

**United States Air Force**  
**Independent Duty Medical Technician**

# **Medical and Dental Treatment Protocols**

Jan 2021

OPR: 383 Training Squadron

Edition 2.3

Maj Jennifer Leggoe, D.O.



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# MEMORANDUM FROM AEROSPACE MEDICAL SERVICE

## CAREER FIELD MANAGER

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MEMORANDUM FOR ALL USAF 4N0X1C INDEPENDENT DUTY MEDICAL  
TECHNICIANS (IDMTs)

FROM: AEROSPACE MEDICAL SERVICE CAREER FIELD MANAGER

SUBJECT: USAF INDEPENDENT DUTY MEDICAL TECHNICIAN PROTOCOLS

The 2.3 updated edition of the IDMT Medical and Dental Treatment Protocols is attached and replaces the 2.2 edition dated Oct 2020. The revised protocols are to be used by all IDMTs deployed, assigned or attached to Squadron Medical Elements (SMEs), Geographically Separated Units (GSUs), or when performing IDMT duties.

The source document for these treatment protocols is the 4N0X1X Aerospace Medical Service Career Field Education and Training Plan dated 24 July 2020. Additional source documents and supporting references include the Bates Guide to Physical Exams and History Taking, Current Medical Diagnosis and Treatment, Hole's Guide to Anatomy and Physiology, and The Merck Manual. All practices listed were peer reviewed by clinical specialists in medicine, optometry and dentistry.

These updated IDMT Medical and Dental Treatment Protocols represent the continuous evolution and update of tools and resources for our IDMTs. The intent of these protocols are to enhance IDMT performance, build skills and ultimately provide the best possible care to those we serve and treat, regardless of clinical setting or location. My sincere thanks go out to the team that worked on the content and format of these protocols. Their efforts reflect the collective commitment of all Air Force Medical Service professionals to our task and purpose.

Implementation is effective immediately. Any deviations from the protocols must be coordinated through the appropriate MAJCOM SG or designated representative IAW AFI 44-103, *The Air Force Independent Duty Medical Technician Program*, August 2018. Questions concerning medical procedures or practical application of these protocols should be directed to the appropriately assigned IDMT preceptor. Requests for changes and updates to the protocols should be directed to the IDMT Course Medical Director at DSN 420-5410 or commercial (210) 808-5410.

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## MEMORANDUM FROM IDMT MEDICAL DIRECTOR

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FOR ALL AEROSPACE MEDICAL TECHNICIAN 4N0X1C AIR FORCE INDEPENDENT DUTY MEDICAL TECHNICIANS

### PREFACE

Our team is pleased to present Edition 2.3 of the Independent Duty Medical Technician Medical and Dental Treatment Protocols. This updated edition includes battlefield acupuncture (BFA) as a treatment option for certain selected medical conditions/diagnoses for BFA-trained IDMTs, updates directive levels from some diagnoses, and updates the Authorized Drug List.

The foundation for the protocols still rests on the career field's core documents, the 4N0X1X Career Field Education and Training Plan, and AFI 44-103. Recommended medications are still listed by class and name only due to ever-changing dosing regimens. The IDMT is encouraged to research all dosing regimens using proper sources before prescribing medications or consulting the preceptor.

We believe that these updated treatment protocols will continue to assist the IDMT in providing efficient and effective care for their respective military populations. If you have any questions or concerns regarding any of the content within these protocols, please contact the IDMT Career Field Consultant at DSN 420-5412 or commercial (210) 808-5412.

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JENNIFER I. LEGGOE, Maj, USAF, MC, D.O.  
Medical Director, IDMT Program

## UTILIZATION OF IDMT PROTOCOLS

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### **MEDICAL PRECEPTORS**

The “MD” found in the medication section of the previous versions of the IDMT Protocols has been changed to “MP” (Medical Preceptor). This change was made to include all privileged and credentialed providers authorized to precept IDMTs IAW AFI 44-103.

The MP will work closely with the IDMTs and should be familiar with these IDMT Protocols and treatment plans. The MP may ask the IDMT to deviate from these protocols at any point based on clinical experience and preference. However, all deviations must be annotated in the patient’s medical record.

### **PRECEPTOR DIRECTIVES**

A new category entitled “Preceptor Directive” has been added to the IDMT Protocols; this important category directs the IDMT on when to communicate with their preceptor.

A **red directive** indicates that the patient must be evacuated or transferred immediately. The MP must be contacted as soon as possible, but the IDMT should prioritize the immediate treatment and stabilization of the patient.

A **blue directive** indicates that the MP must be contacted immediately. These patients may either be a complicated case, may need further work-up, may need a consult/referral, or may need close follow-up. These patients might eventually need to be evacuated or transferred, but there is time for the IDMT and MP to make this decision together.

A **green directive** indicates that the patient will need routine review by the preceptor IAW AFI 44-103. The IDMT may choose to contact the preceptor immediately if questions or concerns arise, but the majority of these cases are likely to be routine non-emergent patients that the IDMT is confident in diagnosing and treating.

### **EMERGENT PATIENT CARE**

Emergency and cardiac medications can be administered per ACLS/EMS/TCCC protocols. These national guidelines have not been included in the IDMT Protocols as they are continuously being updated and changed. These patients would be categorized as a red directive, and the MP will be contacted once the patient has been appropriately treated and stabilized.

## ACKNOWLEDGEMENTS

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## Chapter 1

# ORTHOPEDIC PROTOCOLS

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### SPINE “RED FLAG” SYMPTOMS

- Trauma
- Duration of pain >6 weeks
- Neurologic deficit (bowel/bladder incontinence, saddle anesthesia, lower extremity weakness)
- Fever
- Severe nocturnal or disabling pain
- Unexplained pain after age 55
- Unexplained weight loss

### NECK PAIN

#### Introduction:

- Most neck pain is secondary to degenerative disk disease in the cervical spine and will respond well to conservative therapy
  - Exceptions to this are neck pain in younger populations which are more likely to be secondary to posture or trauma like whiplash

#### Subjective:

- Signs and Symptoms:
  - Localized pain in the neck at the affected section
  - Pain/limited ROM
    - May complain of numbness or tingling in the UE
  - Example manifestations of cervical radiculopathy include:
    - Dropping objects/difficulty buttoning shirt
- Focused History:
  - Presence of numbness, tingling or weakness
  - Assess for red flag symptoms
  - Tobacco/ETOH use
  - History of back or neck problems
  - History of fever - could indicate meningitis



## **NECK PAIN CONTINUED**

### **Objective:**

- Physical Exam:
  - Assess posture
  - Limited ROM secondary to pain
  - Motor and sensory dysfunction represent radicular symptoms associated with neck pain
  - Positive Spurling test
    - Indicative of cervical radiculopathy
- Tools:
  - If available, consider X-rays
    - With lack of trauma, X-rays will likely not be helpful in diagnosis

### **Assessment:**

- Differential:
  - Shoulder problems: pain may be radiating from shoulder
  - Peripheral nerve entrapment (CTS): positive Phalen, Tinel's at elbow or wrist (pain radiating proximal to distal)
  - Cervical radiculopathy: numbness or tingling in the UE
  - Cervical sprain/strain: neck pain without associated symptoms

### **Plan:**

- Rest, ice or heat (whichever feels better)
- Gentle ROM stretching
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Muscle relaxants if most likely diagnosis is spasm
  - Cyclobenzaprine
- Avoid narcotics/steroids

### **Patient Education:**

- Avoid aggravating activities
- Gentle stretching throughout ROM
- Modify posture
- Follow-up Actions:
  - Return in 2 weeks if no improvement
    - Consider physical therapy
  - If gross motor weakness is present then EVAC or transfer

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **LOW BACK PAIN**

### **Introduction:**

- LBP is among the most common medical complaints
- The exact cause is often difficult to diagnose and is often multifactorial
- LBP is the most frequent cause of lost work time in the under 45 population and is the 2nd most common cause of PCM visits

### **Subjective:**

- Signs and Symptoms:
  - Pain in the lower back with or without ROM
  - May present with radicular symptoms
    - Pain traverses the length of the affected nerve root
  - Radiation into the buttock may be present
  - Difficulty standing
- Focused History:
  - History of injury
  - History of back pain
  - Numbness or tingling in LE
  - Difficulty controlling bowel or bladder function
  - Radiation of pain

### **Objective:**

- Physical Exam:
  - Tenderness to palpation at the lumbar paraspinal muscles
  - Muscle spasm in the lumbar paraspinal muscles may be appreciable
  - ROM limited by pain
  - Straight leg raise:
    - Negative with lumbar strain if there is no sciatic nerve involvement
  - Motor and sensory deficits represent a more ominous problem
- Tools:
  - If no “red flag” symptoms, X-rays are not appropriate unless patient has had pain greater than 6 weeks

### **Assessment:**

- Differential:
  - Cauda Equina Syndrome: evidence of paralysis, bowel/bladder dysfunction
  - Disk herniation: unilateral radicular symptoms that extend below the knee
  - Infection: fever, chills, night sweats
  - Causes outside the spine: constipation, pancreatitis, kidney stones
  - Fracture: mechanism of injury

## **LOW BACK PAIN CONTINUED**

### **Plan:**

- If no “red flag” symptoms:
  - Rest, ice or heat (whichever feels better)
  - Gentle ROM stretching
  - NSAIDs
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
  - Muscle relaxants
- Avoid narcotics/steroids
- If “red flag” symptoms or gross motor weakness are present
  - EVAC or transfer immediately

### **Patient Education:**

- Back pain will likely resolve on its own (90% of the time) in 6 weeks
- Follow-up Actions:
  - Return in 2 weeks if no improvement
    - If no improvement in pain, physical therapy if available
    - If physical therapy unavailable, continue stretching, consider changing muscle relaxants or NSAID
  - Return at 6 weeks if still in pain
    - X-ray if available
    - Consider EVAC/transfer or orthopedics consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **CAUDA EQUINA SYNDROME**

### **Introduction:**

- Cauda Equina Syndrome occurs when there is an injury to the spine causing compression of the L2-5 and S1-5 nerve roots
- This is a medical emergency and must be considered in the differential of all low back pain patients
- Cauda Equina Syndrome is one of the primary reasons a complete neurological exam of the lower extremities is necessary

### **Subjective:**

- Signs and Symptoms:
  - Radicular pain and numbness in bilateral legs
  - Difficulty controlling bowel or bladder
    - Urinary retention/frequency/incontinence
    - Fecal incontinence
    - Erectile dysfunction
  - Paralysis
  - "Saddle" paresthesia/anesthesia
- Focused History:
  - Recent injury
  - History of spinal stenosis
  - Bowel or bladder problems following injury

### **Objective:**

- Physical Exam:
  - Low back exam
  - Neurologic exam focusing on the lower extremities
    - Unable to rise from chair unassisted
    - Inability to walk on heels or toes
    - Motor or sensory dysfunction
    - Loss of rectal tone
- Tools:
  - If X-rays available, lumbar films may be appropriate if they do not impede the timeline to EVAC or transfer, however they will be of limited benefit

### **Assessment:**

- Differential:
  - Guillain-Barré Syndrome: intact sensation is possible
  - Herniated nucleus pulposus: unilateral radicular symptoms
  - Multiple sclerosis: associated vision problems (diplopia)
  - Spinal cord tumor: positive Babinski, spasticity

**\* Cauda equina is very rare but serious**

## **CAUDA EQUINA SYNDROME CONTINUED**

### **Plan:**

- If suspicious for Cauda Equina Syndrome
  - Immediate EVAC or transfer
  - If immediate EVAC not possible
    - Consider Foley catheter
    - Supportive care while awaiting EVAC or transfer

### **Patient Education:**

- Patient to self-monitor for “red flag” symptoms
- Follow-up Actions:
  - Patient requires EVAC and surgical decompression

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **LUMBAR DISK HERNIATION**

### **Introduction:**

- Disk herniation: prolapse of an intervertebral disk through a tear in the surrounding annulus fibrosus
- The tear causes pain when the disk impinges on an adjacent nerve root, radiculopathy with paresthesias and a weakness in the distribution of the affected root results
- >80% of disk ruptures affect L5 or S1 nerve roots
- Etiology:
  - Disk herniation occurs when the intervertebral disk suffers a traumatic injury via poor lifting mechanics.
  - May also occur in patients with chronic low back pain or there may be no inciting event
- The symptomology associated with lumbar disk herniation is commonly referred to as Sciatica

### **Subjective:**

- Signs and Symptoms:
  - Back Pain
  - Weakness in LE
  - Numbness or tingling in affected leg (Sciatica)
  - Pain worse with sitting, coughing, sneezing
- Focused History:
  - Assess for “red flag” symptoms
  - History of injury

### **Objective:**

- Physical Exam:
  - Tenderness to palpation at the lumbar paraspinal muscles
  - Muscle spasm in the lumbar paraspinal muscles may be noted
  - ROM limited by pain
  - Straight leg raise will be positive with sciatic nerve involvement
  - Motor and sensory deficits represent a more ominous problem
- Tools:
  - If no “red flag” symptoms, X-rays are not appropriate unless patient has had pain greater than 6 weeks

### **Assessment:**

- Differential:
  - Cauda Equina Syndrome: evidence of paralysis, bowel/bladder dysfunction
  - Trochanteric bursitis: pain down lateral thigh, exquisite tenderness to palpation over the greater trochanter
  - Infection: fever, chills, night sweats
  - Causes outside the spine: constipation, pancreatitis, kidney stones
  - Fracture: mechanism of injury
  - Piriformis syndrome: "pseudo-sciatica"

## **LUMBAR DISK HERNIATION CONTINUED**

### **Plan:**

- If no “red flag” symptoms:
  - Rest, ice or heat (whichever feels better)
  - Gentle ROM stretching
  - NSAIDs
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
  - Muscle relaxants
- Avoid narcotics/steroids
- If red flag symptoms are present:
  - EVAC or transfer immediately

### **Patient Education:**

- Core strengthening exercises
- Daily stretching
- Back pain will likely resolve on its own (90% of the time) in 6 weeks
- Bed rest is contraindicated
  - Physical therapy and home exercises can improve posture and strengthen your back muscles to relieve the nerve root
- Follow-up Actions:
  - Return in 2 weeks if no improvement
    - If no improvement in pain, physical therapy if available
    - If physical therapy unavailable, continue stretching, consider changing muscle relaxants or NSAID
  - Return at 6 weeks if still in pain
    - X-rays if available
    - Consider EVAC/transfer/orthopedics consult

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** if red flag symptoms
- **Blue Directive:** if no red flag symptoms, **Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive:** if no red flag symptoms, **Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **SUBACROMIAL IMPINGEMENT SYNDROME**

### **Introduction:**

- This problem occurs when there is mechanical inflammation in the subacromial space
- Causes of impingement syndrome can be related to muscle strength imbalances, poor scapula control, rotator cuff tears, and subacromial bone spurs

### **Subjective:**

- Signs and Symptoms:
  - Pain with overhead motion
  - Nocturnal pain when sleeping on shoulder
  - Pain with internal rotation
  - Instability
  - Reduced ROM
  - Weakness
- Focused History:
  - Hand dominance
  - History of injury
  - History of throwing or racket sports
  - Occupation

### **Objective:**

- Physical Exam:
  - Atrophy in the infraspinatus/supraspinatus fossa
  - Tenderness to palpation over the anterolateral shoulder
  - Reduced ROM
  - “Rolled-forward” shoulder posture
  - Positive Neer and Hawkins tests
- Tools:
  - X-rays are likely not needed unless trauma is involved

### **Assessment:**

- Differential:
  - Rotator cuff pathology: gross weakness and history of injury
  - Biceps tendonitis: tenderness to palpation over biceps tendon
  - Trauma: history
  - AC joint arthritis: if pain over AC joint and with cross body adduction

### **Plan:**

- Gentle stretching throughout ROM without pain
- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition



## **SUBACROMIAL IMPINGEMENT SYNDROME CONTINUED**

### **Patient Education:**

- Avoid aggravating activities
- Take medications as directed
- Follow-up Actions:
  - Return in 2 weeks-if no improvement, physical therapy consult should be considered
  - If physical therapy unavailable or if physical therapy fails after 6 weeks of therapy, EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **SHOULDER DISLOCATION AND INSTABILITY**

### **Introduction:**

- A dislocation is a complete separation of the bone ends that normally articulate to form a joint
- 95% of all glenohumeral (shoulder) dislocations are anterior
- Shoulder dislocation occurs because of trauma or long-term overuse and abuse of the rotator cuff muscles (throwing/racquet athletes)

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Weakness
  - Numbness or tingling in affected extremity may suggest nerve injury
- Focused History:
  - Hand dominance
  - History of injury
  - History of throwing or racket sports
  - Occupation
  - Numbness, tingling, weakness in affected extremity

### **Objective:**

- Physical Exam:
  - Tenderness to palpation of affected area
  - Obvious deformity with humeral head anterior
  - Arm held in externally rotated position
    - If arm is being held internally rotated, consider posterior dislocation
  - Reduced ROM or unable to perform ROM
  - Positive apprehension/O'Brien tests
- Tools:
  - If available, X-rays to evaluate for possible fracture

### **Assessment:**

- Differential:
  - Shoulder subluxation: shoulder will have reduced spontaneously and no obvious signs may remain
  - Shoulder impingement: no deformity will be present
  - AC separation: trauma, ROM of shoulder reduced, tenderness to palpation over the AC joint but not shoulder
  - Rotator cuff pathology: there will likely be rotator cuff damage with a frank dislocation

## **SHOULDER DISLOCATION AND INSTABILITY CONTINUED**

### **Plan:**

- Evaluate neurovascular status before and after manipulation attempt
- Manual reduction with traction along the long-axis of the arm using various techniques
- Sling for the first 2-4 weeks after injury
- Gentle stretching throughout ROM once pain subsides
- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition

### **Patient Education:**

- Will likely have mild reduction in ROM and possible pain for 4-6 weeks following injury
- Avoid aggravating activities
- Follow physical therapy regimen as recommended
- Follow-up Actions:
  - Follow-up in 2 days; consider referral to physical therapy
  - If no improvement after 6 weeks of conservative therapy, EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ADHESIVE CAPSULITIS**

### **Introduction:**

- Also known as “frozen shoulder” and is described as a very painful shoulder that is triggered by minimal or no trauma
- Consists of three phases:
  - Inflammatory phase: 4-6 months (severe pain)
  - Freezing phase: 4-6 months (severe ROM loss, less pain)
  - Thawing phase: up to a year (gradual return of ROM)
- Adhesive capsulitis is seen commonly in patients 40 to 65 years old and is more common in women
- This is a self-limiting but can be a very debilitating disease

### **Subjective:**

- Signs and Symptoms:
  - Pain in the shoulder
  - Limited range of motion
  - Weakness
- Focused History:
  - Onset is very important in the development of adhesive capsulitis and can be helpful in its diagnosis
    - Insidious onset is more common
    - Traumatic onset of adhesive capsulitis is unlikely
  - Hand dominance
  - Occupation

### **Objective:**

- Physical Exam:
  - Tenderness to palpation about the shoulder
  - There will likely be no obvious cause
  - Limited external rotation and abduction is a common finding
  - Strength is usually normal but can be diminished when patient is in pain

### **Assessment:**

- Differential:
  - Impingement syndrome: active range of motion will be reduced but passive range of motion will be full
  - Shoulder dislocation: patient will be in a great deal of pain and will unlikely be able to perform range of motion
  - AC joint separation: history of trauma and cross body adduction will be painful
  - Tendinitis: history will likely indicate overuse

## **ADHESIVE CAPSULITIS CONTINUED**

### **Plan:**

- Do not vigorously manipulate shoulder
- Gentle range of motion exercises
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Refer to physical therapy if available

### **Patient Education:**

- Avoid aggravating activities
- Follow physical therapy regimen as recommended
- Follow-up Actions:
  - Weekly follow-up in clinic with range of motion evaluation and advancement of physical therapy exercises is appropriate
  - If no progress or worsening of symptoms in six weeks, EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **ACROMIOCLAVICULAR (AC) JOINT SEPARATION**

### **Introduction:**

- Also known as a shoulder separation, this injury occurs most frequently when the patient has fallen on the point of the shoulder or on an outstretched hand
- Severe sprains tear the coracoclavicular ligament, displacing the clavicle upward from the acromion

### **Subjective:**

- Signs and Symptoms:
  - Pain at the distal third of the clavicle
  - Pain with range of motion in the shoulder
  - Swelling may be noted depending on severity of injury
- Focused History:
  - Fall on point of shoulder/outstretched hand
  - Hand dominance
  - Occupation

### **Objective:**

- Physical Exam:
  - Tenderness to palpation at distal third of clavicle
  - Obvious deformity near distal third of clavicle
  - Reduced range of motion in shoulder
  - Swelling at distal third of clavicle
  - Severe pain with cross chest adduction.
- Tools:
  - X-ray of both shoulders (if available) may help characterize grade of sprain

### **Assessment:**

- Differential:
  - Impingement syndrome: active range of motion will be reduced but passive range of motion will be full
  - Shoulder dislocation: patient will be in a great deal of pain and will unlikely be able to perform range of motion
  - Tendinitis: history will likely dictate overuse

### **Plan:**

- Sling for the first 7-10 days after injury
- Gentle stretching throughout ROM once pain subsides
- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- If severe or if neurological compromise may need EVAC or transfer to orthopedics

## **ACROMIOCLAVICULAR (AC) JOINT SEPARATION CONTINUED**

### **Patient Education:**

- Avoid aggravating activities
- Follow physical therapy regimen as recommended
- Follow-up Actions:
  - Return for increased pain, ROM not improving
  - Return for follow-up in 5-7 days
  - If no improvement after 6 weeks of conservative therapy, EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **BRACHIAL PLEXUS INJURY**

### **Introduction:**

- The brachial plexus consists of several nerve roots intertwined with each other
  - Therefore an injury to the brachial plexus may not fit the typical symptom pattern of an individual nerve injury and may incorporate symptoms in several dermatomes.
- The most likely cause of injury to the brachial plexus is trauma ("stinger" or "burner")

### **Subjective:**

- Signs and Symptoms:
  - Most likely one-sided
  - Extremity pain in an unusual pattern
  - Numbness and tingling
  - Weakness
- Focused History:
  - History of trauma
    - Fall that forces head away from shoulder
  - Associated symptoms in hand, wrist or elbow

### **Objective:**

- Physical Exam:
  - Motor/sensory deficits in atypical pattern
    - Possibly affecting entire extremity
  - Diminished reflexes in affected limb
  - Weakness as compared to unaffected side
  - Scapular winging
  - Shoulder muscle atrophy

### **Assessment:**

- Differential:
  - Cervical radiculopathy: pain may radiate from or to neck and shoulder
  - Trauma: mechanism of action

### **Plan:**

- Assess for neck/head trauma
- Limit lifting
- Avoid aggravating activities
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition



