPORTED WITHIN 24 HRS***	
<input type="radio"/> PATIENT	<input type="radio"/> CREW
<input type="radio"/> INTAKE	<input type="radio"/> AIR
<input type="radio"/> KELTY (344)	<input type="radio"/> SOW
<input type="radio"/> GOATH (344)	<input type="radio"/> GOATH (344)
12. DO FORMS (GOATH-HOBTAL) NEAR MISAP COMPLETED? YES <input type="radio"/> NO <input type="radio"/>	
13. COMMENTS	
SECTION IV - GENERAL INFORMATION	
14. SUBMITTING OFFICE/UNIT	15. REPORTING PERSON (Unit Pinc. (Grade))
16. PHONE NO.	
17. EMAIL	
18. SIGNATURE & DATE (Person Completing Form)	
19. TAG NO.	
00001	
SECTION V - BMET INFORMATION	
20. SIGNATURE (Personing BMET)	
21. EQUIPMENT	
22. WORK ORDER NO.	23. EOP
24. SERIAL NO.	25. MODEL
26. TAG NO.	
00001	