## **BRACHIAL PLEXUS INJURY CONTINUED**

### **Patient Education:**

- Avoid aggravating activities
- Daily follow-up is essential
- Likely self-limiting problem
- Take meds as directed
- As pain decreases, weakness may increase initially
- Weakness will improve over time
- Follow-up Actions:
  - Follow up with patient daily until symptoms are resolved
    - If improving daily, continue to monitor
  - If no improvement in 5-7 days-EVAC/orthopedics consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **BICEPS TENDON RUPTURE**

### **Introduction:**

- Biceps tendon rupture most commonly occurs at the proximal long head of the biceps tendon
- Proximal long head of the biceps tendon is involved due to a long history of untreated impingement syndrome

### **Subjective:**

- Signs and Symptoms:
  - Sudden pain in the upper arm
  - Audible snap may be heard
  - Bulging of the muscle is possible
- Focused History:
  - Hand dominance
  - History of injury
  - History of throwing or racket sports
  - History of impingement syndrome
  - Occupation

### **Objective:**

- Physical Exam:
  - Bulge in the lower arm ("Popeye deformity") may be appreciated
    - May be accentuated by having flex biceps
  - Proximal defect may be palpated
  - Tenderness to palpation at bicipital groove
- Tools:
  - X-Ray if available may help rule out fracture

### **Assessment:**

- Differential:
  - Dislocation of the biceps tendon: tender to palpation over bicipital groove but no noted bulge in lower arm
  - Distal biceps rupture: pain and ecchymosis distally with high-riding muscle belly
  - Impingement syndrome: often can cause biceps rupture
  - Rotator cuff tear: often can coexist with biceps rupture

### **Plan:**

- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- RICE
- Refer to physical therapy if available
- EVAC/orthopedics

## **BICEPS TENDON RUPTURE CONTINUED**

### **Patient Education:**

- Mild loss of strength is possible in the affected arm
- There may be a lasting cosmetic defect if not repaired
- Follow-up Actions:
  - Daily follow up to monitor patient for pain control while awaiting EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **EPICONDYLITIS**

### **Introduction:**

- Lateral epicondylitis is also known as “Tennis Elbow” and medial epicondylitis is also known as “Golfer’s Elbow”
  - Lateral epicondylitis is far more common than medial epicondylitis
  - Treatment is the same for both
- Underlying mechanism of injury is chronic repetitive use causing microtrauma at the tendon insertion, although acute injuries can occur as well due to excessive loading

### **Subjective:**

- Signs and Symptoms:
  - Lateral epicondylitis
    - Pain with arm and wrist extended
    - Pain while shaking hands/turning jar lids, door knobs
  - Medial epicondylitis
    - Pain with repetitive pronation or flexion of the wrist
    - Pain with golfing, pitching, swimming
- Focused History:
  - Hand dominance
  - Recent trauma
  - Repetitive actions

### **Objective:**

- Physical Exam:
  - Tenderness to palpation over the affected epicondyle
  - Resisted wrist extension will elicit pain (lateral epicondylitis)
  - Resisted wrist flexion and wrist pronation will elicit pain (medial epicondylitis)
  - Pain with passive ROM can also elicit pain in either

### **Assessment:**

- Differential:
  - Cubital tunnel syndrome: compression of the ulnar nerve, paresthesia in ring and little fingers
  - Radial head fracture: history of trauma, tenderness to palpation over the radial head exacerbated by pronation/supination
  - Synovitis of the elbow: swelling, palpable fluid
  - Triceps tendonitis: tender to palpation above the olecranon

### **Plan:**

- Avoid aggravating activities
- Rest
- Ice/Heat (whichever relieves pain)
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
- Gentle stretching throughout ROM, eccentric strengthening exercises
- OTC tennis elbow bands are effective for pain relief but not recovery

## **EPICONDYLITIS CONTINUED**

### **Patient Education:**

- Medication and stretching regimen should be followed consistently
- Condition could require surgery if pain is not resolved in 6 months
- Wear tennis elbow brace daily
- Follow-up Actions:
  - Return in 2 weeks
  - If no improvement and only if condition is affecting ability to perform daily duties, consider occupational/physical therapy consult if available

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **CARPAL TUNNEL SYNDROME**

### **Introduction:**

- CTS is an entrapment neuropathy of the hand and wrist
- Mechanism of action:
  - If the tendons of the wrist become inflamed from overuse, they can swell, causing compression of the median nerve within the carpal tunnel
- Treatment should focus on the underlying cause of inflammation

### **Subjective:**

- Signs and Symptoms:
  - Pain, burning, tingling in median nerve distribution (thumb, index, middle fingers and palm of same area)
  - Aching pain may radiate into forearm
  - Worst at night
  - May get worse with ROM
- Focused History:
  - Hand dominance
  - Occupation
  - Hobbies
  - History of injury to wrist
  - Pregnancy (late stage problem)

### **Objective:**

- Physical Exam:
  - Sensation may be diminished in median nerve distribution as compared to the other side
  - Tinel/Phalen tests may be positive
  - Carpal compression test may be more sensitive and specific than Tinel or Phalen
  - Thenar eminence atrophy with longstanding CTS

### **Assessment:**

- Differential:
  - Cervical radiculopathy at C6: neck pain, numbness in the thumb and index fingers only
  - Diabetes: history
  - Ulnar neuropathy: numbness of the ring and little fingers
  - Hypothyroidism: other symptoms consistent with thyroid disease
  - Wrist osteoarthritis: history

### **Plan:**

- Avoid aggravating activities
- Volar wrist splint worn day and night until symptoms resolve
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Ergonomic modifications if work related

## **CARPAL TUNNEL SYNDROME CONTINUED**

### **Patient Education:**

- Medication regimen should be followed consistently
- Condition could require surgery if pain is not resolved in 6-12 months or if weakness is noted with daily activities
- Follow-up Actions:
  - Return in 4-6 weeks
  - If no improvement or if obvious thenar eminence atrophy is present, EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **BURSITIS**

### **Introduction:**

- Bursitis is inflammation of bursae that may be secondary to trauma, infection or arthritic conditions
- Bursa are membranous structures that overlie bony prominences where it is important to reduce friction
  - Common places for bursitis include:
    - Shoulder (subacromial bursitis)
    - Elbow (olecranon bursitis)
    - Hip (trochanteric bursitis)
    - Knee (prepatellar bursitis)
      - Prepatellar bursitis affects the anterior knee
      - Also known as “housemaid's knee” (caused by repetitive kneeling)
- Generally a benign problem but a hot, red, swollen, tender joint equals a septic joint until proven otherwise

### **Subjective:**

- Signs and Symptoms:
  - Swelling at the affected joint
  - Pain (likely to be more intense with injury or infection)
  - ROM limitation in some cases
  - Fever or constitutional symptoms indicate septic joint is possible
- Focused History:
  - Hand dominance
  - Trauma
  - Previous episodes
  - History of gout

### **Objective:**

- Physical Exam:
  - Vital signs: fever may be present
  - Obvious swelling
  - Signs of trauma
  - Erythema or associated pus indicates infection
  - Exquisite tenderness to palpation is generally an indicator of infection
- Tools:
  - X-ray to rule out possible fracture (if suspected)

### **Assessment:**

- Differential: The differential will be vary by region of involvement
  - Fracture: traumatic injury
  - Gout: history of similar episodes and diagnosis of gout
  - Rheumatoid arthritis: multiple joint involvement
  - Septic joint: evidence of infection-should always be considered with bursitis



## **BURSITIS CONTINUED**

### **Plan:**

- Non-infectious:
  - Avoid aggravating activities
  - NSAIDs
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
  - Elbow protector for olecranon bursitis
- Septic joint suspected:
  - EVAC or transfer for ortho consult
  - Start IV antibiotics

### **Patient Education:**

- Follow-up Actions:
  - Non-infectious
    - Return PRN for continued pain or lack of response to treatment
    - Modify activities as needed to avoid trauma to the elbow
    - May need aspiration if not improving with NSAIDs
  - Septic Joint
    - Will likely need hospitalization/IV antibiotics/surgical intervention

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** if septic joint
- **Blue Directive:** if non-infectious, **Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive:** if non-infectious, **Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **DE QUERVAIN'S TENOSYNOVITIS**

### **Introduction:**

- De Quervain's tenosynovitis occurs when there is inflammation of the tendons of the base of the thumb and lateral wrist
- This is commonly a problem of overuse

### **Subjective:**

- Signs and Symptoms:
  - Aching pain at the base of the thumb near the wrist
  - Pain worse with motion
  - Mild swelling may be noted
  - Most likely to be dominant hand
- Focused History:
  - Hand dominance
  - Pain with opening doors
  - Pain with opening jars
  - History of injury
  - New mom

### **Objective:**

- Physical Exam:
  - Swelling and tenderness to palpation over the lateral wrist at the base of the thumb
  - Crepitus may be noted with flexion/extension of the wrist
  - Positive Finklestein test

### **Assessment:**

- Differential:
  - Carpometacarpal joint arthritis: older patient, pain at base of thumb, positive shuck test
  - Ganglion cyst: mass will be present
  - Scaphoid fracture: history of injury, snuffbox tenderness to palpation

### **Plan:**

- Avoid aggravating activities
- Thumb spica splint
- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition

## **DE QUERVAIN'S TENOSYNOVITIS CONTINUED**

### **Patient Education:**

- If conservative treatment does not help, return
  - Can consider physical therapy or orthopedics consult if necessary
- Follow-up Actions:
  - Patient to follow up PRN for pain
  - If concerned for scaphoid fracture-EVAC or transfer
  - If no relief after 4-6 weeks of conservative treatment
    - Consider non-emergent orthopedics consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **SCAPHOID FRACTURE**

### **Introduction:**

- The scaphoid is the most commonly fractured bone of the wrist and is prone to poor outcomes even if identified properly
  - The scaphoid has a poor blood supply which can lend itself to avascular necrosis
- A fall on outstretched hand ("FOOSH") is the most common mechanism of injury

### **Subjective:**

- Signs and Symptoms:
  - Pain at base of the thumb
  - Grip strength weakening and pain with grip
  - Swelling
- Focused History:
  - Hand dominance
  - Mechanism of injury
  - History of wrist injury

### **Objective:**

- Physical Exam:
  - Swelling/ecchymosis
  - Anatomical snuffbox TTP
  - Positive shuck test (pain with axial loading)
  - Decreased ROM
  - Decreased grip strength
- Tools:
  - X-rays of hand and wrist at time of injury with films repeated in 2 weeks

### **Assessment:**

- Differential:
  - De Quervain's tenosynovitis: positive Finklestein test, insidious onset
  - Wrist arthritis: unlikely in a young otherwise healthy patient

### **Plan:**

- If mechanism of injury suggestive of scaphoid fracture (even if initial negative x-ray):
  - Avoid aggravating activities
  - Thumb spica splint
  - RICE
  - NSAIDs/narcotics for pain
  - EVAC or transfer
- If mechanism of injury less suspicious:
  - Thumb spica splint
  - RICE
  - NSAIDs
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition

## **SCAPHOID FRACTURE CONTINUED**

### **Patient Education:**

- Must wear thumb spica day and night until follow-up
- Failure to return in 2 weeks for follow-up if pain continues may lead to permanent disability
- Follow-up Actions:
  - Patient to return in 2 weeks
  - If still in pain, EVAC/orthopedics for MRI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **GANGLION CYST**

### **Introduction:**

- Ganglia are cystic swellings that are near or attached to tendon sheaths and joint capsules
- Cause is unknown; usually develop spontaneously in adults aged 20 to 50
- Occur most commonly on the back of the hands, especially on the dorsal aspect of the wrists
- Ganglia are the most common soft tissue tumors of the hand; non-cancerous

### **Subjective:**

- Signs and Symptoms:
  - Pain described as aching
  - Obvious swelling in affected area
  - May impede ROM
  - Size of tumor may increase with activity
- Focused History:
  - Impeding Activities of Daily Living (ADL's)
  - Impeding ability to perform duties
  - Pain

### **Objective:**

- Physical Exam:
  - A lump will likely be evident on examination
  - Texture of lump will be that of a small rubber ball
  - Will most commonly be on the back of the hand
  - Will transilluminate with penlight

### **Assessment:**

- Differential:
  - Bone tumor: consistency will not be rubbery
  - Soft-tissue tumor: does not transilluminate
  - Lipoma: larger, more commonly in the palm

### **Plan:**

- Reassurance of not causing significant distress
- Immobilization if patient is having pain
- Aspiration of dorsal ganglion cyst is treatment, however this should only be performed under direct observation of supervising Medical Preceptor
- Aspiration of a volar ganglion cyst is NEVER recommended-this is a surgical problem
- NSAIDs/Tylenol for pain
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition

## **GANGLION CYST CONTINUED**

### **Patient Education:**

- Once resolved, there is a high likelihood it will recur
- Patient should return to clinic if pain becomes unbearable or if symptoms impede ADLs
- Follow-up Actions:
  - Return in 2-4 weeks after immobilization if still in pain
  - Consider non-urgent orthopedics consult if available

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **FLEXOR TENDON INJURIES**

### **Introduction:**

- The flexor digitorum superficialis (FDS) and the flexor digitorum profundus (FDP) are the prime flexor tendons of the fingers
- The injured tendon can be identified by the location of inability to move the finger
- An injury to a flexor tendon anywhere on the hand can deny the ability to grip effectively and must be recognized for adequate treatment to occur and to avoid permanent disability

### **Subjective:**

- Signs and Symptoms:
  - Pain in the affected finger
  - Inability to flex the finger at PIP, DIP or both
- Focused History:
  - Hand dominance
  - Mechanism of injury
  - History of injury to hand or fingers
  - Numbness or tingling associated with injury

### **Objective:**

- Physical Exam:
  - Obvious deformity may be present
  - Ecchymosis
  - Swelling
  - AROM may be reduced
  - PROM should be intact
  - Test strength against opposite fingers
    - DIP and PIP (testing 2 different tendons)
- Tools:
  - Mainly a clinical diagnosis, but X-rays may show a small avulsion fracture

### **Assessment:**

- Differential:
  - Fracture: noted on X-rays if available
  - Dislocation: noted on X-rays or obvious deformity of the finger

### **Plan:**

- NSAIDs/narcotics for pain control
- Splint with wrist and hand in flexed position, but not with a fist
- EVAC or transfer
- This injury requires surgical intervention



## **FLEXOR TENDON INJURIES CONTINUED**

### **Patient Education:**

- Do not remove splint under any circumstances until directed to do so by orthopedic surgeon
- Follow-up Actions:
  - Return if pain/function does not improve

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **MALLET FINGER**

### **Introduction:**

- Mallet finger is an obvious injury of the distal finger resulting from the rupture of the extensor tendon at the DIP
- Incorrect recognition can lead to a permanent flexion deformity of the fingertip

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Inability to straighten the fingertip
- Focused History:
  - Hand dominance
  - History of injury to affected hand
  - Mechanism of injury

### **Objective:**

- Physical Exam:
  - DIP will be in obvious flexion
  - Patient unable to extend DIP
  - Dorsal DIP is tender to palpation
  - Mild swelling may be noted
- Tools:
  - This is mainly a clinical diagnosis, but X-rays may show a small avulsion fracture on dorsal aspect of affected finger

### **Assessment:**

- Differential:
  - Fracture/dislocation of DIP joint: noted on X-rays
  - Fracture of distal phalanx: noted on X-rays

### **Plan:**

- Pre-fabricated mallet finger splints are available
- Splint the DIP in extension, but allow the PIP to remain free
- Should remain in place day and night for 6 weeks followed by 4 weeks of nighttime splinting

## **MALLET FINGER CONTINUED**

### **Patient Education:**

- Must keep DIP in extension at all times:
  - If splint removed for cleaning, MUST keep finger in extension
  - If tip of the finger drops even once, the treatment period must start over again
  - If at end of 6 weeks there is no flexion deformity present, guarded active flexion may begin with continued nighttime splinting
- Follow-up Actions:
  - Weekly follow-up to evaluate for pressure sores and to ascertain if patient has been compliant
  - If there is no improvement after 6 weeks of consistent splinting, consider routine EVAC/orthopedics visit

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **MUSCLE STRAINS**

### **Introduction:**

- There are more than 600 muscles in the body, all of which can be injured by a variety of mechanisms
  - Strains of the lower extremities are exceedingly common injuries and can be caused by trauma or overuse

### **Subjective:**

- Signs and Symptoms:
  - Pain over the affected muscle
  - Pain with movement
- Focused History:
  - Able to bear weight if lower extremity
  - Activities of daily living (ADLs)
  - Numbness or tingling

### **Objective:**

- Physical Exam:
  - Tenderness to palpation at the insertion of affected muscle
  - Ecchymosis, swelling possible
  - Tenderness with AROM but none/less with PROM
  - Tenderness with resisted ROM
- Tools:
  - Consider X-rays if over bone or if mechanism suggests possible fracture

### **Assessment:**

- Differential:
  - Avulsion fracture: patient unable to perform AROM if avulsed tendon
  - Osteonecrosis of the associated joint: chronic dull ache
  - Bone tumor/cancer: pain at rest or at night, increased pain with weight bearing

### **Plan:**

- Avoid aggravating activities
- Gentle stretching throughout ROM
- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition

## **MUSCLE STRAINS CONTINUED**

### **Patient Education:**

- Avoid aggravating activities
- Return if pain increases, if numbness or tingling develop or if unable to bear weight or perform ADLs
- Follow-up Actions:
  - Return in 2 weeks
  - If no improvement, consider physical therapy consult if available
  - Consider X-rays if available
  - If no improvement after 6 weeks, consider routine EVAC or transfer for PCM/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **KNEE PAIN**

### **Introduction:**

- The knee is the largest joint in the body and is very commonly injured
- The knees are susceptible to injury from trauma, inflammation, infection, and degenerative changes

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Grinding, popping, locking, catching or giving way
  - Swelling
  - Pain worse with activity
- Focused History:
  - Mechanism of injury (plant and twist, etc.)
  - Patient activities (running, etc.)

### **Objective:**

- Physical Exam:
  - Tenderness to palpation
  - Swelling/effusion
  - Reduction in ROM
  - Deformity
- Tools:
  - Apply Ottawa knee rules as appropriate to determine if X-rays are needed

### **Assessment:**

- Differential:
  - Trauma: mechanism of injury, history
  - Meniscal injury: location of pain, mechanism of injury
  - Ligamentous injury: location of pain, instability, mechanism of injury
  - Bursitis: inflammation, swelling
  - Patellofemoral pain syndrome: anterior knee pain, chronic

### **Plan:**

- No suspected instability or fracture
  - Avoid aggravating activities
  - Gentle range of motion exercises
  - NSAIDs
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Instability or fracture suspected:
  - EVAC or transfer

## **KNEE PAIN CONTINUED**

### **Patient Education:**

- Avoid aggravating activities
- Follow medication regimen
- Return in 2 weeks if no improvement or sooner if worsening of symptoms
- Follow-up Actions:
  - Return in 2 weeks
    - If no improvement, consider physical therapy consult, X-rays if available
    - If no progress or worsening of symptoms in six weeks, consider routine EVAC/orthopedics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY**

### **Introduction:**

- The ACL's primary purpose is to prevent anterior translation of the tibia on the femur
- The ACL can be injured with contact or with non-contact injury and is common in skiing, football, basketball and soccer
- Plant and twist injuries as well as hyperextension injuries are common causes of an ACL injury

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Swelling about the knee
  - Difficulty with walking
  - Feeling of instability
- Focused History:
  - Trauma
  - Mechanism of injury
  - Ambulating after injury

### **Objective:**

- Physical Exam:
  - Limitation of ROM
  - Obvious edema (representative of possible hemarthrosis)
  - Positive Lachman's or positive anterior drawer test
  - Gait changes
- Tools:
  - X-rays if available may help rule out fracture, but may not be necessary

### **Assessment:**

- Differential:
  - Fracture: tenderness to palpation over bone
  - Meniscal injury: mechanism of injury, location of pain
  - Patellar subluxation: positive apprehension sign
  - PCL tear: positive sag test, posterior drawer test

### **Plan:**

- RICE
- Crutches, non-weight bearing until cleared by orthopedics
  - Can consider knee immobilizer
- NSAIDs/narcotics for pain
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Avoid aggravating activities
- ROM exercises when pain subsides
- Consider urgent but not emergent EVAC/orthopedics
  - Patient likely requires surgical intervention



## **ANTERIOR CRUCIATE LIGAMENT (ACL) INJURY CONTINUED**

### **Patient Education:**

- Long-term use of knee immobilizer is not recommended
- ROM exercises should begin ASAP once pain subsides
- Follow-up Actions:
  - Return in 24 hours to evaluate for pain control while patient awaits transport

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **COLLATERAL LIGAMENT INJURY**

### **Introduction:**

- Injuries to knee ligaments are common among the military population
- The most commonly injured ligament in the knee is the Medial Collateral Ligament (MCL)
- Injury to this ligament occurs when there is a valgus stress to a partially flexed knee
- The Lateral Collateral Ligament (LCL) may be injured with a varus stress to the knee

### **Subjective:**

- Signs and Symptoms:
  - Pain along the course of the ligaments
  - Swelling about the knee
  - Might be able to ambulate and possibly even return to play
  - Unlikely to have problems with instability
- Focused History:
  - Trauma
  - Mechanism of injury
  - Ambulating after injury

### **Objective:**

- Physical Exam:
  - ROM limitations
  - Gait changes
  - Tenderness to palpation along the course of the MCL/LCL
  - Swelling in the area of the MCL/LCL
  - Valgus stress tests the MCL
  - Varus stress tests the LCL
- Tools:
  - X-rays if available may help rule out fracture, but may not be necessary

### **Assessment:**

- Differential:
  - ACL injury: effusion of the knee
  - Fracture: tenderness to palpation over bone
  - Meniscal injury: mechanism of injury, location of pain
  - Patellar subluxation: positive apprehension sign
  - PCL tear: positive sag test, posterior drawer test

## **COLLATERAL LIGAMENT INJURY CONTINUED**

### **Plan:**

- RICE
- Crutches as needed
  - Weight bearing as tolerated
- NSAIDs/narcotics for pain
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Avoid aggravating activities
- ROM exercises when pain subsides

### **Patient Education:**

- Return as needed for increased pain, instability or inability to walk
- This will likely heal with time and is not likely to need surgical intervention
- Follow-up Actions:
  - Return in 24 hours to assess for pain control
  - Continue ROM exercises and progress to full weight bearing as tolerated

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **MENISCAL INJURY**

### **Introduction:**

- The meniscus is the shock absorber of the knee
- Injury to the meniscus can be either medial or lateral and often occurs with traumatic injuries in the younger population

### **Subjective:**

- Signs and Symptoms:
  - Pain with walking
  - Pain with squatting
  - Catching or locking
  - Pain along the joint line
- Focused History:
  - Trauma
  - Mechanism of injury
  - Trouble squatting
  - Able to extend knee fully

### **Objective:**

- Physical Exam:
  - Tenderness to palpation along the medial and/or lateral joint line
  - Occasionally, swelling will be noted
  - Positive McMurray, positive Thessaly, positive Apley
  - Must determine if patient can straighten leg
- Tools:
  - X-rays if available may help rule out fracture, but may not be necessary

### **Assessment:**

- Differential:
  - Bucket handle meniscal tear: unable to fully extend leg
  - ACL Injury: effusion of the knee
  - Fracture: tenderness to palpation over bone
  - Patellar subluxation: positive apprehension sign
  - PCL tear: positive sag test, posterior drawer test

### **Plan:**

- RICE
- Crutches as needed
- NSAIDs for pain
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- ROM exercises when pain subsides
- \*\* If patient is unable to straighten leg-EVAC/orthopedics consult (this likely represents a bucket-handle tear)

## **MENISCAL INJURY CONTINUED**

### **Patient Education:**

- Return as needed for increased pain, instability, inability to walk or if unable to fully extend leg
- This will likely heal with time and is not likely to need surgical intervention unless a bucket handle tear is suspected
- Follow-up Actions:
  - Return in 24 hours to assess for pain control
  - Continue ROM exercises and progress to full weight bearing as tolerated

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **PATELLOFEMORAL PAIN SYNDROME (PFPS)**

### **Introduction:**

- PFPS is characterized by diffuse, aching anterior knee pain
- This is not generally a result of acute injury and is considered an overuse problem
- PFPS is exacerbated by climbing stairs, running, kneeling, squatting or after prolonged sitting

### **Subjective:**

- Signs and Symptoms:
  - Pain in the anterior knee (“under” the kneecap)
  - Pain may also be referred to the medial or lateral patella and through the knee
  - Swelling is unlikely with PFPS
- Focused History:
  - Recent increase in exercise
  - History of trauma
  - Activities that cause pain

### **Objective:**

- Physical Exam:
  - Palpate the undersurface of the patella
  - Positive patellar apprehension sign
  - Positive patellar grind test
  - Crepitus noted with flexion

### **Assessment:**

- Differential:
  - Meniscal Injury: tenderness to palpation along the joint line, injury
  - ACL Injury: effusion of the knee
  - Fracture: tenderness to palpation over bone
  - Patellar subluxation: positive apprehension sign
  - PCL tear: positive sag test, posterior drawer test

### **Plan:**

- RICE
- NSAIDs for pain (short-term)
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
- Patellar stabilization brace
- OTC orthotics if evidence of pes planus
- Physical therapy is treatment of choice

## **PATELLOFEMORAL PAIN SYNDROME (PFPS) CONTINUED**

### **Patient Education:**

- Surgery should be an absolute last option
- Physical therapy is the treatment of choice and should be used to maximal benefit
- Follow-up Actions:
  - Return in 2 weeks to evaluate for pain
  - Continue physical therapy exercises for at least 6 weeks

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **PATELLAR TENDONITIS**

### **Introduction:**

- Also known as “Jumper’s Knee”
- Patellar tendonitis is a common disorder among young, active adults
- This is a problem of anterior knee pain
  - Differs from the anterior knee pain of PFPS, which is generally a deeper pain
- Pain is often noted at the end of exercise, but can also occur during exercise

### **Subjective:**

- Signs and Symptoms:
  - Anterior knee pain
  - Pain with exercise or at end of exercise
  - Pain with jumping
- Focused History:
  - Recent exercise
  - History of injury
  - Pain with movement

### **Objective:**

- Physical Exam:
  - Tenderness to palpation over the patellar tendon
  - Mild swelling over the knee
  - Increased heat
  - Soft-tissue crepitus

### **Assessment:**

- Differential:
  - Meniscal injury: tenderness to palpation along the joint line, injury
  - ACL injury: effusion of the knee
  - Fracture: tenderness to palpation over bone
  - Patellar subluxation: positive apprehension sign
  - PCL tear: positive sag test, posterior drawer test

### **Plan:**

- RICE
- NSAIDs for pain (acute)
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
- ROM exercises/eccentric strengthening (chronic)



## **PATELLAR TENDONITIS CONTINUED**

### **Patient Education:**

- Rest and avoidance of aggravating activities is treatment of choice
- Follow-up Actions:
  - Return in 2 weeks to evaluate for pain
  - Continue physical therapy exercises for at least 6 weeks

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **SHIN SPLINTS**

### **Introduction:**

- Repetitive running, jumping or other impact forces can lead to anterior lower leg pain
  - This is commonly referred to as shin splints
- Condition is thought to be a periosteal reaction in response to repetitive muscle contraction

### **Subjective:**

- Signs and Symptoms:
  - Pain in the anterior lower leg
    - Starts when activity begins
    - Lessens as activity continues
- Focused History:
  - Recent increase in exercise
  - Running uphill

### **Objective:**

- Physical Exam:
  - Severe localized pain over anterior compartment muscles
  - Tenderness to palpation of the tibial shaft is possible
- Tools:
  - X-rays unlikely to show anything
  - Bone scan more sensitive for stress fracture
  - MRI if bone scan unavailable

### **Assessment:**

- Differential:
  - Stress fracture: if suspicious, bone scan will show
  - Exercise induced compartment syndrome: pain that occurs during exercise and gradually wanes after exercise
  - Deep vein thrombosis (DVT): pain and swelling in the calf, risk factors
  - Trauma: contusion, ecchymosis may be present

### **Plan:**

- Stop running
- RICE
- NSAIDs for acute pain/Tylenol if stress fracture suspected
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Stretching/strengthening exercises

## **SHIN SPLINTS CONTINUED**

### **Patient Education:**

- Return to running gradually once pain-free
- Avoid deconditioning by cross-training
- Change shoes every 6 months or 500 miles
- Follow-up Actions:
  - Return in 2 weeks
  - If no improvement in pain consider:
    - Imaging
    - Routine EVAC/orthopedics consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **ACHILLES TENDON RUPTURE**

### **Introduction:**

- Achilles tendon ruptures are a problem seen in older athletes who participate in stop-and-go sports, including tennis, racquetball and basketball
- A complete rupture of the Achilles tendon requires surgical intervention for repair and must be recognized early for maximal benefit

### **Subjective:**

- Signs and Symptoms:
  - Sudden, severe distal calf pain
  - Described as a “gunshot wound” to the heel
  - Ability to walk will be impaired
- Focused History:
  - Mechanism of injury
  - Presence of a "pop"

### **Objective:**

- Physical Exam:
  - Swelling in lower calf
  - Antalgic gait
  - Palpable defect in the Achilles tendon
  - Positive Thompson test (most reliable within 48 hours of injury)

### **Assessment:**

- Differential:
  - Achilles tendonitis: pain in Achilles, but Thompson test is negative, pain is of gradual onset
  - DVT: no history of injury, risk factors, negative Thompson test
  - Ankle sprain: mechanism of injury, pain and swelling over malleoli
  - Medial gastrocnemius injury: Thompson test negative, pain in the calf

### **Plan:**

- Crutches (non-weight bearing)
- Splint foot in plantar flexion
- NSAIDs/narcotics for pain
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Urgent EVAC/orthopedics

## **ACHILLES TENDON RUPTURE CONTINUED**

### **Patient Education:**

- Remain on crutches (non-weight bearing) until cleared by orthopedics
- Do not remove splint
- Follow-up Actions:
  - Follow up daily to assess for pain control
  - Ensure patient remains non-weight bearing until EVAC

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ANKLE SPRAIN**

### **Introduction:**

- Most common ligament injured is the anterior talofibular ligament (ATFL)
- Most common mechanism of injury is an inversion/plantar flexion injury

### **Subjective:**

- Signs and Symptoms:
  - Localized pain and swelling over anterolateral ankle
  - Difficulty bearing weight
  - May complain of instability
- Focused History:
  - Mechanism of injury
  - Presence of numbness or tingling
  - History of previous ankle injuries

### **Objective:**

- Physical Exam:
  - Antalgic gait
  - Swelling, ecchymosis over lateral ankle
  - ROM limitations
  - Positive anterior drawer test
  - Positive subtalar tilt test
- Tools:
  - Ottawa ankle rules will help determine if x-rays are necessary

### **Assessment:**

- Differential:
  - Ankle fracture: X-rays will confirm
  - Medial ankle injury: deltoid ligament involvement (instability)
  - Achilles tendon rupture: posterior ankle swelling, positive Thompson test
  - Jones fracture: tenderness to palpation at the base of the 5th metatarsal

### **Plan:**

- RICE
- NSAIDs
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Weight bearing as tolerated
- Theraband exercises ("toe alphabet")
- Air Cast/stirrup splint
- X-rays if Ottawa rules dictate
- If fracture on x-rays, EVAC/orthopedics consult

## **ANKLE SPRAIN CONTINUED**

### **Patient Education:**

- ROM/strengthening exercises are key to avoiding future injuries
  - 10-20% of patients develop chronic instability
- Return in 2 weeks if no improvement in pain
- If pain is improving, continue ROM/strengthening exercises
- Follow-up Actions:
  - Return in 24 hours to assess for pain control
  - Return in 2 weeks; if no improvement in pain at 2 weeks, consider EVAC/orthopedics consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **PLANTAR FASCIITIS**

### **Introduction:**

- Plantar Fasciitis is pain at the site of the insertion of the plantar fascia into the calcaneus
- Risk factors for plantar fasciitis include:
  - Sedentary lifestyle, obesity, very high or low arches of the feet, wear of high heels and those whose occupations require long hours on their feet

### **Subjective:**

- Signs and Symptoms:
  - Pain at the bottom of the heel with weight bearing
  - Pain usually first thing in the morning
  - Pain improves throughout the day
  - May complain of feeling like something is stuck in their shoe
- Focused History:
  - Occupation
  - Pain worse in the morning with initial steps
  - Pain improves as the foot stretches out

### **Objective:**

- Physical Exam:
  - Tenderness to palpation at the insertion of the plantar fascia into the heel
  - Tenderness to palpation along the medial border of fascia (instep)
  - Mild swelling may be noted
  - Pressure with thumb at calcaneus while patient foot in dorsiflexion will elicit pain

### **Assessment:**

- Differential:
  - Traumatic rupture of the plantar fascia: ecchymosis, swelling over proximal plantar fascia
  - Sciatica: radiating pain from proximal source
  - Tarsal tunnel syndrome: paresthesias and numbness in bottom of foot
  - Calcaneal fracture: trauma (likely a fall from height)

### **Plan:**

- Avoid aggravating activities until pain-free
- Ice bottle massage (water bottle treatment) in the morning
- NSAIDs (short-term)
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Stretching exercises
- Air Heel



## **PLANTAR FASCIITIS CONTINUED**

### **Patient Education:**

- Avoid walking barefoot
- Take shorter steps
- Stretching frequently throughout the day
- Plantar fasciitis can take many months to heal if not compliant with treatment regimen
- Steroid injections in the feet can help but are performed by orthopedics and podiatry
- Follow-up Actions:
  - Return in 2 weeks
  - If no improvement, consider physical therapy consult
  - If physical therapy unavailable, consider routine EVAC if patient unable to perform daily duties

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **STRESS FRACTURE**

### **Introduction:**

- Stress fractures are small and result from repetitive force (overuse) of the affected area
- Occur most commonly in the metatarsals, often from running

### **Subjective:**

- Signs and Symptoms:
  - Pain in the affected area
  - Gradual onset of intermittent pain worsening with weight bearing
  - Swelling is possible
  - Pain may be relieved with rest
- Focused History:
  - Recent increase in exercise

### **Objective:**

- Physical Exam:
  - Localized bony tenderness
  - Swelling
  - Ecchymosis
- Tools:
  - X-rays unlikely to show anything
  - Bone scan more sensitive for stress fracture
  - MRI if bone scan unavailable

### **Assessment:**

- Differential:
  - Fracture: x-rays will confirm
  - Gout: erythema, swelling, past history
  - Morton's neuroma: pain, numbness or tingling in the intermetatarsal space
  - Bone tumor: pain at rest or at night

### **Plan:**

- Avoid aggravating activities
- RICE
- Tylenol (avoid NSAIDs - may impair bone healing)
- Non weight bearing until cleared by orthopedics
- Consider EVAC/orthopedics

### **Patient Education:**

- Stress fractures may take substantial time and rest to heal
- Follow-up Actions: return if pain continues after two weeks

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 2

# DERMATOLOGY PROTOCOLS

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### “ABCDE” RULE

- Asymmetry
- Border Irregularity
- Color Variegation
- Diameter > 6 mm
- Evolution

### CALLUSES and CORNS

#### Introduction:

- Circumscribed areas of hyperkeratosis at a site of intermittent pressure or friction
  - Usually over a bony prominence (heel, metatarsal heads)
- Calluses: more superficial, cover broad areas of skin
- Corns: deeper, more focal

#### Subjective:

- Signs and Symptoms:
  - Calluses: superficial lesions on skin, mostly located on hands and feet, usually asymptomatic but may become irritated
  - Corns: deeper lesions on skin, mostly located on hands and feet, frequently painful
- Focused History:
  - Shoe type
  - Activity level

#### Objective:

- Physical Exam:
  - Calluses: lack a central plug and have a more even appearance
    - After paring shows smooth translucent skin
  - Corns: sharply circumscribed keratinous plug, pea-sized or slightly larger, extends through most of underlying dermis
    - Soft Corns: between toes
    - Hard Corns: occur over prominent bony protuberances
    - After paring shows sharply outlined yellowish to tan translucent core

## **CALLUSES and CORNS CONTINUED**

### **Assessment:**

- Differential:
  - Bunion: valgus deformity of great toe
  - Metatarsalgia: pain on plantar surface of 2<sup>nd</sup> and 3<sup>rd</sup> metatarsals
  - Plantar wart: verrucous papule that may have pain with pressure
  - Molluscum contagiosum: pearly umbilicated papules
  - Furuncle: painful inflammatory swelling

### **Plan:**

- Manual Removal (Paring):
  - Nail file, emery board, pumice stone used immediately after bathing
- Keratolytics: salicylic acid treatments

### **Patient Education:**

- Cushioning and altering foot biomechanics can help prevent corns and help existing corns
- Pressure of affected surface should be reduced or redistributed
  - Pads, rings, moleskin can help
- Wear soft, well-fitting shoes where toes can move freely
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **INGROWN TOENAIL**

### **Introduction:**

- Incurvation or impingement of a nail border into its adjacent nail fold, causing pain
- Causes: tight shoes, abnormal gait, bulbous toe shape, excessive trimming of nail plate, or various congenital variations in nail contour
- Eventually, infection can occur along the nail margin (paronychia)

### **Subjective:**

- Signs and Symptoms:
  - Pain along corner of nail fold, or less commonly along its entire margin
- Focused History:
  - Shoe type
  - Activity level
  - History of nail trauma
  - Nail trimming

### **Objective:**

- Physical Exam:
  - Incurvation or impingement of a nail border into its adjacent nail fold

### **Assessment:**

- Differential:
  - Osteochondroma: benign bone tumor common in young adults, x-rays needed
  - Paronychia: infection of the periungual tissues that causes pain along the nail margin
  - Amelanotic melanoma: occurs in older adults, granulation tissue around toe
  - Tinea unguium (onychomycosis): lusterless, brittle, discolored, hypertrophic nails
  - Bunion: valgus deformity of great toe

### **Plan:**

- Mild cases:
  - Insert cotton between ingrown nail plate and painful fold
- Moderate cases or development of infection:
  - Nail excision
- Recurrent ingrown nail:
  - Consider destruction of adjacent nail matrix with phenol or trichloroacetic acid

## **INGROWN TOENAIL CONTINUED**

### **Patient Education:**

- Wear well-fitting shoes
- Warm Epsom salt soaks may help
- Proper nail trimming straight across nail
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 week or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PARONYCHIA**

### **Introduction:**

- Infection of the periungual tissues that causes pain along the nail margin
- Usually acute, but chronic cases may occur
- Causative organisms are usually *Staphylococcus aureus* or streptococci
  - Organisms enter through a break in the epidermis resulting from a hangnail, trauma to nail fold, loss of cuticle, or chronic irritation
- In toes, infection often begins as an ingrown toenail

### **Subjective:**

- Signs and Symptoms:
  - Pain along the nail margin
  - Can develop over hours to days
  - Discharge usually develops along nail margin and sometimes beneath nail

### **Objective:**

- Physical Exam:
  - Redness, swelling, pain along nail border
  - Possible discharge
  - Nail border tender to palpation
  - Gait abnormalities due to pain

### **Assessment:**

- Differential:
  - Osteochondroma: benign bone tumor common in young adults, x-rays needed
  - Amelanotic melanoma: occurs in older adults, granulation tissue around toe
  - Ingrown toenail: incurvation or impingement of a nail border into its adjacent nail fold, causing pain
  - Tinea unguium (onychomycosis): lusterless, brittle, discolored, hypertrophic nails
  - Bunion: valgus deformity of great toe

### **Plan:**

- Antistaphylococcal antibiotics:
  - Dicloxacillin or cephalexin
  - If CA-MRSA (community acquired methicillin-resistant *S. aureus*)
    - Consider trimethoprim-sulfamethoxazole
- Drainage:
  - If fluctuant swelling or visible pus, drain using a #11 scalpel blade between nail and nail fold (skin incision is unnecessary)
- Infected ingrown toenail:
  - Nail excision

## **PARONYCHIA CONTINUED**

### **Patient Education:**

- Warm compresses and Epsom salt soaks may help
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 week or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **SUBUNGUAL HEMATOMA**

### **Introduction:**

- Occurs when blood becomes trapped between the nail plate and the nail bed, usually as a result of trauma

### **Subjective:**

- Signs and Symptoms:
  - Pain and eventual separation of and temporary loss of the nail plate
- Focused History:
  - Trauma or injury history

### **Objective:**

- Physical Exam:
  - Swelling, ecchymosis and disruption of nail plate
  - Blood may be visible under nail
  - Nail may be tender to palpation

### **Assessment:**

- Differential:
  - Fracture: if trauma is suspected then obtain x-ray
  - Subungual melanoma: pigmented nail; painless, no trauma history
  - Subungual keratoacanthoma: tumor of finger and nail beds; presents suddenly with pain, swelling, inflammation, no trauma history

### **Plan:**

- Nail trephination:
  - Create a hole in the nail plate (escape for the blood) using an 18-gauge needle or electrocautery tool. Not effective >48hrs of initial trauma.

### **Patient Education:**

- Follow-up Actions:
  - Follow up for further evaluation if symptoms do not improve within 1-2 days

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ATOPIC DERMATITIS**

### **Introduction:**

- Also known as eczema
- Immune-mediated inflammation of the skin arising from an interaction between genetic and environmental factors
- Associated with personal or family history of allergic manifestations
- Diagnostic Criteria:
  - Pruritus
  - Typical morphology and distribution (flexural lichenification, hand eczema, nipple eczema, eyelid eczema in adults)
  - Onset in childhood
  - Chronicity

### **Subjective:**

- Signs and Symptoms:
  - Pruritic, exudative, lichenified eruption on face, neck, upper trunk, wrists, hands, as well as in the antecubital and popliteal folds
    - Flexural surfaces of elbows and knees often involved
  - Severe and prolonged itching
- Focused History:
  - Personal or family history of atopic disease
  - Triad of asthma, allergic rhinitis, atopic dermatitis

### **Objective:**

- Physical Exam:
  - Rough, red plaques
  - Chronic cases: dry, leathery and lichenified skin
  - Acute flares: widespread redness with weeping, either diffusely or in discrete plaques

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Staphylococcal infections: may exacerbate atopic dermatitis, consider during hyperacute, weepy flares of atopic dermatitis
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue

## **ATOPIC DERMATITIS CONTINUED**

### **Plan:**

- Medications:
  - Emollient/Moisturizer (Vanicream, Eucerin, etc.) needed for long term management and may be effective for mild exacerbation
  - Topical corticosteroids:
    - Start with a stronger steroid (triamcinolone) and then taper to a mild steroid (hydrocortisone)
- Systemic corticosteroids:
  - Only indicated for severe, acute exacerbations

### **Patient Education:**

- Gentle skin care:
  - Do not bathe more than once daily
  - Soap confined to armpits, groin, scalp, feet
  - Do not use washcloths or brushes
  - After rinsing, skin should be patted dry and within three minutes covered with a thin film of emollient (Aquaphor, Eucerin)
  - Avoid triggers: sweating, ointments, hot baths, animal dander, scratchy fabrics
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1-2 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PSORIASIS**

### **Introduction:**

- Benign, chronic inflammatory skin disease
  - Genetic basis + environmental triggers
- Hyperproliferation of epidermal keratinocytes combined with inflammation of the epidermis and dermis
- Affects 1-5% of the population worldwide
- Common triggers: trauma, infection, certain drugs (beta-blockers, ACE inhibitors, indomethacin), sunburns, emotional stress, alcohol consumption
- Peak onset: ages 16-22 and 57 to 60
- Obesity tends to worsen symptoms
- Several variants: most common is plaque type

### **Subjective:**

- Signs and Symptoms:
  - Lesions that appear as patches and plaques
  - Favored sites:
    - Scalp, palms/soles, and nails
    - Extensor surfaces: elbows, knees
  - Often asymptomatic, but itching can occur and be severe
  - Koebner phenomenon: injury or irritation of normal skin tends to induce lesions
  - Inflammatory arthritis develops in 5 to 30% of patients
- Focused History:
  - Family history is important

### **Objective:**

- Physical Exam:
  - Plaque psoriasis: red, sharply defined plaques covered with silvery and shiny scales
  - Fine stippling (pitting) of the nails

### **Assessment:**

- Differential:
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Atopic dermatitis: eczema; poorly demarcated plaques common on flexural surfaces
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Staphylococcal infections: may exacerbate atopic dermatitis, consider during hyperacute, weepy flares of atopic dermatitis
  - Pityriasis rosea: mild, acute inflammatory disease with an eruption of scaly lesions that follow cleavage lines on trunk

## **PSORIASIS CONTINUED**

### **Plan:**

- Never use systemic corticosteroids to treat mild flares of psoriasis
- Medications:
  - Mild, limited disease:
    - Emollients (calcitriol ointment)
  - May consider medium potency steroid while awaiting consult
    - Triamcinolone
  - High potency corticosteroid (preceptors only)
- UV Phototherapy (dermatologists only)

### **Patient Education:**

- Course tends to be chronic and unpredictable, and may be refractory to treatment
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1-2 weeks
  - If no improvement a referral may be needed

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PITYRIASIS ROSEA**

### **Introduction:**

- Mild, acute inflammatory disease with an eruption of scaly lesions
- More common in young adult females
- Most common between ages 10 and 35
- Peaks in cooler months
- Often is self-limited, lasts 6-8 weeks, and heals without scarring

### **Subjective:**

- Signs and Symptoms:
  - Herald patch: initial lesion, often larger, may precede general eruption by 1-2 weeks
    - Appears on trunk or proximal limbs
  - Eruption of oval scaly lesions follows within 7 to 14 days
  - Itching (usually mild, but occasionally severe)
- Focused History:
  - Concurrent household cases have been reported

### **Objective:**

- Physical Exam:
  - Oval, salmon-colored plaques up to 2 cm in diameter
  - Center of lesions have a crinkled or cigarette paper appearance
  - Lesions follow cleavage lines on trunk ("Christmas tree pattern")

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Staphylococcal infections: may exacerbate atopic dermatitis, consider during hyperacute, weepy flares of atopic dermatitis
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue

### **Plan:**

- Often requires no treatment
- Treatment only if patient is symptomatic:
  - Oral antihistamines
  - Topical steroids
  - Systemic treatment with prednisone for severe cases only (not routinely recommended)

## **PITYRIASIS ROSEA CONTINUED**

### **Patient Education:**

- Reassurance that the lesions will disappear on their own in 6-8 weeks
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 8 weeks or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **SEBORRHEIC DERMATITIS**

### **Introduction:**

- Inflammation of skin that has a high density of sebaceous glands (face, scalp, upper trunk)
- Acute or chronic papulosquamous dermatitis
- Does not usually affect extremities
- Incidence and severity affected by genetic factors, emotional or physical stress, and cold weather

### **Subjective:**

- Signs and Symptoms:
  - Scaly lesions located on scalp, face, chest, back, umbilicus, eyelid margins and body folds
  - Dry or greasy diffuse scaling
  - Pruritus (inconsistent finding)

### **Objective:**

- Physical Exam:
  - Dry scales or oily yellowish dandruff and underlying erythema

### **Assessment:**

- Differential:
  - Staphylococcal infections: may exacerbate atopic dermatitis, consider during hyperacute, weepy flares of atopic dermatitis
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue
  - Atopic dermatitis: eczema; immune-mediated inflammation of the skin; poorly demarcated plaques common on flexural surfaces

### **Plan:**

- Medications:
  - Treat according to location:
    - Scalp: shampoos containing zinc pyrithione, selenium sulfide or ketoconazole
    - Face: mild corticosteroid (hydrocortisone)
    - Non-hairy/intertriginous regions: low to medium potency steroid cream (hydrocortisone, triamcinolone)
    - Eyelid margins: gentle cleaning with baby shampoo using cotton swab



## **SEBORRHEIC DERMATITIS CONTINUED**

### **Patient Education:**

- Tendency for lifelong recurrences
- Individual outbreaks may last weeks, months, years
- Do not use steroid creams on or near the eyes
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2 weeks or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **FUNGAL INFECTIONS**

### **Introduction:**

- Tinea corporis or tinea circinata: body ringworm
- Tinea cruris: jock itch
- Tinea manuum: hand fungus
- Tinea pedis: foot fungus or “athlete’s foot”
- Tinea versicolor: pityriasis versicolor
- Tinea unguium (onychomycosis): trichophyton infection of fingernails or toenails

### **Subjective:**

- Signs and Symptoms:
  - Tinea corporis or tinea circinata: itching on affected areas of the body
  - Tinea cruris (jock itch): asymptomatic to severe itching in intertriginous areas, sparing scrotum
  - Tinea manuum and tinea pedis: asymptomatic scaling or itching, burning and stinging of interdigital web spaces, scaling palms and soles
  - Tinea versicolor: usually asymptomatic lesions on central upper trunk
  - Tinea unguium (onychomycosis): dystrophic nails (deformed and discolored white or yellow)

### **Objective:**

- Physical Exam:
  - Tinea corporis or tinea circinata: ring-shaped with an advancing scaly border and central clearing or scaly patches with a distinct border on affected areas of body
  - Tinea cruris: lesions peripherally spread, sharply demarcated with central clearing
  - Tinea manuum and tinea pedis: asymptomatic scaling, may progress to fissuring or maceration
  - Tinea versicolor: velvety, tan, pink or white macules that do not tan; central upper trunk frequent site, vary from 4-5 mm in diameter to large confluent areas
  - Tinea unguium (onychomycosis): lusterless, brittle, discolored, hypertrophic nails
- Basic Tools (if available):
  - KOH preparation or culture
    - May need nail clipping
  - “If it’s scaly, scrape it”

## **FUNGAL INFECTIONS CONTINUED**

### **Assessment:**

- Differential: (all have *negative* fungal studies)
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Atopic dermatitis: eczema; immune-mediated inflammation of the skin; poorly demarcated plaques common on flexural surfaces
  - Intertrigo: rash located in body folds caused by macerating effect of heat, moisture, and friction

### **Plan:**

- Generally treated with topical antifungals
- Exceptions:
  - Nails and/or extensive disease require systemic treatment
    - Onychomycosis: terbinafine
      - Prescribed by preceptor after positive culture and normal liver enzymes confirmed
  - Tinea versicolor:
    - Selenium sulfide or ketoconazole shampoo

### **Patient Education:**

- Moist skin favors growth of fungi: keep skin dry
- Talc or other drying powders may be useful
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2-4 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **INTERTRIGO**

### **Introduction:**

- Rash in body folds caused by macerating effect of heat, moisture, and friction
- More likely in obese individuals in humid climates

### **Subjective:**

- Signs and Symptoms:
  - Itching, stinging and burning in body folds

### **Objective:**

- Physical Exam:
  - Increased BMI may be noted
  - Fissures and erythema in body folds

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Atopic dermatitis: eczema; poorly demarcated plaques common on flexural surfaces
  - Impetigo: infection of the skin caused by staphylococci or streptococci; usually lesions located on face and exposed parts

### **Plan:**

- Medications:
  - Only after keeping area clean and dry
  - Antifungal cream
  - Mild steroid cream considered for *severe* itching

### **Patient Education:**

- In affected area:
  - Maintain hygiene
  - Keep dry
  - Recurrences are common
- Consider weight loss if appropriate
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **IMPETIGO**

### **Introduction:**

- Contagious and autoinoculable infection of the skin caused by staphylococci or streptococci
- Risk factors:
  - Moist environment
  - Poor hygiene
  - Chronic nasal carrier of staphylococci

### **Subjective:**

- Signs and Symptoms:
  - Erythematous lesions most likely located on face and exposed parts
- Focused History:
  - Personal or family history of staph/strep

### **Objective:**

- Physical Exam:
  - Lesions: macules, vesicles, bullae, pustules, honey-colored crusts
  - Superficial blisters filled with purulent material that rupture easily
- Tools (if available):
  - Culture + gram stain

### **Assessment:**

- Differential:
  - Intertrigo: rash in body folds caused by macerating effect of heat, moisture, and friction
  - Acute allergic contact dermatitis: pruritic lesions in a linear distribution
  - Contact dermatitis: acute or chronic dermatitis from direct skin contact with chemicals or allergens
  - Atopic dermatitis: eczema; immune-mediated inflammation of the skin; poorly demarcated plaques common on flexural surfaces
  - Pityriasis rosea: mild, acute inflammatory disease with an eruption of scaly lesions that follow cleavage lines on trunk

### **Plan:**

- Medications:
  - Topical agent for limited infections:
    - mupirocin (Bactroban)
  - Antibiotics:
    - Cephalexin
    - Doxycycline
    - CA-MRSA suspected:
      - Clindamycin
      - Trimethoprim-sulfamethoxazole

## **IMPETIGO CONTINUED**

### **Patient Education:**

- Wash affected area gently several times per day to remove crust
- Delay in treatment can cause cellulitis, lymphangitis, furunculosis, or hyper/hypo pigmentation
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 48 hours

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CONTACT DERMATITIS**

### **Introduction:**

- Acute or chronic dermatitis from direct skin contact with chemicals or allergens
- Types:
  - Irritant contact dermatitis: 80% due to excessive exposure to irritants (soaps, detergents, organic solvents)
  - Allergic contact dermatitis: most common causes are poison ivy/oak, topical antimicrobials, anesthetics, hair care products, jewelry (nickel), rubber, essential oils, adhesive tape

### **Subjective:**

- Signs and Symptoms:
  - Itching, burning, and stinging may be severe
  - Location will often suggest cause:
    - Scalp: hair dyes, shampoos
    - Face: creams, cosmetics, soaps
- Focused History:
  - Occupational exposures
  - Outdoor activities
  - New body or hair products

### **Objective:**

- Physical Exam:
  - Allergic contact dermatitis: acute phase characterized by tiny vesicles, weepy and crusted lesions
  - Resolving or chronic contact dermatitis: scaling, erythema, possibly thickened skin
  - Lesions can be erythematous macules, papules and vesicles
  - Affected area may be hot, swollen and complicated by infection
  - Typical pattern: linear streaked vesicles

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: less pruritic, frequent scalp and face involvement, greasy and scaly lesions, quick response to therapy
  - Staphylococcal infections: may exacerbate atopic dermatitis, consider during hyperacute, weepy flares of atopic dermatitis
  - Psoriasis: chronic inflammatory disease; presents with sharply demarcated plaques with silvery scales; favors extensor surfaces
  - Atopic dermatitis: eczema; poorly demarcated plaques common on flexural surfaces
  - Tinea corporis or tinea circinata: ring-shaped with an advancing scaly border and central clearing

## **CONTACT DERMATITIS CONTINUED**

### **Plan:**

- Removal of irritant
- Medications:
  - Topical corticosteroids (mid to high potency)
    - Use for localized involvement (except for face)
    - Topical steroids do not work well on vesicular, weepy lesions
- Systemic corticosteroids for severe cases:
  - Prednisone

### **Patient Education:**

- Poison Oak/Ivy: prompt removal of causative oil with liquid dishwashing soap within 10 minutes after exposure
- Allergic Contact Dermatitis: 2-3 weeks for full resolution
- Mainstay of prevention:
  - Identification of agent causing the dermatitis
  - Avoidance of exposure
  - Use of protective clothing and gloves
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 3-5 days

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **ACNE VULGARIS**

### **Introduction:**

- The most common of all skin conditions
- Hallmark: open and closed comedones
- More common in younger persons (puberty) and more severe in males
- Pathology:
  - Disease is activated by androgens in those that are genetically predisposed
  - Plugging of the infundibulum of the follicles, retention of sebum, overgrowth of *Propionibacterium acnes* leading to inflammation
- Severity varies: purely comedonal < inflammatory acne < cysts/nodules

### **Subjective:**

- Signs and Symptoms:
  - Mild soreness, pain or itching
  - Location: face, neck, upper chest, back, and shoulders
- Focused History:
  - Hyperandrogenism
    - Hirsutism
    - Irregular Menses
    - History of polycystic ovary syndrome (PCOS)

### **Objective:**

- Physical Exam:
  - Comedones: tiny, flesh-colored, non-inflamed bumps that give the skin a rough texture and appearance
    - Open comedones (blackheads)
    - Closed comedones (whiteheads)
  - Presentation severity varies:
    - Purely comedonal
    - Inflammatory papules/pustules
    - Cysts/nodules
    - Scarring

### **Assessment:**

- Differential:
  - Herpes simplex: grouped vesicles with positive viral culture
  - Acne rosacea: chronic face disorder with flushing and erythema; absence of comedones
  - Folliculitis: presents in specific hairy areas
  - Erysipelas: superficial form of cellulitis caused by beta-hemolytic streptococci on central face
  - Angioedema: involvement of deeper subcutaneous tissue with swelling of the lips, eyelids, palms, soles, and genitalia

## **ACNE VULGARIS CONTINUED**

### **Plan:**

- Medications:
  - Topical retinoids (tretinoin)
  - Benzoyl peroxide
  - Antibiotics:
    - Mild acne:
      - Topical antibiotics - erythromycin or clindamycin
    - Moderate acne:
      - Oral antibiotics - tetracycline, doxycycline, minocycline
  - Severe acne: isotretinoin (dermatologists only)

### **Patient Education:**

- Don't manipulate the lesions
- It will take 4-6 weeks to see improvement and old lesions may take months to fade (additional time needed for the back and chest)
- Avoid topical exposure to oils, cocoa butter, greases
- Low glycemic diet that results in weight loss has been reported to improve acne in males aged 18-25
  - Suggests possible common pathway (insulin resistance)
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 3 months or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ROSACEA**

### **Introduction:**

- Chronic facial disorder; pathogenesis unknown
- Components:
  - Neurovascular (erythema, telangiectasias, flushing)
  - Acneiform (papules, pustules)
  - Glandular (rhinophyma or hyperplasia of the soft tissue of the nose)

### **Subjective:**

- Signs and Symptoms:
  - Flushing of cheeks, nose, chin, at times the entire face
  - Exacerbation due to heat, hot drinks, spicy food, sunlight, exercise, alcohol, emotions, menopause
  - May have burning and stinging with episodes

### **Objective:**

- Physical Exam:
  - Erythema, dilated vessels on cheeks (mild form)
  - Inflammatory papules may evolve into pustules
  - Associated seborrhea may be found

### **Assessment:**

- Differential:
  - Lupus: butterfly pattern central face; no pustules
  - Acne vulgaris: erythematous lesions, open and closed comedones present
  - Folliculitis: presents in specific hairy areas
  - PFB: irritation of the skin due to ingrowing beard hairs
  - Erysipelas: superficial form of cellulitis caused by beta-hemolytic streptococci on central face

### **Plan:**

- Medications:
  - Topical:
    - Metronidazole
    - Clindamycin 1%
    - Azelaic acid (under preceptor guidance)
  - Systemic:
    - Minocycline or doxycycline

## **ROSACEA CONTINUED**

### **Patient Education:**

- Usually a life-long condition
- Avoid triggers (especially alcohol)
- Wear broad-spectrum sunscreen
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 month or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **FOLLICULITIS**

### **Introduction:**

- Folliculitis: bacterial infection of hair follicles
- Multiple causes:
  - Most common: *Staphylococcal aureus* infections
  - “Hot tub folliculitis” caused by *Pseudomonas*
  - Nonbacterial: friction and oils (occlusion, perspiration, rubbing)
  - Steroid usage
- Abscess formation is a major complication

### **Subjective:**

- Signs and Symptoms:
  - Itching and burning in hairy areas
- Focused History:
  - Recent antibiotic use
  - Hot tub/pool usage
  - Use of steroids
  - Tight jeans or heavy fabrics

### **Objective:**

- Physical Exam:
  - Superficial pustule or inflammatory nodule surrounding a hair follicle
- Tools:
  - Gram stain and culture if feasible

### **Assessment:**

- Differentiate between bacterial and nonbacterial folliculitis (history, gram stain and culture)
- Differential:
  - Acne vulgaris: erythematous lesions, open and closed comedones present
  - PFB: irritation of the skin due to ingrowing beard hairs
  - Erysipelas: superficial form of cellulitis caused by beta-hemolytic streptococci on central face
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue
  - Herpes simplex: grouped vesicles with positive viral culture

## **FOLLICULITIS CONTINUED**

### **Plan:**

- Medication:
  - Topical:
    - Clindamycin
    - Benzoyl Peroxide
  - Systemic:
    - Antistaphylococcal antibiotics if infection involves scalp or densely hairy areas
      - Cephalexin if MSSA
      - Clindamycin or trimethoprim/sulfamethoxazole if MRSA
    - Ciprofloxacin to cover *Pseudomonas* (severe cases only; mild cases will self-resolve)

### **Patient Education:**

- Prevention:
  - Correct predisposing causes (oils, friction)
  - Water treatment (hot tubs, pools, etc.)
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 week

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PSEUDOFOLLICULITIS BARBAE (PFB)**

### **Introduction:**

- Irritation of the skin due to beard hairs that penetrate the skin before leaving the hair follicle or that leave the follicle and curve back into the skin, causing a foreign-body reaction
- Predominately affects black men

### **Subjective:**

- Signs and Symptoms:
  - Irritated lesions of the beard and neck
- Focused History:
  - Shaving technique

### **Objective:**

- Physical Exam:
  - Small papules and pustules around beard and neck

### **Assessment:**

- Differential:
  - Acne vulgaris: erythematous lesions, open and closed comedones present
  - Erysipelas: superficial form of cellulitis caused by beta-hemolytic streptococci on central face
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue
  - Herpes simplex: grouped vesicles with positive viral culture
  - Folliculitis: infected hair follicle; symptoms worse

### **Plan:**

- Warm compresses
- Manual removal of ingrown hairs with needle or tweezers
- Medications:
  - Mild symptoms:
    - Topical mild steroid (hydrocortisone)
    - Topical antibiotics (clindamycin)
    - Benzoyl peroxide
    - Tretinoin (Retin-A)
  - Moderate to severe symptoms:
    - Oral doxycycline or erythromycin

## **PSEUDOFOLLICULITIS BARBAE (PFB) CONTINUED**

### **Patient Education:**

- Proper shaving techniques:
  - Make sure beard is thoroughly wet
  - Shave with the grain in the direction of the beard growth
  - Use quality shaving cream
  - Use a quality razor and change it often
- Shaving waiver is often appropriate. See below.
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 3-5 days

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

Shaving Waivers are very commonly given. Be sure to educate the member on the regulations to which they must adhere. See example verbiage below:

Member has a medical condition that precludes them from conforming to AFI 36-2903 beard length. Member may be required to shave closely due to operational requirements, at the discretion of the commander, or for any training requirements that include, but are not limited to, proper wear of gas masks, respirators, and occupational masks. Member must be able to pass a gas mask fit test. If the member is having significant or recurrent breakouts or scarring from shaving, re-evaluation at the Medical Treatment Facility is recommended. Keep this profile in possession at all times. Make a follow-up appointment for re-evaluation prior to expiration date. This waiver expires in five years.



## **URTICARIA and ANGIOEDEMA**

### **Introduction:**

- Eruptions of evanescent wheals or hives
- Results from stimuli on an immunologic or nonimmunologic basis
  - Most common immunologic mechanism mediated by IgE
- Acute urticaria most likely caused by foods, infections, and medications
- Most incidents are acute and self-limited (1-2 weeks)
- Chronic urticaria: > 6 weeks, may be autoimmune
- Angioedema: involvement of deeper subcutaneous tissue with swelling of the lips, eyelids, palms, soles, and genitalia
  - The patient with angioedema involving the lips and mouth must be immediately assessed for signs of airway compromise

### **Subjective:**

- Signs and Symptoms:
  - Itchy red swellings
  - Individual lesions in true urticaria last <24 hours, often only 2-4 hours
- Focused History:
  - Exposure history: foods, infections, medications

### **Objective:**

- Physical Exam:
  - Swellings can be a few millimeters to many centimeters
  - Morphology of lesions may vary over time, results in geographic or bizarre patterns
  - Dermatographism may be present
    - Appearance of urticarial wheal after focal pressure in the distribution of the pressure
    - Example: scratching the skin

### **Assessment:**

- Differential:
  - Papular urticaria: from insect bites, central punctum can be seen
  - Hereditary angioedema: positive family history, or family history of gastrointestinal or respiratory problems
  - Urticarial vasculitis: serum sickness - severe drug reaction
  - Drug eruption: widespread, symmetric erythematous eruption usually caused by antibiotics and anticonvulsants
  - Cellulitis: diffuse, spreading infection of the dermis and subcutaneous tissue; smaller, localized area

## **URTICARIA and ANGIOEDEMA CONTINUED**

### **Plan:**

- Medications:
  - First generation antihistamines are sedating:
    - Hydroxyzine, diphenhydramine
  - Second generation antihistamines are less sedating and should be used 1st line:
    - Fexofenadine, cetirizine, loratadine
  - H2-blockers may be added as adjunct therapy (e.g., ranitidine)
  - Systemic corticosteroids may be needed if severe and diffuse
    - Not effective in chronic urticaria
- Prepare for ACLS intervention if there are signs of airway compromise

### **Patient Education:**

- Avoid inciting factors
- Follow-up Actions:
  - Frequent monitoring of airway patency is critical throughout treatment
  - Return for further evaluation if symptoms do not improve within 1 day

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**
- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** if airway compromise

## **ERYSIPELAS**

### **Introduction:**

- Superficial form of cellulitis caused by beta-hemolytic streptococci
- Central face frequently involved (nose)
- Unless promptly treated, local extension of the infection can occur (abscess formation, scarlet fever, pneumonia, skin necrosis, etc.) and rarely systemic toxicity.

### **Subjective:**

- Signs and Symptoms:
  - Bright red spot that progresses to a larger plaque
  - Pain, malaise, chills, fever
  - Frequently located on nose

### **Objective:**

- Physical Exam:
  - Vital signs: may note fever
  - Bright red spot that progresses to a tense, sharply demarcated, glistening, smooth, hot plaque
  - Lesion can be edematous and can advance within hours
  - Vesicles or bullae may occasionally develop

### **Assessment:**

- Differential:
  - Acne vulgaris: erythematous lesions, open and closed comedones present
  - Acne rosacea: chronic face disorder with flushing and erythema; absence of comedones
  - Lupus: butterfly pattern of erythema across nose
  - PFB: irritation of the skin due to ingrowing beard hairs

### **Plan:**

- Medications:
  - Antibiotics:
    - Penicillin VK
    - Dicloxacillin
    - PCN allergic: clindamycin or erythromycin
  - IV antibiotics may be necessary if severe (fevers/chills)

### **Patient Education:**

- Monitor for spreading or for systemic symptoms
- Follow-Up Actions:
  - Follow closely daily, EVAC or transfer if systemic or worsening symptoms

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **CELLULITIS**

### **Introduction:**

- Diffuse, spreading infection of the dermis and subcutaneous tissue
- Most commonly due to gram-positive cocci, especially group A beta-hemolytic streptococci and *S. aureus*

### **Subjective:**

- Signs and Symptoms:
  - Timeline:
    - Begins as a small patch, expands over hours
    - Onset to presentation is usually 6 to 36 hours
  - Swelling, erythema, pain
  - May progress to chills, fever, malaise
  - Rare septicemia may develop, resulting in hypotension followed by shock

### **Objective:**

- Physical Exam:
  - Edematous, expanding, erythematous, warm plaque with or without vesicles or bullae
- Tools:
  - Labs:
    - CBC may show leukocytosis (increased WBC count)
    - Wound/blood cultures may be positive

### **Assessment:**

- Differential:
  - Life threatening conditions if on lower extremities:
    - Deep venous thrombosis (DVT): large, painful swollen lower extremity, history of stasis
    - Necrotizing fasciitis: toxic appearance, bullae, crepitus or anesthesia of involved skin
  - Acute, severe contact dermatitis: itching instead of pain
  - Furuncle (boil): deep-seated infection (abscess); presents with extremely painful swelling
  - Staphylococcal infections: hyperacute, weepy painful lesions

### **Plan:**

- Medications:
  - Oral antibiotics that provide coverage of *Streptococcus* and *Staphylococcus*
  - Mild: dicloxacillin or cephalexin
  - CA-MRSA: trimethoprim/sulfamethoxazole or clindamycin
- Severe symptoms:
  - May need IV antibiotics
  - EVAC or transfer

## **CELLULITIS CONTINUED**

### **Patient Education:**

- Draw a line around lesion and have patient watch for possible spreading
- Follow-up Actions:
  - Follow these patients very closely - bring back every 1-2 days to check on symptoms and outline of lesion
  - Follow-up precautions: temp over 100.4 F despite treatment, spreading of lesion, development of severe pain or numbness

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **WARTS**

### **Introduction:**

- Verrucous papules anywhere on skin or mucous membranes
- Types: common, plantar, genital
- Caused by human papillomaviruses (HPV)
- Prolonged incubation period (2-18 months)
- Spontaneous “cures” and “recurrences” are frequent

### **Subjective:**

- Signs and Symptoms:
  - Usually no symptoms (pain, itching)
  - Plantar warts may have tenderness with pressure and resemble corns/calluses
  - Anogenital warts may have itching
  - Periungual warts may be dry, fissured and may resemble a hangnail

### **Objective:**

- Physical Exam:
  - Papules usually no larger than 1 cm in diameter
  - Plantar warts may resemble corns/calluses
  - Periungual warts may be dry, fissured and may resemble a hangnail

### **Assessment:**

- Differential:
  - Molluscum contagiosum: pearly umbilicated papules
  - Callus: area of hyperkeratosis on hands and feet; superficial lesions
  - Epidermal inclusion cyst: common, benign growths of the upper portion of the hair follicle; expresses foul-smelling material
  - Lipoma: located in subcutaneous fat, no punctum, not painful
  - Actinic keratosis: macules and papules on sun-exposed areas; feels like sandpaper

### **Plan:**

- Treatment aimed at producing “wart-free intervals”
  - No treatment can guarantee remission or prevent recurrences
- First-line: cryotherapy with liquid nitrogen (use caution with periungual warts)
- Second-line:
  - Salicylic acid products
  - Occlusion products (duct tape)
- Genital Warts: imiquimod

## **WARTS CONTINUED**

### **Patient Education:**

- Discuss prevention of genital warts with the HPV immunization if applicable
- Warts are very hard to eradicate and multiple treatments will be necessary
- Follow-up Actions:
  - Return for further evaluation if symptoms not improved within 1 month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **MOLLUSCUM CONTAGIOSUM**

### **Introduction:**

- Clusters of smooth, flesh-colored, or pearly umbilicated papules
- Caused by a poxvirus
- Lesions are auto-inoculable and spread by wet skin-to-skin contact
  - May also spread via fomites (towels, bath sponges, etc.)
- In adults lesions may be spread by sexual contact

### **Subjective:**

- Signs and Symptoms:
  - Small papules on face, lower abdomen, genitals
- Focused History:
  - Sexual history

### **Objective:**

- Physical Exam:
  - Dome-shaped, waxy papules 2-5 mm in diameter that are umbilicated
  - Lesions at first are firm, solid, flesh-colored
  - With maturity become soft, whitish, or pearly gray

### **Assessment:**

- Differential:
  - Callus: area of hyperkeratosis on hands and feet; superficial lesions
  - Epidermal inclusion cyst: common, benign growths of the upper portion of the hair follicle; expresses foul-smelling material
  - Lipoma: located in subcutaneous fat, no punctum, not painful
  - Actinic keratosis: macules and papules on sun-exposed areas; feels like sandpaper
  - Warts: verrucous papules anywhere on skin or mucous membranes caused by HPV virus; usually asymptomatic

### **Plan:**

- Cryotherapy with liquid nitrogen
- Resistant lesions: imiquimod

### **Patient Education:**

- Individual lesions persist for about 2 months
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1-2 months

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **SCABIES**

### **Introduction:**

- Infestation with *Sarcoptes scabiei*
- Usually acquired by sleeping with or in the bedding of an infested individual or close contact
- Entire household may be affected
- Facility-associated scabies is increasingly common, primarily in long-term care facilities
- Infestation usually spares head/neck (except for infants, elderly, and in AIDS patients)

### **Subjective:**

- Signs and Symptoms:
  - Generalized severe itching
  - Lesions are generalized excoriations and “burrows” in web spaces, heels, palms, wrists, elbows, around the axillae, and on the breasts of women
- Focused History:
  - Contacts and living quarters

### **Objective:**

- Signs and Symptoms:
  - Generalized severe itching
  - Lesions are generalized excoriations and “burrows” in web spaces, heels, palms, wrists, elbows, around the axillae, and on the breasts of women

### **Assessment:**

- Differential:
  - Pediculosis: located on scalp, trunk, pubic areas
  - Bedbug bites: papular urticaria in clusters; can see in crevices of beds or furniture
  - Flea bites: papular urticaria sporadically in exposed areas
  - Acute allergic contact dermatitis: pruritic lesions in a linear distribution
  - Herpes simplex: grouped vesicles with positive viral culture

### **Plan:**

- Treatment aimed at killing scabies mites and controlling the associated dermatitis
- Medications:
  - Scabies mites: permethrin 5% cream
  - Dermatitis: triamcinolone 0.1%

## **SCABIES CONTINUED**

### **Patient Education:**

- Treatment aimed at all infected persons in a family/group or re-infestations will occur
- Patients will continue to itch for several weeks after treatment
- Generalized measures:
  - Bedding/clothing should be cleaned and set aside for 14 days in plastic bags
    - High heat (60 degrees Celsius) required
- Follow-up Actions:
  - Return for further evaluation if symptoms not improved within 2 weeks (after two applications of permethrin)

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **PEDICULOSIS**

### **Introduction:**

- Parasitic infestation of the scalp, trunk, pubic areas
  - Pediculosis capitis (head louse): may be transmitted through shared hats, combs
  - Pediculosis corporis (body louse): common in overcrowded dwellings with inadequate hygiene facilities
  - Pediculosis pubis (pubic louse or “crabs”): may be sexually transmitted

### **Subjective:**

- Signs and Symptoms:
  - Intense itching
  - Scratching may result in deep excoriations
- Focused History:
  - Exposures
  - Contacts

### **Objective:**

- Physical Exam:
  - Nits on hair shafts; lice on skin or clothes
  - Head lice: small nits on scalp hairs close to skin
    - Easiest to see above ears and nape of neck
  - Pubic lice:
    - Occasionally generalized, especially in hairy individuals, may be found on eyelashes/scalp region
    - Occasionally grey-blue macules on inner thighs/lower abdomen

### **Assessment:**

- Differential:
  - Scabies: infestation with *Sarcoptes scabiei*; excoriations and burrows in web spaces; spares head/neck
  - Bedbug bites: papular urticaria in clusters; can see in crevices of beds or furniture
  - Flea bites: papular urticaria sporadically in exposed areas
  - Acute allergic contact dermatitis: pruritic lesions in a linear distribution
  - Herpes simplex: grouped vesicles with positive viral culture

### **Plan:**

- Medications:
  - Permethrin 1% cream rinse (Nix) for pubic, head lice
  - Permethrin 5% cream for body lice
  - Permethrin resistance is common; ask preceptor for alternate medication if not improved within 2 weeks

## **PEDICULOSIS CONTINUED**

### **Patient Education:**

- General measures:
  - Dispose of infected clothing
  - Address social situation
  - For pubic lice treat sexual contacts
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **FURUNCULOSIS**

### **Introduction:**

- Furuncle (boil) is a deep-seated infection (abscess) caused by *S. aureus* involving the entire hair follicle and adjacent subcutaneous tissue
- Common sites: hairy parts exposed to friction, pressure, moisture
- Increased risk of infection: diabetes, injection drug usage, HIV, hospitalization, athletic teams, prisons, military service, homelessness
- Carbuncle: several furuncles forming a conglomerate, deeply situated mass with multiple draining points

### **Subjective:**

- Signs and Symptoms:
  - Extremely painful erythematous inflammatory swelling
  - May start off small (pimple) and gradually enlarges

### **Objective:**

- Physical Exam:
  - Abscess is rounded or conical, gradually enlarges, becomes fluctuant
  - Lesion then softens and can open spontaneously after a few days or weeks to drain necrotic tissue/discharge
- Tools:
  - Culture discharge to rule out MRSA or other bacteria

### **Assessment:**

- Differential:
  - Hidradenitis suppurativa: recurrent tender, sterile abscesses in axillae and groin
  - Epidermal inclusion cyst: common, benign growths of the upper portion of the hair follicle; expresses foul-smelling material
  - Lipoma: located in subcutaneous fat, no punctum, not painful

### **Plan:**

- Incision and drainage (first-line)
- Medications:
  - Systemic antibiotics if necessary (offer little benefit beyond I&D)
    - Dicloxacillin or cephalexin
    - MRSA: trimethoprim-sulfamethoxazole or clindamycin

## **FURUNCULOSIS CONTINUED**

### **Patient Education:**

- Local Preventive Measures:
  - Hand washing
  - Do not share towels or clothing
  - Aggressive scrubbing of showers, bathrooms and surfaces with bleach
- Avoid manipulation
- Moist heat to help larger lesions “localize” or drain
- Follow-Up Actions:
  - Follow daily, EVAC or transfer if systemic or worsening symptoms

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **EPIDERMAL INCLUSION CYST (EIC)**

### **Introduction:**

- Common, benign growths of the upper portion of the hair follicle

### **Subjective:**

- Signs and Symptoms:
  - Likely asymptomatic, but can be painfully inflamed
  - Firm dermal papule/nodule
  - Favors face and trunk

### **Objective:**

- Physical Exam:
  - Papule/nodule from 0.3 cm to several cm in the superficial dermis
  - Characteristic: overlying pore or punctum
  - Lateral pressure: extrusion of foul-smelling, cheesy material

### **Assessment:**

- Differential:
  - Cellulitis: superficial, spreading infection of dermis and subcutaneous tissue
  - Lipoma: located in subcutaneous fat, no punctum, not painful
  - Furuncle: painful inflammatory swelling

### **Plan:**

- Asymptomatic: no treatment necessary
- Inflamed lesions: incision and drainage
- Large or symptomatic cysts: referral for surgical excision

### **Patient Education:**

- Avoid manipulation
- Follow-Up Actions:
  - Return for further evaluation if symptoms do not improve within 1 week after incision and drainage or sooner if symptoms worsen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DRUG ERUPTIONS**

### **Introduction:**

- Cutaneous drug reactions
- Usually abrupt onset of widespread, symmetric erythematous eruption
- Rashes are the most common adverse reactions
- Common offenders: antibiotics and anticonvulsants
- Most common cause of urticaria: amoxicillin, ampicillin, penicillin, TMP-SMX
- Severity ranges from mild pigment changes < urticaria < exfoliative dermatitis < toxic epidermal necrolysis/extensive blistering eruptions with mucosal involvement requiring hospitalization

### **Subjective:**

- Signs and Symptoms:
  - Simple Drug Eruption:
    - Commonly caused by antibiotics
    - Appears 2<sup>nd</sup> week as diffuse exanthem (rash); no constitutional symptoms
  - Complex Drug Eruption:
    - Commonly caused by sulfonamides, allopurinol, anticonvulsants
    - Occurs in 3<sup>rd</sup> week with constitutional findings such as fever, chills, headache, malaise, arthralgias
    - Can be life threatening if not recognized

### **Objective:**

- Physical Exam:
  - Severity ranges from hyperpigmentation < red, itchy wheals < plaques/papules < bullae < exfoliative necrosis

### **Assessment:**

- Key to diagnosis: new medication history
- Observation after discontinuation helps establish the diagnosis
- Re-challenge may pose a danger to the patient and is best avoided
- Differential:
  - Angioedema: involvement of deeper subcutaneous tissue with swelling of the lips, eyelids, palms, soles, and genitalia
  - Urticaria: eruptions of evanescent wheals or hives; diffuse skin findings that are pruritic
  - Papular urticaria: from insect bites, central punctum can be seen



## **DRUG ERUPTIONS CONTINUED**

### **Plan:**

- Stop offending agent
- Antihistamines may be of value for urticarial reactions
  - Severe reactions with constitutional/systemic symptoms: EVAC/transfer

### **Patient Education:**

- Add offending agent to allergy list
- Follow-up Actions:
  - If mild symptoms, return for further evaluation if symptoms do not improve within 48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **MALIGNANT MELANOMA**

### **Introduction:**

- Leading cause of death due to skin disease
- Increased detection of early melanomas has led to increased survival
- 1 in 4 cases occurs before the age of 40
- Tumor thickness: single most important prognostic factor
  - 10-year survival rates: <1 mm, 95%; 1-2 mm, 80%; 2-4 mm, 55%; >4 mm, 30%
- More than 5 types based on various clinical and histological characteristics
- Should be suspected in any pigmented skin lesion with a recent change in appearance
- “ABCDE” Rule:
  - Asymmetry
  - Border Irregularity
  - Color Variegation
  - Diameter  $\geq$  6 mm
  - Evolution: a changing mole is the single most important reason for close evaluation and possible referral

### **Subjective:**

- Signs and Symptoms:
  - “ABCDE” irregularities
- Focused History:
  - Family or personal history of skin cancer
  - Personal history of intense, peeling sunburns
  - Sunscreen use

### **Objective:**

- Physical Exam:
  - Full skin exam including palms, feet, nails
  - Varies: may be flat or raised with border irregularities and varying colors including red, white, black, and bluish

### **Assessment:**

- Differential:
  - Melanocytic nevi (normal moles): small lesions with a well-defined border and single shade of pigment
  - Seborrheic keratosis: benign plaques with a velvety or warty surface; appear to be stuck onto the skin
  - Actinic keratosis: macules and papules on sun-exposed areas; feels like sandpaper
  - Squamous cell carcinoma: non-healing ulcer or warty nodule
  - Basal cell carcinoma: waxy/pearly/translucent papule

## **MALIGNANT MELANOMA CONTINUED**

### **Plan:**

- Treatment: referral for excision

### **Patient Education:**

- Always use sunscreen and sun-protective measures
- Follow-up Actions:
  - Referral for excision
  - Encourage compliance with specialty recommendations
  - Return for further evaluation for any new suspicious lesions

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ACTINIC KERATOSIS**

### **Introduction:**

- Macules and papules on sun-exposed areas
- Considered to be pre-malignant
  - 1:1000 lesions per year progress into squamous cell carcinoma

### **Subjective:**

- Signs and Symptoms:
  - Macules and papules usually of fair-skinned individuals on sun-exposed skin
  - Feels like sandpaper and can be tender when touched
- Focused History:
  - Family or personal history of skin cancer
  - Personal history of intense, peeling sunburns
  - Sunscreen use
  - Changes to the lesion(s): ABCDE rule

### **Objective:**

- Physical Exam:
  - Full skin exam
  - Appearance: small (0.2 - 0.6 cm) macules or papules, flesh-colored, pink, or slightly hyperpigmented

### **Assessment:**

- Differential:
  - Melanocytic nevi (normal moles): small lesions with a well-defined border and single shade of pigment
  - Seborrheic keratosis: benign plaques with a velvety or warty surface; appear to be stuck onto the skin
  - Squamous cell carcinoma: non-healing ulcer or warty nodule
  - Basal cell carcinoma: waxy/pearly/translucent papule
  - Malignant melanoma: ABCDE irregularities

### **Plan:**

- Treatment: liquid nitrogen
- Referral for persistent lesion or if diagnosis unclear

### **Patient Education:**

- Always use sunscreen and sun-protective measures
- Follow-up Actions:
  - Referral for persistent lesions
  - Encourage compliance with specialty recommendations
  - Return for further evaluation for any new suspicious lesions

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **SQUAMOUS CELL CARCINOMA**

### **Introduction:**

- Non-healing ulcer or warty nodule usually of fair-skinned individuals on sun-exposed skin
- May arise from actinic keratosis
- Rate of metastasis: 3-7%

### **Subjective:**

- Signs and Symptoms:
  - Non-healing ulcer or warty nodule usually of fair-skinned individuals on sun-exposed skin
- Focused History:
  - Family or personal history of skin cancer
  - Personal history of intense, peeling sunburns
  - Sunscreen use
  - Changes to the lesion(s): ABCDE rule

### **Objective:**

- Physical Exam:
  - Full skin exam
  - Appearance: small red, conical, hard nodules that occasionally ulcerate in sun-exposed areas

### **Assessment:**

- Differential:
  - Melanocytic nevi (normal moles): small lesions with a well-defined border and single shade of pigment
  - Seborrheic keratosis: benign plaques with a velvety or warty surface; appear to be stuck onto the skin
  - Actinic keratosis: macules and papules on sun-exposed areas; feels like sandpaper
  - Basal cell carcinoma: waxy/pearly/translucent papule
  - Malignant melanoma: ABCDE irregularities

### **Plan:**

- Treatment: referral for excision

### **Patient Education:**

- Always use sunscreen and sun-protective measures
- Follow-up Actions:
  - Referral for excision and encourage compliance with specialty recommendations
  - Return for further evaluation for any new suspicious lesions

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **BASAL CELL CARCINOMA**

### **Introduction:**

- Most common form of skin cancer; metastasis is rare (<1%)
  - Lesions of fair-skinned individuals on sun-exposed skin
  - Papules on sun-exposed skin in otherwise normal, fair-skinned individuals
- Usually significant history of sun exposure (often intense, intermittent)

### **Subjective:**

- Signs and Symptoms:
  - Most common presentation: papule or nodule that may have a central scab or erosion
  - Lesions grow slowly over years, attaining a size of 1-2 cm or more in diameter
  - May have a history of bleeding
- Focused History:
  - Personal history of intense, peeling sunburns
  - Sunscreen usage
  - Changes to the lesion(s): ABCDE rule

### **Objective:**

- Physical Exam:
  - Full skin exam
  - Appearance: waxy, pearly or translucent papules, erythematous patch > 6 mm, or non-healing ulcer in sun-exposed areas (face, trunk, lower legs)

### **Assessment:**

- Differential:
  - Melanocytic nevi (normal moles): small lesions with a well-defined border and single shade of pigment
  - Seborrheic keratosis: benign plaques with a velvety or warty surface; appear to be stuck onto the skin
  - Actinic keratosis: macules and papules on sun-exposed areas; feels like sandpaper
  - Squamous cell carcinoma: non-healing ulcer or warty nodule
  - Malignant melanoma: ABCDE irregularities

### **Plan:**

- Treatment: referral for excision

### **Patient Education:**

- Always use sunscreen and sun-protective measures
- Follow-up Actions:
  - Referral for excision and encourage compliance with specialty recommendations
  - Return for further evaluation for any new suspicious lesions

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 3

# EAR, NOSE, THROAT PROTOCOLS

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### HEARING LOSS

#### **Introduction:**

- Hearing loss can be classified by type:
  - Conductive: involving external ear, canal, TM and middle ear
  - Sensorineural: involving cochlea and acoustic nerve
  - Mixed: a combination of conductive and sensorineural
  - Central: brain processing
- Hearing loss can be normal, mild, moderate, severe and profound

#### **Subjective:**

- Focused History:
  - Age and family history (especially <40)
  - Recent illness, any ear drainage
  - Exposure to loud noises or blast injuries
  - Unilateral vs. bilateral
  - Length of symptoms (sudden = emergency)
  - Vertigo or spinning sensation
  - Medication history
  - History of ear surgeries
  - Recent diving or altitude exposure

#### **Objective:**

- Physical Exam:
  - Look for signs of infection:
    - Erythema, tenderness or swelling of the ear canal
    - Drainage or inflammation to suggest canal infection or obstruction
  - Feel behind the ear for swelling and tenderness indicating mastoiditis or external otitis
  - Tuning fork exams – Weber and Rinne
  - Otoscope exam of canal and TM for perforations or fluid

#### **Assessment:**

- Differential:
  - Serous OM: decreased TM mobility, serous fluid, pressure, fullness, conductive hearing loss
  - Mastoiditis: fever, history of otitis media, painful mastoid process
  - Noise trauma: exposure to recent loud noises
  - Presbycusis: age-related hearing loss, speech is difficult to discriminate, sensorineural
  - Cerumen impaction: evidence of impaction
  - Acoustic Neuroma: this should always be suspected in cases of unilateral hearing loss

## **HEARING LOSS CONTINUED**

### **Plan:**

- Every patient who complains of hearing loss should be referred for an audiology evaluation unless the cause is easily remedied
- Treatment is aimed at the underlying cause
- Sudden onset sensorineural hearing loss is an emergency and requires high dose oral steroids and urgent referral. If remote, immediate evacuation.

### **Patient Education:**

- Noise trauma is the second most common cause of sensorineural hearing loss
- All individuals should wear ear protection
- Follow-up Actions:
  - Return if worsening symptoms, pain or vertigo associated with hearing loss

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**
- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**
  - For sudden onset sensorineural hearing loss.



## **TINNITUS**

### **Introduction:**

- Tinnitus is defined as the sensation of sound in the absence of an exogenous sound source
- Can accompany any form of hearing loss
- 15% of the general population experiences tinnitus

### **Subjective:**

- Signs and Symptoms:
  - May interfere with sleep, ability to concentrate and cause psychological distress
  - Severity of tinnitus correlates poorly with degree of hearing loss
  - Quality: pulsatile, tonal or clicking
  - Vertigo or balance problems

### **Objective:**

- Physical Exam:
  - Complete HEENT including tuning fork tests
- Tools:
  - Audiometry to rule out associated hearing loss
  - If unilateral tinnitus, especially with hearing loss, MRI to r/o vestibular schwannoma (acoustic neuroma)
  - If pulsatile or staccato “clicking”, evaluate for vascular lesion with MRI

### **Assessment:**

- Differential:
  - Tinnitus idiopathic: high-pitched tonal noise associated with hearing loss
  - Vestibular schwannoma: tumor affecting the 8<sup>th</sup> cranial nerve causing unilateral hearing loss and tinnitus
  - Exposure to excessive noise causing temporary tinnitus
  - Venous hums: heard by patients who may have vascular abnormalities - evaluate with CTA or MRA

### **Plan:**

- The most important treatment of tinnitus is avoidance of exposure to excessive noise, ototoxic agents, and other factors that cause cochlear damage
- Nortriptyline may improve tinnitus in depressed patients

### **Patient Education:**

- Always wear hearing protection
- Use music or white-noise machines to help mask tinnitus at bedtime
- Follow-up Actions:
  - Return if tinnitus begins to interfere with daily functioning

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **VERTIGO**

### **Introduction:**

- Can be caused by either a peripheral or central etiology or both
- Common complaint that is difficult for the patient to describe
  - Either a sensation of motion where there is no motion or an exaggerated sense of motion in response to movement
- Duration of vertigo episodes and association with hearing loss is the key to diagnosis

### **Subjective:**

- Signs and Symptoms:
  - “Spinning” sensation, sense of tumbling or falling
  - Should be distinguished from imbalance, light-headedness, and syncope
  - Nausea or vomiting if severe
- Focused History:
  - Precipitating factors/movements, prior history, duration of symptoms, recent illness, ear pain or fullness, ear trauma, ringing or hearing loss, abnormal gait, falling

### **Objective:**

- Physical Exam:
  - Vitals:
    - Positive orthostatic vital signs could indicate dehydration
    - Fever may indicate ear infection
  - HEENT exam
  - Tuning fork tests
  - Neurologic: if there is nystagmus or worsening symptoms with head or eye movement; this is most indicative of positional vertigo
- Tools:
  - Audiometry if hearing loss

### **Assessment:**

- Differential:
  - BPPV: acute spinning sensation with head movement lasting less than a minute, horizontal or rotary nystagmus, *no* hearing changes. Most common cause.
  - Systemic (medications, hypotension, infection): vitals and history will be abnormal
  - Ménière’s: episodic vertigo with fluctuating sensorineural hearing loss and aural pressure
  - Labyrinthitis: acute, continuous, severe vertigo lasting several days to a week, hearing loss and tinnitus

## **VERTIGO CONTINUED**

### **Plan:**

- Treatment should be tailored to the underlying cause:
  - If otitis or labyrinthitis, treat with antibiotics and analgesics, antihistamines recommended
  - If Ménière's is suspected, consider evacuation
  - BPPV: Epley maneuvers or Brandt-Daroff exercises
  - If severe vertigo limits oral intake, then IV hydration should be initiated
  - Evacuate patients with persistent or recurrent symptoms of vertigo or dizziness when an etiology cannot be readily determined

### **Patient Education:**

- Patient should be aware that vertigo can arise from many different conditions, and should communicate any changes to the provider
- Follow-up Actions:
  - Return to the provider if vertigo or medication side effects limit occupational functioning
  - If severe vertigo limits oral intake, then IV hydration should be initiated
  - Evacuate or transfer patients with persistent or recurrent symptoms of vertigo or dizziness when an etiology cannot be readily determined

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ALLERGIC RHINITIS**

### **Introduction:**

- Allergic rhinitis adversely affects school and work performance, costing about \$6 billion annually in US
- Most commonly caused by pollens and spores
- Symptoms are similar to those of viral rhinitis but are persistent and may show seasonal variation
- Many patients note a strong family history of atopy or allergy

### **Subjective:**

- Signs and Symptoms:
  - Itching of the nose/eyes; may have conjunctival hyperemia and excessive tearing
  - Nasal congestion, head fullness
  - Decreased sense of smell
  - Cough and sneezing if post-nasal drip
- Focused History:
  - Length of symptoms, color of drainage, use of nasal spray, head or nasal trauma, family history

### **Objective:**

- Physical Exam:
  - Examine the anterior and posterior nasal cavity, posterior oral pharynx and ears
  - Palpate the sinuses and lymph nodes
  - Auscultate lungs
  - Nasal polyps if long-standing
  - Erythematous nasal mucosa and turbinates

### **Assessment:**

- Differential:
  - Vasomotor rhinitis: clear rhinorrhea in response to nasal stimuli, mucosa usually pale
  - Infectious rhinitis: nasal discharge associated with common cold or viral illness, sore throat
  - Rhinitis medicamentosa: overuse of nasal decongestants with rebound symptoms
  - Nasal foreign body: unilateral discharge, visible
  - Sinusitis: sinus pain, fullness, purulent discharge

## **ALLERGIC RHINITIS CONTINUED**

### **Plan:**

- Medications:
  - Antihistamines: temporary but immediate control (loratadine, cetirizine and fexofenadine)
  - Intranasal corticosteroids: most effective and helpful, also effective for nasal polyps (fluticasone, mometasone furoate)

### **Patient Education:**

- Seek treatment for severe or persistent symptoms that interfere with performance
- Avoid allergens when possible
- Take medications exactly as directed
- Follow-up Actions:
  - Evacuate or transfer if patient has life-threatening wheezing or SOB
  - Return if symptoms are inadequately relieved by medication and avoidance measures

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **APHTHOUS ULCER**

### **Introduction:**

- Common and easy to recognize
- Cause uncertain but associated with various systemic diseases
- Not contagious or infectious
- May be single or multiple

### **Subjective:**

- Signs and Symptoms:
  - May be single or multiple, found on buccal and labial mucosa, are usually recurrent and appear as painful small round ulcerations
  - Larger lesions can be disabling due to oral pain
  - Burning, itching or pain

### **Objective:**

- Physical Exam:
  - Single to multiple painful round ulcerations with yellow-gray fibrinoid centers surrounded by red halos on buccal and labial mucosa
  - Can be larger than >1 cm
  - Lymph nodes can be enlarged in the affected area

### **Assessment:**

- Differential:
  - Herpetic lesions: vesicular lesions
  - Oral cancer: non-healing lesion, more worrisome if erythematous
  - Behcet's disease: triad including genital ulcers and uveitis
  - Crohn's disease: accompanied with GI symptoms
  - Trauma: lesion will heal quickly if caused by bite or food trauma

### **Plan:**

- Treatment is challenging and centers on comfort
- Medications:
  - Topical corticosteroids
    - Triamcinolone acetonide or fluocinonide ointment in an adhesive base (orabase plain) appear to provide relief
  - A one-week tapering course of prednisone has also been used successfully if symptoms are severe

## **APHTHOUS ULCER CONTINUED**

### **Patient Education:**

- Avoid salty or acidic foods that could irritate and prolong symptoms
  - Maintain healthy diet, ample fluids and rest
- Lesions can take up to two weeks to resolve
- Follow-up Actions:
  - If lesion(s) do not resolve or if diagnosis is not clear then refer for biopsy

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **BACTERIAL SINUSITIS**

### **Introduction:**

- Uncommon compared to viral rhinitis but still affects nearly 20 million Americans and costing \$2 billion in health care annually
- Result of impaired mucociliary clearance and obstruction of the osteomeatal complex
  - Edematous mucosa causes obstruction of the complex, resulting in accumulation of mucus secretion in sinus cavity that becomes infected by bacteria
  - Typical pathogens are *S. pneumoniae*, *H. influenzae*, *M. catarrhalis*

### **Subjective:**

- Signs and Symptoms:
  - Symptoms lasting longer than 10 days or worsening symptoms within 10 days after initial improvement including:
    - Purulent nasal drainage, facial pain or pressure, nasal congestion, fever, headache, dental pain, cough and altered smell
- Focused History:
  - Symptoms worse than usual cold, pain in the face, pain behind the eyes, double vision, severe headache, recent URI, recent dental infection

### **Objective:**

- Physical Exam:
  - Inspect for purulent nasal drainage in the nose or posterior oral cavity, inflamed turbinates, foul breath
  - Palpate for maxillary and frontal sinus tenderness and lymph node enlargement

### **Assessment:**

- Differential:
  - Viral URI: shorter duration, less severe symptoms
  - Pharyngitis: marked throat pain, no sinus pain
  - Dental decay: swelling over the cheek or gum, lack of ENT symptoms
  - Rhinitis: nasal discharge not purulent, no pain

### **Plan:**

- About 80% of sinus infections will resolve symptomatically without antibiotic treatment
  - Pain symptoms can be improved with oral or nasal decongestants – oral pseudoephedrine and/or nasal oxymetazoline
  - Consider antibiotic treatment when symptoms last >10-14 days or severe symptoms
    - High-dose amoxicillin is first-line agent



## **BACTERIAL SINUSITIS CONTINUED**

### **Patient Education:**

- Salt water nasal flushes will help clear thick secretions, shrink mucosa and relieve pressure
- Breathing in warm steam from a shower or tea kettle can also help relieve congestion
- Prolonged antibiotic use may cause diarrhea; severe, crampy diarrhea should be reported to a provider
- Follow-up Actions:
  - Return if symptoms not improving with treatment within 2-3 days or if worsening; fever > 100.4° F, any changes in vision, facial swelling or worsening headache

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CERUMEN IMPACTION**

### **Introduction:**

- Cerumen is a protective secretion produced by the outer portion of the ear canal
- In most patients the ear canal is self-cleansing
- In most cases, cerumen impaction is self-induced through attempts at cleaning the ear

### **Subjective:**

- Signs and Symptoms:
  - Hearing loss, feeling of fullness or pain

### **Objective:**

- Physical Exam:
  - Otoscope exam of canal to observe impaction

### **Assessment:**

- Differential:
  - Chronic otitis media: drainage, tenderness to touch
  - Foreign body: evidence of object
    - More frequent in children
    - Remove firm objects with a loop taking care not to push the object further in
    - Do not irrigate organic objects or they may swell
    - Live insects are best immobilized by filling the ear canal with lidocaine

### **Plan:**

- Irrigation with water at body temperature
  - Stream aimed at the posterior ear canal wall adjacent to cerumen plug
  - Follow irrigation with isopropyl alcohol or hair dryer to thoroughly dry ear canal to reduce the likelihood of inducing external otitis
  - Do not irrigate if there is question of tympanic perforation
  - Avoid jet irrigator or curette

### **Patient Education:**

- Patients can use detergent ear drops (carbamide peroxide otic) for maintenance if recurrent impaction
- Avoid cotton tip applicators inserted into the ear canal as they compact the cerumen and cause impaction
- Follow-up Actions:
  - Return if recurrent episodes, hearing loss or ear pain

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **EPIGLOTTITIS**

### **Introduction:**

- Epiglottitis, more correctly known as supraglottitis, should be suspected if a patient presents with pain on swallowing out of proportion to apparently minimal oropharyngeal findings on exam
- Dangerous condition: may lead to airway compromise and death

### **Subjective:**

- Signs and Symptoms:
  - Rapidly developing sore throat
  - Pain and difficulty with swallowing
  - Possible difficulty breathing especially supine
  - Patient may be drooling and leaning forward (“tripod position”)
- Tools:
  - Lateral plain radiograph of neck may demonstrate “thumbprint sign”

### **Objective:**

- Physical Exam:
  - Patient may be using accessory muscles to breathe
  - Assess for stridor
  - Careful inspection of the oral pharynx which will likely look normal

### **Assessment:**

- Differential:
  - Pharyngitis: usually shows erythema and is less severe
  - Peritonsillar abscess: unilateral tonsillar swelling; uvula may deviate away from affected side
  - Retropharyngeal abscess: posterior pharyngeal wall may bulge to one side

### **Plan:**

- Immediate EVAC or transfer with IV antibiotics (ceftriaxone)
- Indications for intubation are dyspnea or progression of airway compromise; if not intubated the patient should have continuous oxygen monitoring

### **Patient Education:**

- Follow-up Actions:
  - Evacuate or transfer immediately if suspected

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **EPISTAXIS**

### **Introduction:**

- Epistaxis is an extremely common problem
  - Factors include nose picking, foreign bodies, forceful nose blowing, rhinitis, dryness of the nasal mucosa, hypertension and drug and alcohol use
  - 95 % of bleeding is in the anterior septum in Kiesselbach's plexus

### **Subjective:**

- Signs and Symptoms:
  - Bleeding from one or both nostrils
- Focused History:
  - Age of patient, recent trauma (including nose picking), recent illness or runny nose, family history of bleeding disorder, how many episodes, length of episodes and difficulty controlling

### **Objective:**

- Physical Exam:
  - Evaluate blood pressure
  - Once the acute episode has passed, careful examination of the nose and paranasal sinuses to rule out neoplasia and hereditary hemorrhagic telangiectasia
  - Use otoscope to examine for any swollen, soft, compressible mass consistent with a hematoma

### **Assessment:**

- Differential:
  - Posterior nose bleed: 5% of nasal bleeding originates here and is associated with atherosclerotic disease and hypertension; older patients
  - Unsuccessful attempts to treat anterior bleed is an emergency
  - Bleeding disorder: recurrent episodes or profuse bleeding

### **Plan:**

- Direct Pressure:
  - Continuous pressure on nares for 15 minutes
- Have the patient sit and lean slightly forward
- Medications:
  - Oxymetazoline and phenylephrine
- When visible:
  - Bleeding site may be cauterized with silver nitrate
- As a last resort, anterior nasal tamponade or packing may be needed

## **EPISTAXIS CONTINUED**

### **Patient Education:**

- Avoid straining and vigorous exercise for several days
- Don't nose-pick
- Nasal saline should be used for moisture
- Avoid tobacco and spicy foods which cause vasodilation
- Lubrication with petroleum jelly may be helpful
- Follow-up Actions:
  - Return if recurrent symptoms of epistaxis reoccur

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **EUSTACHIAN TUBE DYSFUNCTION**

### **Introduction:**

- The eustachian tube provides ventilation and drainage for the middle ear to the nasopharynx
- It is normally closed, opening only during swallowing or yawning
- When the function is compromised and the air in the middle ear becomes absorbed, negative pressure results which is often uncomfortable or painful

### **Subjective:**

- Signs and Symptoms:
  - Sense of fullness or discomfort in the ear, mild to moderate hearing impairment
  - Crackling or popping sound with Valsalva
- Focused History:
  - Recent illness, allergic rhinitis, air travel or diving

### **Objective:**

- Physical Exam:
  - ENT exam may reveal retracted, non-mobile TM
  - If recent viral illness or allergic rhinitis, turbinates may show hypertrophy and erythema

### **Assessment:**

- Differential:
  - Serous otitis media: TM shows dullness, fluid and hypomobility
  - Barotrauma: blood behind TM or injected TM with history of exposure to change in pressure
  - Tympanic membrane rupture: sudden pain

### **Plan:**

- Pseudoephedrine
- Oxymetazoline combined with a gentle Valsalva maneuver
- Allergic patients will benefit from intranasal corticosteroids

### **Patient Education:**

- Avoid air travel, rapid altitudinal change and underwater diving
- Follow-up Actions:
  - Return if pain worsens or symptoms do not resolve with treatment
  - If fever over  $> 100.4^{\circ}$  F develops

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **LARYNGITIS**

### **Introduction:**

- Acute laryngitis is probably the most common cause of hoarseness, which may persist for a week or so after other symptoms of an upper respiratory infection have cleared
- Usually viral in origin – possibly *M. catarrhalis* and *H. influenzae* but antibiotics do not significantly alter natural resolution

### **Subjective:**

- Signs and Symptoms:
  - URI symptoms
  - Cough
  - Strained speech or whispering to talk; hoarseness
- Focused History:
  - Length of symptoms; recent shouting, singing; pain with swallowing; lumps or masses in neck or difficulty swallowing; recent heartburn or indigestion, recent URI

### **Objective:**

- Physical Exam:
  - Listen to voice quality
  - Thoroughly inspect the oral cavity and posterior pharynx for evidence of irritation, inflammation or drainage
  - Inspect the nasal cavity for rhinorrhea
  - Palpate the neck for lymph nodes, tenderness and swelling

### **Assessment:**

- Differential:
  - Laryngopharyngeal reflux: chronic symptoms, response to proton-pump inhibitor
  - Vocal abuse: worse in the evening, accompanied by throat clearing
  - Vocal cord nodules: foreign body sensation
  - Chronic rhinitis: chronic drainage, throat irritation
  - Vocal cord dysfunction

### **Plan:**

- Supportive measures: hydration, humidity, lozenges and vocal rest

### **Patient Education:**

- Avoid strenuous use of voice until voice is normal and avoid vocal abuse in the future
- Cases should improve within 3 weeks
- Follow-up Actions:
  - If symptoms worsen or do not improve within 3 weeks
  - Immediately if any increasing pain, difficulty swallowing or shortness of breath

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **NASAL POLYPS**

### **Introduction:**

- Nasal polyps are pale, edematous, mucosally covered masses commonly seen in patients with allergic rhinitis
  - They may result in chronic nasal obstruction and diminished sense of smell
- Patients with nasal polyps and history of asthma should not take aspirin as it may precipitate severe bronchospasm (Samter's triad)

### **Subjective:**

- Signs and Symptoms:
  - Nasal congestion or obstruction
  - Diminished sense of smell
  - Symptoms of allergic rhinitis

### **Objective:**

- Physical Exam:
  - Evaluate the nasal cavity for patency, discharge and obvious masses

### **Assessment:**

- Differential:
  - Inverted papilloma: cauliflower-like growth (HPV)
  - Malignant tumor: expansion of the cheek and proptosis
  - Turbinate hypertrophy: enlarged, boggy turbinates

### **Plan:**

- Topical nasal corticosteroids
  - Initial treatment and must be used for 1-3 months to see reduction
    - Fluticasone, mometasone
  - When polyps are massive or medical management is unsuccessful, ENT surgery may be necessary

### **Patient Education:**

- Follow-up Actions:
  - Return for further evaluation if medication is not helping within 1-3 months or if nasal obstruction occurs

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **OTITIS EXTERNA**

### **Introduction:**

- Infection of the ear canal
- Otitis externa is often caused by exposure to excessive moisture (i.e., Swimmer's ear) or mechanical trauma (i.e., scratching, cotton-tipped applicators, car keys)
- Usually caused by *Pseudomonas aeruginosa*

### **Subjective:**

- Signs and Symptoms:
  - Painful erythema and edema of ear canal skin
  - Purulent exudate from the ear canal

### **Objective:**

- Physical Exam:
  - Careful examination reveals erythema and edema of the ear canal often with purulent exudate
  - Manipulation of the auricle often elicits pain
  - TM, if visualized, is mobile but may be erythematous

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: yellow, flaking inside the ear canal which can cause irritation and swelling
  - Neoplasia: non-resolving otitis externa could be squamous cell carcinoma
  - Otitis media: bacterial infection of the mucosally lined air-containing spaces of the temporal bone

### **Plan:**

- Drying the ear canal is fundamental to treatment
  - Antibiotic drops (with or without steroid):
    - Fluoroquinolone otic suspension
  - If swelling prevents drops from entering the ear a wick should be placed
  - In resistant cases, or if cellulitis develops
    - Oral fluoroquinolones are the drug of choice

### **Patient Education:**

- Keep ear canal dry by instilling a 50/50 mix of alcohol/white vinegar after moisture exposure
- Purulent debris should be gently removed prior to instilling ear drops for best results
- Follow-up Actions:
  - Return if symptoms do not improve with treatment or if pain worsens

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **OTITIS MEDIA, ACUTE**

### **Introduction:**

- Acute otitis media is a bacterial infection of the mucosally lined air-containing spaces of the temporal bone
- Usually precipitated by a viral URI that causes eustachian tube obstruction and secondary infection
  - *Streptococcus pneumoniae*, *Haemophilus influenzae* and *Moraxella catarrhalis* are most common organisms

### **Subjective:**

- Signs and Symptoms:
  - Otalgia, aural pressure, decreased hearing, fever
- Focused History:
  - Recent illness
  - History of ear infections or previous surgeries (tympanoplasty)

### **Objective:**

- Physical Exam:
  - TM erythema and decreased mobility of the tympanic membrane
  - If effusion is severe, the TM can bulge outward and rupture is imminent
    - Rupture will spontaneously heal
    - Pain will likely be reduced if rupture occurs

### **Assessment:**

- Differential:
  - Otitis externa: infection of the ear canal
  - Barotrauma: blood behind TM or injected TM with history of exposure to change in pressure
  - Eustachian tube dysfunction: intermittent pain, immobile TM

### **Plan:**

- Medication:
  - High-dose amoxicillin first-line
  - Erythromycin + sulfonamide (PCN-allergic)
  - Resistant cases:
    - Cefuroxime
    - High-dose amoxicillin-clavulanate
- Recurrent cases require referral and long-term antibiotic treatment

## **OTITIS MEDIA, ACUTE CONTINUED**

### **Patient Education:**

- If a TM perforation results, spontaneous healing will occur in most cases; patient should f/u for evaluation
  - Patients should wear earplugs while swimming or bathing during healing
- Follow-up Actions:
  - If recurrent symptoms occur or if symptoms fail to resolve, if temperature > 100.4° F
  - If perforation persists or is not progressing to healing, a routine consult to ENT is prudent

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ORAL CANDIDIASIS**

### **Introduction:**

- Oral candidiasis (thrush) is usually painful and looks like creamy-white, curd-like patches overlaying erythematous mucosa in the mouth that are easily rubbed off
- Commonly encountered in adults with dentures, diabetics, those with poor oral hygiene, receiving corticosteroids or antibiotics and who may have immune suppression

### **Subjective:**

- Signs and Symptoms:
  - Fluctuating throat or mouth discomfort
  - Pain or difficulty with eating
- Focused History:
  - Medication history for oral or systemic corticosteroids, chemotherapy and antibiotics, history of diabetes, HIV, dental conditions

### **Objective:**

- Physical Exam:
  - Complete mouth exam with bimanual:
    - Erythema of the oral cavity or oropharynx
    - Fluffy, white patches which are easily rubbed off
- Tools:
  - Diagnosis is clinical, but KOH will show spores and non-septate mycelia

### **Assessment:**

- Differential:
  - Leukoplakia: white lesion cannot be removed by rubbing
  - Oral cancer: early lesions appear as leukoplakia but advanced lesions will be a palpable mass/ulcer; early detection of oral cancers are key to treatment, have a high index of suspicion
  - Glossitis: burning of the tongue without white lesions; secondary to nutritional deficiency

### **Plan:**

- Antifungal medications:
  - Fluconazole or ketoconazole oral
  - Clotrimazole troches dissolved orally
  - Nystatin mouth rinses

### **Patient Education:**

- If patients are using inhaled steroids they should be reminded to rinse their mouth with water after they inhale their medication
- Follow-up Actions:
  - Return if symptoms reoccur or fail to resolve

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PHARYNGITIS**

### **CENTOR CRITERIA**

- Tonsillar exudate
- Anterior chain cervical lymphadenopathy
- Fever
- Absence of cough
- Scoring:
  - 0-1 positive criteria - no culture, rapid strep or antibiotics
  - 2-3 positive criteria - culture/rapid strep appropriate
  - 4 positive criteria - rapid strep test/culture; if positive/very high suspicion, give antibiotics

#### **Introduction:**

- Viral infection is the most common cause
- Main concern is determining who has group A beta-hemolytic streptococcal infection (GABHS)
- Treatment Goals:
  - Avoid unnecessary antibiotic use
  - Appropriate antibiotic use may lessen antibiotic resistant GABHS
  - Reduce extraordinary cost

#### **Subjective:**

- Signs and Symptoms:
  - Difficult/painful swallowing
  - Fever/chills
  - Cough/malaise
  - Pain may refer to the ears
- Focused History:
  - Length of symptoms, fever/chills, sick contacts, did symptoms start after eating or drinking, is there difficulty swallowing/difficulty breathing

#### **Objective:**

- Physical Exam:
  - Inspect the oral and pharyngeal mucosa for:
    - Erythema, ulcerations, swelling, asymmetry, foreign bodies, purulence
  - Palpate for enlarged or swollen lymph nodes
  - Perform oral bimanual exam
  - Evaluate for hepatosplenomegaly if suspicious for mono
- Tools:
  - Evaluate CENTOR criteria

## **PHARYNGITIS CONTINUED**

### **Assessment:**

- Differential:
  - Viral pharyngitis: raw, dry, burning throat, cough, hoarseness and concomitant cold symptoms
  - Tonsillitis/Strep: burning throat pain, becomes severe, fever, chills, malaise, tonsillar enlargement and exudate, lymph node enlargement/tenderness
  - Peritonsillar abscess: increasing, unilateral throat pain - severe, fever, malaise, difficulty swallowing, trismus, drooling, “hot potato voice” - emergency
  - Mononucleosis: hepatosplenomegaly
  - Trauma: history of foreign body or ingestion of caustic substance

### **Plan:**

- Treatment should be tailored to the underlying cause
- Viral Illness is most common and should be treated with hydration and acetaminophen
- Medications:
  - Penicillin V
  - Erythromycin for penicillin allergic patients

### **Patient Education:**

- Light activities during acute phase of illness
- Consume clear liquids or soft diet for comfort
- Complete all medications as directed
- Contact sport precautions (if suspicious for mono)
  - Good hygiene
- Follow-up Actions:
  - Return for significant breathing or swallowing problems ASAP – may require EVAC or transfer
  - Return if not improving within a week

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **SALIVARY GLAND DISORDERS**

### **Introduction:**

- Sialadenitis is an acute bacterial infection affecting either the parotid or submandibular gland
  - Often occurs in the setting of dehydration or in association with chronic illness (i.e., autoimmune disease such as Sjögren's syndrome)
- Sialolithiasis is calculus (stone) formation found more frequently in Wharton's duct vs Stensen's duct
  - Patient may have history of recurrent sialadenitis

### **Subjective:**

- Signs and Symptoms:
  - Sialadenitis:
    - Acute swelling of the parotid or submandibular gland
    - Increased pain and swelling with meals
    - Tenderness and erythema of the duct opening
    - Purulent drainage can be massaged from the duct opening
  - Sialolithiasis: postprandial pain and local swelling
    - Stones may be palpated or seen in the duct

### **Objective:**

- Physical Exam:
  - Complete oral exam with bi-manual exam
    - Sialadenitis: purulent drainage can be massaged from the duct opening
    - Sialolithiasis: stones may be palpated or seen in the duct

### **Assessment:**

- Differential:
  - Salivary gland tumor: likely malignant, presents as an asymptomatic mass, may involve facial nerve
  - Inflammation of salivary gland: metabolic disorders can cause diffuse enlargement of unilateral or bilateral parotid gland
  - Autoimmune disease: Sjögren's syndrome

### **Plan:**

- Sialadenitis:
  - Medications:
    - Amoxicillin-clavulanate
  - Measures to increase salivary flow
    - Hydration
    - Warm compresses and gland massages
- Sialolithiasis:
  - Massage of the gland toward the duct to mobilize and expel the stone
  - Refer if symptoms persist or recur

## **SALIVARY GLAND DISORDERS CONTINUED**

### **Patient Education:**

- Sour food and candies will help move saliva through the gland but may cause some discomfort during usage
- Increase hydration to increase saliva; avoid caffeine
- Continue good oral hygiene
- Complete resolution can take 2-3 weeks
- Follow-up Actions:
  - If recurrent symptoms occur or if symptoms fail to resolve, if temperature > 100.4° F
  - EVAC or transfer if needed for IV antibiotics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **UPPER RESPIRATORY INFECTION (URI)**

### **Introduction:**

- Hundreds of viruses and bacteria can infect the mucous membranes, leading to symptoms which make up the condition called upper respiratory tract infections
- URIs are most commonly acute localized infections secondary to rhinovirus which involve the nose and throat
- Adults have 2-3 URIs per year

### **Subjective:**

- Signs and Symptoms:
  - Clear rhinitis and nasal congestion
  - Malaise
  - Sneezing
  - Scratchy or sore throat, cough, hoarseness
  - Headache
  - Fever is less common
- Focused History:
  - Fever, headache (with location), cough (productivity), sick contacts

### **Objective:**

- Physical Exam:
  - Full HEENT exam, lungs, lymph nodes
  - Erythema and edema on nasal exam with watery discharge
  - Erythema of the oropharynx without exudate

### **Assessment:**

- Differential:
  - Influenza: fever, myalgias, mild cold symptoms
  - Allergic rhinitis: recurrent or seasonal with itchy eyes or nose; increased tearing
  - Sinusitis: tender sinuses, red, swollen nasal mucosa with purulent discharge
  - Rhinitis medicamentosa: overuse of nasal decongestant
  - COVID-19: recent exposure (if known), fever, cough, dyspnea, possible anosmia or other smell abnormalities, sore throat, myalgias, fatigue, rhinorrhea

### **Plan:**

- Nasal irrigation:
  - Nasal saline improves symptoms and reduces the need for medications
- Medications:
  - Pseudoephedrine
  - Oxymetazoline
  - Dextromethorphan
  - Cepacol
  - Tylenol/Motrin
  - Ipratropium (Atrovent nasal spray)
- Testing:
  - Consider testing for COVID-19 and/or influenza (depending on the season and local viral activity).

## **UPPER RESPIRATORY INFECTION (URI) CONTINUED**

### **Patient Education:**

- Continue to hydrate and practice good airborne droplet precautions (handwashing, cover your cough)
- Complete resolution can take 2-3 weeks
- Follow-up Actions:
  - If recurrent symptoms occur or if symptoms fail to resolve, if temperature > 100.4° F

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **REACTIVE LYMPHADENITIS**

### **Introduction:**

- Reactive lymphadenitis occurs when a patient is exposed to a disease process which affects the lymphatic system
- Reactive lymphadenitis is a common (and usually benign) problem associated with URI

### **Subjective:**

- Signs and Symptoms:
  - May or may not be painful
  - “Swollen glands”
  - URI type symptoms
- Focused History:
  - Recent illness
  - Fever
  - Family history of cancer
  - Recent cat scratch
  - Length of time node has been swollen

### **Objective:**

- Physical Exam:
  - Vital signs - assess for fever
  - HEENT exam for evidence of URI or other potentially causative agent
  - Generalized lymph node exam
  - Enlarged node is defined as >1 cm in diameter
  - Node may be rubbery, boggy or hard
- Tools:
  - Consider labs if node remains swollen greater than 30 days
    - CBC - WBC count may be very high or very low

### **Assessment:**

- Differential:
  - URI: associated symptoms
  - Mononucleosis: constitutional symptoms, abdominal pain, exposure (“kissing disease”)
  - Malignancy: one-sided more concerning for cancer
  - Cat scratch fever: history of exposure to cats
  - HIV: global lymphadenopathy

### **Plan:**

- Treat the cause if known
- Medications:
  - Consider antibiotics for infectious causes
  - Consider coverage for MRSA

## **REACTIVE LYMPHADENITIS CONTINUED**

### **Patient Education:**

- Will likely resolve spontaneously once causative problem resolves
- Return to clinic in 30 days if no improvement
- Monitor for fever, worsening of symptoms and RTC as needed
- Follow-up Actions:
  - If no improvement in 30 days:
    - EVAC/transfer/HEENT consult for further workup

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## Chapter 4

# EYE PROTOCOLS

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### RED EYE

#### **Introduction:**

- The painful red eye is a common complaint with a generally treatable cause
  - Most cases of red eye will end up being viral, allergic or bacterial conjunctivitis
- Identify potentially blinding conditions and evacuate them emergently
  - More benign eye problems may be treated on-site

#### **Subjective:**

- Signs and Symptoms:
  - Itching
  - Pain
  - Tearing
  - Vision loss
  - Foreign body sensation
- Focused History:
  - Use of contact lenses
  - Must consider AFSC
  - Use of eye protection/integrity of eye protection
  - History of LASIK/PRK
  - Associated constitutional symptoms

#### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Use of a Wood's lamp/or Bluminator/or hand-held slit-lamp or slit-lamp with sodium fluorescein (NaFl) can facilitate diagnosis of many disease processes of the eye
  - Everting the eyelid can be helpful especially for foreign body sensation
  - Clarity of the sclera and cornea
  - Position of the eye within the ocular cavity (exophthalmos/or proptosis)
  - Evaluation of eye redness should include the limbus
  - Pupil irregularities may be noted

#### **Assessment:**

- Differential:
  - Most common:
    - Conjunctivitis
    - Corneal abrasion
    - Dry eye
    - Subconjunctival hemorrhage
    - Acute angle closure glaucoma

## **RED EYE CONTINUED**

### **Assessment Continued:**

- Problems that cause blindness:
  - Acute angle closure glaucoma
  - Globe rupture
  - Central retinal artery occlusion

### **Plan:**

- Determine if problem is a threat to vision:
  - If yes:
    - Apply Fox shield if applicable and EVAC to ophthalmology
  - If no:
    - Apply appropriate treatment plan with close follow up
- Steroid eye drops should only be used under medical preceptor guidance

### **Patient Education:**

- Never wear contact lenses if eye is itchy, red or painful
- Keep eyes and hands clean
- Maintain pair of eyeglasses on person in case problems with contact lenses
- Maintain proper hygiene regarding contact lenses
- Never use tap water or saliva to clean contact lenses
- Follow-Up Action:
  - If non-emergent eye problems do not resolve in 48-72 hours, consider evacuation to nearest optometrist/ or ophthalmologist
  - If painful red eye develops, return immediately

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **SUBCONJUNCTIVAL HEMORRHAGE**

### **Introduction:**

- A harmless collection of blood between the sclera and conjunctiva, often in one sector of the eye
- Occurs suddenly after a transient increase in intrathoracic pressure such as coughing, sneezing or vomiting
- Benign process

### **Subjective:**

- Signs and Symptoms:
  - Painless and asymptomatic red eye

### **Objective:**

- Physical Exam:
  - Bright red patch on white part (sclera) of eye

### **Assessment:**

- Differential:
  - Conjunctivitis
  - Corneal abrasion
  - Dry Eye
  - Conjunctival neoplasm (with secondary hemorrhage)
  - Acute angle closure glaucoma

### **Plan:**

- No treatment necessary
  - Defect will resolve spontaneously over 1-3 weeks (heals similar to a bruise)
  - Artificial tears may be prescribed for minor irritation

### **Patient Education:**

- Defect will resolve spontaneously over 1-3 weeks
- Avoid elective use of aspirin/NSAIDs
- Follow-up Actions:
  - Return for further evaluation if symptoms not improved after 1 month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **HORDEOLUM (STYE)**

### **Introduction:**

- A common staphylococcal abscess of the upper or lower lid
  - Internal
    - Involves meibomian gland
    - Points onto the conjunctival surface of the lid
  - External
    - Involves gland of Zeis/or Moll at base of eyelash
    - Usually on the lid margin

### **Subjective:**

- Signs and Symptoms:
  - Painful lump more often on upper eyelid/or eyelid margin
- Focused History:
  - Vision loss (obtain visual acuity)
  - Contact lens wear
    - What type of lenses (daily vs. extended wear)
    - Cleaning schedule
  - Onset of symptoms
  - Redness
  - Itching
  - Eye problems/eye surgery
  - Discharge
  - Attempts at manipulation

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - PERRLA
  - Extra-ocular motion without pain
  - Photophobia not present
  - Tearing
  - Erythema with mild focal swelling in upper or lower lid
  - Mild TTP

### **Assessment:**

- Differential:
  - Chalazion: non-painful bump involving upper or lower lid
  - Preseptal cellulitis: ocular pain, eyelid swelling and erythema
  - Blepharitis: generally bilateral and associated with red lid margins and crusting debris of eyelashes
  - Corneal abrasion: suspect if painful eye with photophobia and history of contact lenses wear or foreign body
  - Conjunctivitis: consider patient contacts, length of symptoms, color, nature or presence of discharge or associated URI symptoms



## **HORDEOLUM (STYE) CONTINUED**

### **Plan:**

- Warm, moist compresses (lid soaks) are mainstay combined with gentle lid massage over lesion
  - Lid soaks 5-10 minutes 3-5 times per day, lid massage 2-3 times per day
- If no signs of resolution in 1-2 weeks, can consider incision, however this should be performed by ophthalmology.
- If it appears the warm compress and lid hygiene is working, continue until resolution
- Consider erythromycin ointment 2-3 times daily
- Watchful waiting
- An untreated hordeolum can lead to a preseptal cellulitis/or even worse life-threatening orbital cellulitis

### **Patient Education:**

- If erythema develops outside current borders or if swelling increases, return ASAP for consideration of optometry/or ophthalmology consult/ER visit
- Follow-up Actions:
  - Return if no improvement in 48 hours with warm compresses and lid hygiene

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CHALAZION**

### **Introduction:**

- A non-tender granulomatous inflammation within the eyelid tarsus secondary to obstruction of a meibomian gland
- Differs from hordeolum in that there is generally no pain with chalazion
- Can occur on upper or lower lid
- Can lead to visual disturbance if allowed to grow unchecked, but problem itself does not cause vision loss
- Recurrent chalazia increases suspicion of sebaceous gland carcinoma

### **Subjective:**

- Signs and Symptoms:
  - Non-tender, bump, possible vision changes (if chalazion is large enough)
- Focused History:
  - Vision loss (obtain visual acuity)
  - Contact lens wear
  - What type of lenses (daily vs. extended wear)
  - Redness
  - Itching
  - Eye problems/eye surgery
  - Discharge
  - Attempts at manipulation

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
    - Potential visual disturbance if large enough
  - PERRLA
  - Extra-ocular motion without pain
  - Photophobia will not be present
  - Tearing
  - Erythema with mild focal swelling in upper or lower lid

### **Assessment:**

- Differential:
  - Hordeolum: if painful, then likely hordeolum (stye)
  - Blepharitis: generally bilateral and associated with crusting
  - Corneal abrasion: suspect if painful eye with photophobia and history of contact lenses wear or foreign body
  - Conjunctivitis: consider patient contacts, length of symptoms, color, nature or presence of discharge or associated URI symptoms
  - Preseptal cellulitis: ocular pain, eyelid swelling and erythema

## **CHALAZION CONTINUED**

### **Plan:**

- Treatments similar to hordeolum: warm lid soaks with light massage over the bump
- If chalazion fails to resolve after 3-4 weeks of medical therapy, refer to ophthalmology to have it removed by incision and curettage, or an injection of steroid into the bump can be performed

### **Patient Education:**

- Follow-up Actions:
  - Return if lesion becomes more bothersome or if vision is impeded
  - Report to ER if erythema spreads to orbit or if fever develops

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **BLEPHARITIS**

### **Introduction:**

- A common, chronic and usually bilateral inflammatory problem of the eyelids which can be attributed to either bacterial infection (commonly staph) or to seborrheic dermatitis
  - Anterior - involves eyelid, skin and glands of eyelid
  - Posterior - involves the meibomian glands at eyelid margin
  - Angular - involves eyelid margin near the lateral canthus
- Rosacea is commonly implicated/associated disorder in older patients with blepharitis

### **Subjective:**

- Signs and Symptoms:
  - Irritation, burning and itching of the lids and margins with AM crusting
  - Minor pain/foreign body sensation
  - History of seborrheic dermatitis
  - History of frequent conjunctival infections may be clue to diagnosis
  - History of eyelid or lash problems (entropion/or trichiasis)

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - PERRLA
  - Extra-ocular motion without pain
  - Photophobia will not be present
  - Tearing
  - Erythema with mild focal swelling in upper or lower lid
  - Scaling may be noted in lashes
  - Abnormal lid position
    - Entropion vs ectropion

### **Assessment:**

- Differential:
  - Seborrheic dermatitis: generally affects the ears and scalp
  - Allergic conjunctivitis: clear, stringy discharge from eyes with associated redness of the sclera
  - Bacterial conjunctivitis: copious purulent discharge from eyes with crusting
  - Eczema: history of allergies, involvement of other surfaces on body

### **Plan:**

- Treatment:
  - Usually controlled by cleanliness of lid margins: lid hygiene
  - Lid scrubs twice-daily with warm washcloth and baby shampoo
  - Use erythromycin ophthalmic ointment once at night for moderate symptoms or if bacterial source is suspected
  - Doxycycline 100 mg once-daily for 1-2 weeks if unresponsive to lid hygiene care

## **BLEPHARITIS CONTINUED**

### **Patient Education:**

- Good eye care (lid hygiene) including twice-daily scrubs with baby shampoo is recommended for prevention
- Follow-up Actions:
  - Return if no improvement of symptoms in 3-5 days with basic care

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CONJUNCTIVITIS**

- Conjunctivitis is the most common eye disease and may be acute or chronic
- Most commonly, conjunctivitis is either viral, bacterial, and/or allergic
- Mode of transmission is usually from direct contact from an infected object (fingers, towels etc. or allergens)
- STI's can cause infection of the eyes

## **VIRAL CONJUNCTIVITIS**

### **Introduction:**

- Most common cause is adenovirus
- Most often bilateral
- Infection is very easily spread (examiner should wear gloves if inspecting eyes suspicious for conjunctivitis)
- Swimming pools and eye clinics can be a source of infection
- Can also be HSV related
  - If associated with HSV, most likely will be unilateral

### **Subjective:**

- Signs and Symptoms:
  - Recent history of URI symptoms
  - Recent sick contacts
  - Recent pool use
  - Bilateral vs. unilateral
  - Copious watery discharge
  - Possible foreign body sensation, itching/burning

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Mild photophobia may be present
  - Copious tearing (bilateral vs unilateral)
  - Crusting of eye
  - Erythema of conjunctiva
  - Must perform complete HEENT exam
    - Pharyngitis
    - Preauricular lymphadenopathy (tender, palpable)
    - Fever/malaise
- Tools:
  - Dendritic lesions on Wood's lamp, Bluminator, and/or hand-held slit lamp suggest HSV

### **Assessment:**

- Differential:
  - Bacterial conjunctivitis: fever, history of exposure, purulent discharge
  - Acute uveitis: marked photophobia, consensual light reflex pain, redness involving the limbus
  - Acute glaucoma: marked pain, profound vision loss
  - Corneal ulcer: history of contact lenses wear, eye pain, photophobia
  - Dry eye: environmental exposures, rheumatic disease

## **VIRAL CONJUNCTIVITIS CONTINUED**

### **Plan:**

- Viral:
  - Treatment is supportive
    - Preservative-free artificial tears 4-8 times/day
    - Anti-histamine eye drops may be used if itching is severe
    - Cool moist compresses
    - Excellent hand hygiene
- HSV-herpes simplex keratitis
  - EVAC to ophthalmology

### **Patient Education:**

- Highly contagious; excellent hand hygiene is an absolute must (avoid touching eyes, shaking hands, sharing towels)
- Disease process is self-limited but may last up to 2-3 weeks
- Follow up Actions:
  - Return if no improvement after one week
  - Consider EVAC or transfer if marked eye pain, vision loss or if suspicious for STI related conjunctivitis

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**
- **Blue Directive: Contact Preceptor Immediately** if HSV-herpes simplex keratitis suspected



## **BACTERIAL CONJUNCTIVITIS**

### **Introduction:**

- Most commonly implicated organisms:
  - *Staphylococcus*
  - *Pseudomonas*
  - *Haemophilus*
  - *Neisseria gonorrhoeae*
  - *Chlamydia trachomatis*
- Bacterial conjunctivitis should always be high among differentials for anyone who wears contact lenses (most common is *Pseudomonas*)
- Can be caused by STI type infections
- Chlamydial eye disease (trachoma) is most common cause of infectious blindness worldwide

### **Subjective:**

- Signs and Symptoms:
  - Mild discomfort will be noted
  - No vision loss/blurring
- Focused History:
  - Recent exposures or history of STI
  - Urethral discharge or dysuria
  - Contact lens wear/ocular hygiene
  - Fever
  - Recent travel

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Photophobia will not be present
  - Copious purulent discharge
  - Crusting of eye
  - Erythema of conjunctiva
  - Recommend GU/GYN exam if suspicious for STI related conjunctivitis

### **Assessment:**

- Differential:
  - Viral conjunctivitis: bilateral watery, itchy eyes, URI symptoms
  - Acute uveitis: marked photophobia, consensual light reflex pain, redness involving the limbus
  - Acute glaucoma: marked pain, profound vision loss
  - Corneal ulcer: history of contact lenses wear, eye pain, photophobia
  - Dry eye: environmental exposures, rheumatic disease

## **BACTERIAL CONJUNCTIVITIS CONTINUED**

### **Plan:**

- Medications:
  - Trimethoprim with Polymyxin B (Polytrim) or ophthalmic fluoroquinolone 4 times daily for 5-7 days
  - If suspicious of STI related infections, treat with appropriate antibiotics for disease (e.g., ceftriaxone for gonorrhea, azithromycin for chlamydia)
  - If STI related, contact Public Health

### **Patient Education:**

- Proper hand hygiene is imperative
- Protected sex at all times
- No contact lens wear until resolved
- Throw away old contact lenses and case
- Eye make-up should be discarded
- Remove contact lenses nightly
- Follow-up Actions:
  - Return in 48-72 hours if not improving
  - Consider EVAC or transfer if marked eye pain, vision loss or if suspicious for STI related conjunctivitis

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ALLERGIC CONJUNCTIVITIS**

### **Introduction:**

- Associated with atopy including eczema, asthma and rhinitis (atopic triad)
- Benign but bothersome disease
- Usually occurs in late childhood or early adulthood
- Can be seasonal
- Can be complicated by hordeolum, bacterial infection, etc.

### **Subjective:**

- Signs and Symptoms:
  - Itching
  - Tearing
  - Redness
  - Stringy, clear discharge
  - Mild photophobia
- Focused History:
  - Seasonal allergies
  - Asthma
  - Eczema

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Conjunctival injection/edema (chemosis)
  - “Cobblestoning” will be noted on upper tarsal conjunctiva
  - Photophobia and mild vision loss may be noted
  - Stringy or clear discharge may be noted

### **Assessment:**

- Viral conjunctivitis: bilateral watery, itchy eyes, URI symptoms
- Bacterial conjunctivitis: fever, history of exposure, purulent discharge
- Acute uveitis: marked photophobia, consensual light reflex pain, redness involving the limbus
- Acute glaucoma: marked pain, profound vision loss
- Corneal ulcer: history of contact lenses wear, eye pain, photophobia

### **Plan:**

- Topical meds are first-line; systemic meds are second-line

## **ALLERGIC CONJUNCTIVITIS CONTINUED**

### **Plan Continued:**

- Medications:
  - Topical antihistamines (first line)
    - olopatadine (Patanol)
    - azelastine (Optivar)
    - naphazoline w/pheniramine (Naphcon-A)
  - Systemic antihistamines
    - loratadine (Claritin)
    - fexofenadine (Allegra)
    - cetirizine (Zyrtec)
- Consider facial and lid hygiene with cool compresses

### **Patient Education:**

- May use prescribed topical and systemic meds concurrently, but do not add OTC meds unless directed to
- Follow-up Actions:
  - If no improvement with initial treatment, return in 5-7 days for consideration of add-on therapy
  - Consider EVAC or transfer if:
    - Severe worsening of symptoms such that patient is unable to perform duties

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DRY EYES**

### **Introduction:**

- Usually but not always in an older population (e.g., post-menopausal women)
- Can be caused by dysfunction of lacrimal glands
- Can be associated with autoimmune disease (Sjögren's, lupus, RA)
- Most likely, this will be caused by environmental exposure
  - Hot, windy, dry climates
  - Long hours staring at computer screens

### **Subjective:**

- Signs and Symptoms:
  - Dryness, excessive tearing
  - Redness or foreign body sensation
  - Severe cases may present with photophobia and pain
- Focused History:
  - Occupational exposure
  - History of rheumatic disease
  - History of eye surgery (LASIK/PRK)

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - PE may be completely normal in cases of dry eye
  - Subtle findings may include
    - Conjunctival injection
    - Loss of corneal and conjunctival luster
  - Wood's lamp, Bluminator, and hand-held slit lamp exam combined w/ NaFl staining may reveal a superficial punctate keratitis (SPK) or a corneal ulcer in severe cases

### **Assessment:**

- Viral conjunctivitis: bilateral watery discharge, pre-auricular nodes, URI symptoms
- Acute uveitis: marked photophobia, consensual light reflex pain, redness involving the limbus
- Acute glaucoma: marked pain, profound vision loss
- Corneal ulcer: history of contact lenses wear, eye pain, photophobia
- Sjögren's syndrome: personal or family history of disease

### **Plan:**

- Artificial Tears:
  - Can be used every half hour but often are only needed every 3-4 hours
  - In some preparations, preservatives in artificial tears can cause a reaction
    - Try a preservative-free artificial tear

## **DRY EYES CONTINUED**

### **Patient Education:**

- Keep eyes lubricated with artificial tears
- Try to avoid staring at screens
- Wear eye protection as appropriate in hot, windy environments
- Follow-up Actions:
  - Contact preceptor if no improvement in 3-5 days
  - Consider EVAC or transfer if symptoms worsen, if associated with vision loss or suspicious for corneal ulcer

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PINGUECULA and PTERYGIUM**

### **Introduction:**

- Pinguecula and pterygium are benign fleshy growths on the conjunctiva and cornea of the eye; they are often bilateral
  - Pinguecula are yellow, elevated degenerative conjunctival elastic tissue more common on the nasal side, but can be found on temporal conjunctiva
    - Common in people over 35
  - Pterygium are triangular fleshy encroachments on the cornea
    - Usually a result of exposure to wind, sun, sand and dust

### **Subjective:**

- Signs and Symptoms:
  - Complaint will likely be cosmetic
  - Irritation of the eye or vision

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Extra-ocular motion will be normal
  - PERRLA
  - Raised, yellowish nodule noted on nasal side of cornea (pinguecula)
  - Flesh-colored encroachment of the cornea (pterygium)

### **Assessment:**

- Differential:
  - Inflammation of either: erythema around pterygium or pinguecula
  - Ocular trauma: history
  - Corneal ulcer: pain, contact lens wear, photophobia
  - Cataract: lens will be opaque
  - Allergic eye disease: symptoms are local

### **Plan:**

- Can use artificial tears for lubrication 4-8 times daily
- Leave alone unless encroaching on vision
- Refer to ophthalmology for consideration of removal if severe ocular irritation or vision impairment are noted

## **PINGUECULA and PTERYGIUM CONTINUED**

### **Patient Education:**

- This is a benign process that requires intervention only if vision is being affected
- Protect eyes from sun/dust/wind (wear sunglasses)
- Follow-up Actions:
  - Return if no improvement in 3-5 days
  - Consider EVAC or transfer for ophthalmology/optometry consult if vision is being affected

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **CORNEAL ULCER**

### **Introduction:**

- Most commonly due to infection
- May also have non-infectious source (eye injury/trauma, auto-immune)
- Overuse or misuse of contact lenses is a primary means by which corneal ulcers develop
- Severe dry eyes related to auto-immune disease may also lead to development of corneal ulcers

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Photophobia
  - Tearing
  - Reduced vision
- History:
  - Use of contact lenses
  - Poor ocular hygiene
  - Occupational exposure (consider dry eyes as a source)
  - Trauma
  - Foreign body in eye (metal workers)
  - Positive history of systemic auto-immune disease

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Photophobia
  - Blurred vision
  - Redness/injection of the cornea not involving limbus
- Tools:
  - Wood's lamp, Bluminator, and/or hand-held slit lamp exam will show marked uptake of NaFl dye

### **Assessment:**

- Differential:
  - Corneal abrasion: NaFl uptake pattern will more likely be linear
  - Conjunctivitis: will likely have associated constitutional symptoms
  - Trauma: history
  - Dry eye: occupation, history of contact lens wear
  - Acute angle closure glaucoma: there will be a hard eye on palpation and there will be a rapid onset of severe pain and profound visual loss with "halos around lights"

## **CORNEAL ULCER CONTINUED**

### **Plan:**

- Any patient with an acute painful red eye and a corneal abnormality should be referred emergently to ophthalmology. Contact preceptor to consider en route antibiotics.
- Consider immediate EVAC/ophthalmology or optometry visit

### **Patient Education:**

- Avoid aggravating activities
- Avoid contact lens wear until cleared by ophthalmology or optometry
- Wearing sunglasses will help with photophobia

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ACUTE ANGLE CLOSURE GLAUCOMA**

### **Introduction:**

- Acute angle closure glaucoma is a sudden narrowing of the angle of the anterior chamber, an ocular urgency that can rapidly become an ocular emergency
- This problem occurs mostly in older patients, particularly those who are pre-disposed (females, farsighted people, Asian)

### **Subjective:**

- Signs and Symptoms:
  - Age over 40
  - Extreme eye pain, frontal HA
  - Blurred vision
  - May experience a colored halo effect around lights
  - Nausea and vomiting
- Focused History:
  - Is pain sharp or dull
  - Photophobia
  - Discharge
  - Onset sudden or insidious

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Eye will be red
  - Cornea will be cloudy
  - Pupil will be moderately dilated and fixed
  - Eye will be hard to palpation
  - One eye affected only
    - If both eyes are painful, consider different diagnosis

### **Assessment:**

- Differential:
  - Iritis: eye will not be hard to palpation
  - Conjunctivitis: presence of discharge
  - Foreign body: identification of foreign body via exam
  - Dry eye: usually bilateral, consider environment
  - Subconjunctival hemorrhage: recent hard coughing or sneezing; generally absent of pain or very mild irritation

### **Plan:**

- Immediate EVAC is warranted
- Medications:
  - Topical eye drops as recommended by ophthalmology/optometry
  - Acetazolamide (Diamox) is drug of choice (rule-out sulfa allergy)
    - Rx: two 250 mg tabs by mouth--then EVAC

## **ACUTE ANGLE CLOSURE GLAUCOMA CONTINUED**

### **Patient Education:**

- Acute angle closure glaucoma will lead to blindness if patient is not compliant with medications while awaiting transport
- Follow-up Actions:
  - If unable to immediately evacuate patient, close follow-up is imperative with dosing of Diamox every 4 hours

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **UVEITIS**

### **Introduction:**

- Uveitis is inflammation of the anterior or posterior choroid and is commonly associated with inflammatory, systemic disease processes (autoimmune disease)
  - e.g., ankylosing spondylitis, ulcerative colitis
- Uveitis will be painful and may be accompanied by photophobia and vision loss; usually unilateral but may be bilateral
- Patients with uveitis should be seen by ophthalmologist/or optometrist at first opportunity

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Redness
  - Photophobia
  - Decreased vision
  - Patient may complain of “floaters”
- Focused History:
  - Is pain sharp or dull
  - Photophobia
  - Discharge
  - Onset sudden or insidious
  - History of systemic disease

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Eye will be red
    - Will involve limbus (this is very helpful in diagnosis)
  - Irregular pupil may indicate a history of synechia/scarring from previous inflammatory episodes
- Tools:
  - Wood's lamp, Bluminator, and/or hand-held slit lamp exam will not show uptake of NaFl dye

### **Assessment:**

- Differential:
  - Corneal abrasion: history of trauma
  - Conjunctivitis: presence of discharge, sparing of the limbus
  - Foreign body: identification of foreign body via exam
  - Dry eye: usually bilateral, consider environment
  - Subconjunctival hemorrhage: recent hard coughing or sneezing; generally absent of pain or very mild irritation

## **UVEITIS CONTINUED**

### **Plan:**

- Immediate EVAC is warranted; will need ophthalmology/optometry evaluation for steroid drops
- Warm compresses can decrease pain
- NSAIDs can be prescribed for pain relief

### **Patient Education:**

- Uveitis can lead to scarring of pupil if left untreated
- Do not wear contact lenses until cleared by ophthalmology/optometry
- Follow up Actions:
  - Recommend close follow-up until EVAC

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **ORBITAL CELLULITIS**

### **Introduction:**

- Orbital cellulitis is an infection of the orbital contents that penetrated the protective fascia barrier called the orbital septum
- This can result from an extension of local cellulitis (nasal cellulitis), insect envenomation or injury
- Infection of the paranasal sinuses is most common etiology
- Most likely infective agent is *S. pneumoniae*

### **Subjective:**

- Signs and Symptoms:
  - Periorcular edema/redness
  - Pain with EOMs
  - Erythema of tissue surrounding eye
- Focused History:
  - Vision change (double vision, blurred vision)
  - Pain in or around eye
  - Foreign body sensation
  - Use of contact lenses
  - Insect bites
  - Recent dental infection
  - Recent URI symptoms
  - Trauma

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Fever
  - Proptosis (bulging eye)
  - Restricted/painful extra-ocular motion
  - Swelling and erythema of lids
  - Consider HEENT exam
  - Consider dental exam

### **Assessment:**

- Differential:
  - Dacryocystitis: infection of lacrimal sac
  - Dacryoadenitis: infection/or inflammation of lacrimal gland
  - Preseptal cellulitis: ocular pain, eyelid swelling and erythema
  - Insect envenomation: history
  - Eye trauma: history of corneal abrasion

## **ORBITAL CELLULITIS CONTINUED**

### **Plan:**

- Immediate EVAC or transfer
- Medications:
  - IV antibiotics (under preceptor guidance)
- Same day referral to ophthalmology/or optometry if available

### **Patient Education:**

- Impart to patient the severity of the diagnosis
- Ensure antibiotics are administered on schedule
  - Orbital cellulitis can lead to meningitis and death if not treated appropriately
- Follow up Actions:
  - Recommend close follow-up until EVAC

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **CORNEAL ABRASION**

### **Introduction:**

- Commonly there will be a history of trauma to the eye
- Trauma can include a fingernail or a piece of paper or a contact lens
- Can lead to recurrent corneal erosions

### **Subjective:**

- Signs and Symptoms:
  - Pain (sharp)
  - Photophobia
  - Tearing
  - Reduced vision
- Focused History:
  - Use of contact lens
  - Poor ocular hygiene
  - Trauma
  - Foreign body in eye (metal workers)
  - Pain with blinking may indicate foreign body on inside of eyelid

### **Objective:**

- Physical Exam:
  - Complete vitals including eye chart
  - Photophobia
  - Blurred vision
  - Consider everting eyelid to look for foreign bodies
  - Redness/injection of the cornea not involving limbus
- Tools:
  - Wood's lamp, Bluminator, hand-held slit lamp exam will show uptake of NaFl dye in more linear pattern vs. staining of a corneal ulcer

### **Assessment:**

- Differential:
  - Corneal ulcer: NaFl dye uptake pattern will likely be more diffuse
  - Conjunctivitis: will likely have associated constitutional symptoms
  - Trauma: history
  - Angle closure glaucoma: there will be a hard eye on palpation and there will be a rapid onset of severe pain and profound visual loss with "halos around lights"
  - Foreign body embedded in eye may be visible to naked eye

## **CORNEAL ABRASION CONTINUED**

### **Plan:**

- Medications:
  - Ophthalmic fluoroquinolone (for injuries from contact lenses, fingernails)
  - Ophthalmic erythromycin ointment
  - Trimethoprim/polymyxin B
- Can consider use of NSAIDs for pain control
- Topical analgesics may be considered; however, overuse may lead to corneal erosions and corneal ulcers
  - Use of topical analgesics on eye **MUST** be done in coordination with preceptor
- Consider EVAC if no improvement in 2 to 3 days

### **Patient Education:**

- Follow-up Actions:
  - Return in 48 hours
  - Go to ED for fever, vision loss or increasing pain in eye
  - Discontinue contact lens wear until eye is pain-free

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **FOREIGN BODY**

### **Introduction:**

- Most likely caused by trauma
- Occupational exposure must be considered
  - Metal workers at high risk
  - Construction workers at high risk
- A rust ring may be noted if foreign body is metal
- May be conjunctival, corneal or intraocular

### **Subjective:**

- Signs and Symptoms:
  - Patient will likely complain of “something in eye”
  - Irritation/increased lacrimation
  - Possible photophobia
- Focused History:
  - Did something hit eye
  - Was eye protection being used at time of injury
    - Are the safety glasses intact (if broken, the safety glasses could be the offending object)
  - Was metal being hammered when injury occurred

### **Objective:**

- Physical Exam:
  - Photophobia
  - Non-circular pupil may indicate an intraocular foreign body
  - Extra-ocular motion may not function properly
  - Hyphema is possible
- Tools:
  - Wood's lamp, Bluminator, and/or hand-held slit lamp exam will highlight foreign body/associated corneal abrasions
  - Fluorescein stain should not be used if globe rupture is suspected
  - Multiple linear abrasions indicate foreign body is trapped under eyelid

### **Assessment:**

- Differential:
  - Traumatic iritis: injection will involve limbus
  - Subconjunctival hemorrhage: generally painless
  - Ruptured globe: do not palpate eye
  - Corneal ulcer: Wood's lamp or Bluminator or hand-held slit lamp exam findings helpful
  - Corneal abrasion: may be caused by foreign body

## **FOREIGN BODY CONTINUED**

### **Plan:**

- Apply topical anesthetic if available (tetracaine or proparacaine)
- Flush eye with sterile saline to see if foreign body can be dislodged
- If flush is unsuccessful:
  - Using maximal lighting and magnification if possible, use a moistened (with topical anesthetic) cotton swab to remove foreign body
- Assess for corneal abrasion and treat as appropriate

### **Patient Education:**

- Excellent hand hygiene and eye care are imperative
- Keep eye clean and dry
- Follow-up Actions:
  - Follow up daily until resolution
  - Consider ED/EVAC if no improvement in 24-48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 5

### DENTAL PROTOCOLS

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#### DENTAL “RED FLAG” SYMPTOMS

- Swelling
- Bleeding
- Malocclusion
- New growths
- Numbness or paresthesia
- Fever
- Weight loss

#### LUDWIG’S ANGINA

##### Introduction:

- Ludwig’s Angina definition: an infection of the floor of the mouth under the tongue due to bacteria (commonly Staph or Strep following oral trauma or tooth infection)
  - Also known as a submandibular space infection
  - It is a rapidly spreading form of cellulitis that typically involves the sublingual, submental and submandibular spaces
  - When a periapical abscess does not drain through gingiva or skin, the infection can spread into soft tissue spaces
- Can be a life threatening infection if not identified and treated early
- Though this is a disease of the HEENT system, it can be manifested through dental pain or noted during a dental exam
- Careful attention to a dental exam and history should point to this diagnosis

##### Subjective:

- Signs and Symptoms:
  - Fever, malaise
  - Severe pain in involved teeth
  - Severe, tender induration of the localized skin and neck region
  - Drooling
  - Trouble breathing (requires immediate EVAC/transfer)
  - Trouble swallowing (requires immediate EVAC/transfer)
- Focused History:
  - Recent trauma
  - Recent tooth infection
  - Recent dental work

## **LUDWIG'S ANGINA CONTINUED**

### **Objective:**

- Physical Exam:
  - Complete VS with emphasis on temperature
  - Pain scale (0 – 10)
  - Complete HEENT exam
    - Submental and sublingual induration
    - Swelling extends from inferior border of mandible to the upper neck
    - Elevation of the floor of the mouth and posterior tongue
    - Stridor
    - Airway obstruction (requires immediate EVAC/transfer)

### **Assessment:**

- Differential:
  - Tooth infection: may have localized cellulitis of the surrounding soft tissues
  - Pericoronitis: erythema, swelling and pain localized to the erupting wisdom tooth and localized soft tissue, usually will not extend beyond this
  - Peritonsillar abscess: uvula will not rise midline with phonation, erythema and induration typically will not extend to the floor of the mouth
  - Strep pharyngitis: pain is generally localized to the throat and elevated with swallowing
  - Trauma: history of trauma may predispose to infection

### **Plan:**

- This is a medical emergency
  - Prepare for ACLS intervention
  - IV/oxygen/monitor
- Medications:
  - IV antibiotics if available (under preceptor guidance)
    - Clindamycin, Ampicillin
  - If IV antibiotics unavailable:
    - Pen VK/Augmentin/Clindamycin PO
- Maintain IV hydration, nutrition, pain control and infection management
- Prevent saliva accumulation in supine position and maintain airway patency
- EVAC or transfer STAT

### **Patient Education:**

- Continue good oral hygiene, as possible
- Report any worsening of symptoms ASAP
- Follow-up Actions:
  - Patient should remain in clinic for observation until EVAC

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **BRUXISM**

### **Introduction:**

- Bruxism is grinding or clenching of the teeth that can lead to abrasion, wear and fracture and/or avulsion of dental enamel and cusps of teeth (commonly stress-related)
- There are two general types of bruxism:
  - Awake bruxism
  - Sleep bruxism
    - The most extensive and common occurrence of bruxism is during sleep

### **Subjective:**

- Signs and Symptoms:
  - Patient may be aware of grinding and clenching
  - Headache
  - Jaw pain
  - Tooth pain
  - Earaches
  - Bed partners/roommates may complain of grinding sound

### **Objective:**

- Physical Exam:
  - Full set of vital signs
  - Pain scale (0 – 10)
  - HEENT/oral/teeth examination:
    - Painful TMJs and associated muscles of mastication
    - May have painful or limited opening
    - Pain may radiate to ear and temporal regions
    - Jaw may pop with opening or closing
    - Enamel wear and fractures may be obvious on molars and incisors
    - May demonstrate multiple habitual clench positions
    - Loose, painful teeth

### **Assessment:**

- Differential:
  - TMJ pain: popping, clicking, crepitus, limited ROM and locking of jaw
  - Referred pain: radiating and/or referred pain to ear, temporal and posterior neck regions
  - Abscess: tooth pain and pressure sensitivity
  - Tooth fracture: trauma
  - Headache: referred to/from jaw

### **Plan:**

- Pain management:
  - NSAIDs PRN
- Orthotics: OTC heat moldable devices
- Self-awareness: conscious effort to reduce jaw clenching

## **BRUXISM CONTINUED**

### **Plan Continued:**

- Stress reduction: meditation
- Diet/exercise: avoid caffeine, nicotine, alcohol and vigorous exercise before sleep
- Sleep hygiene: improve sleep quality, duration, avoiding fractured sleep patterns

### **Patient Education:**

- Follow recommended treatment plan
  - Long term, untreated bruxism can lead to loose teeth, dental wear, etc.
  - Use dental device nightly and during the day if tolerated
  - Self-awareness
  - Take NSAIDs as directed
  - Stay hydrated
  - Soft diet as tolerated for acute phase
  - Avoid severe, extreme jaw movements, chewing gum
  - Gentle, slow stretching exercises for mandibular ROM
  - Heat and/or cold application to TMJs 15 minutes on/15 minutes off PRN
- Follow-up Actions:
  - Return to clinic 1-2 weeks after using strategies for evaluation of continued pain
  - If pain continues after 2 weeks of conservative treatment, recommend dental evaluation

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **HALITOSIS**

### **Introduction:**

- Halitosis is frequent or persistent unpleasant breath odor
- While halitosis is generally benign, it should be considered as a harbinger for other disease entities and a careful HEENT exam should be performed

### **Subjective:**

- Signs and Symptoms:
  - Consistent bad breath
  - White to brownish coating on tongue
  - Plaque buildup on teeth
  - Dry mouth
  - Morning bad breath
  - Bitter and sour metallic taste
  - Thick saliva
- Focused History:
  - Poor oral health care
  - History of diabetes
  - Drug, tobacco and alcohol use
  - Strongly flavored food/drink
  - Other systemic disease

### **Objective:**

- Physical Exam:
  - Complete vital signs - evaluate for fever
  - Pain scale (1 – 10)
  - HEENT exam
    - Periodontal disease
    - Dental infections
    - Sinus disease
    - “Sniff test”

### **Assessment:**

- Differential:
  - Dental infection: pain to pressure on teeth, or adjacent tissue swelling (abscess)
  - Xerostomia: history, PE findings of xerostomia
  - Medication use: side effect of medications, xerostomia
  - Sinus disease: URI symptoms, sinus pain/pressure
  - Dietary considerations: onions, garlic, spices
  - Systemic disease: lung, liver, renal, GERD, diabetes, Sjögren's disease, etc.

## **HALITOSIS CONTINUED**

### **Plan:**

- Identify primary source of odor and treat as indicated
- Psychogenic halitosis requires psychiatry consult

### **Patient Education:**

- Improve oral health care - brushing, flossing, brushing the tongue
  - Non-alcohol mouth rinses may assist temporarily
  - Chew sugar-free gum
  - Stay hydrated (6 -8 glasses of water each day)
  - Eat a healthy diet – avoid food/drinks high in sugar and starch
- Follow-up Actions:
  - Return for further evaluation if symptoms do not resolve

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DENTAL CARIES**

### **Introduction:**

- Caries are cavities in the teeth caused by acids produced by bacteria in dental plaque
- Untreated caries can lead to tooth destruction, infections and the need for extractions
- Risk factors for caries include food and drinks high in acid, sugar (sucrose), starch, fizzy cola drinks, untreated dry mouth (xerostomia), tobacco use and poor dental hygiene

### **Subjective:**

- Signs and Symptoms:
  - Pain (mild, moderate, severe, intermittent, lingering, spontaneous, constant)
    - Associated with: cold, hot, sweet, sour, salty foods/drinks
    - Pain with chewing: a late sign due to inflammation of the dental pulp with subsequent inflammation of the periodontal ligament (PDL joint space)
- Focused History:
  - Oral hygiene
  - Anatomical consideration: crowded, malposed dentition
  - Dietary considerations
  - Tobacco use
  - Medications: dry mouth/xerostomia
    - Consider current medication regimen as a source

### **Objective:**

- Physical Exam:
  - Complete VS with emphasis on temperature
  - Pain scale (0 – 10)
  - Obvious defect in tooth
  - Pain, mobility to palpation
  - Poor, malposed dentition
- Tools:
  - X-rays if available

### **Assessment:**

- Differential: to include pain etiology if present
  - Differentials for toothache: caries (with location), gingival recession, gingival abrasion, fracture, leaking restoration, recurrent caries around restoration, radiographs (\*if x-ray available)
  - Frank or obvious dental caries do not require differentials

## **DENTAL CARIES CONTINUED**

### **Plan:**

- Remove gross debris with high pressure saline irrigation or floss
- May attempt to debride carious lesion with small instrument (spoon)
- Oral pain control with NSAIDs
  - If symptoms are controlled with NSAIDs
    - Routine dental appointment
  - If symptoms not relieved with NSAIDs
    - EVAC or transfer
- Place IRM or \*Fuji 9 Glass Ionomer restorative material while awaiting transport

### **Patient Education:**

- Non-acute:
  - Improve dental hygiene
    - Brush and floss daily
    - Control dietary components
- Acute episode:
  - Soft diet as tolerated, do not chew on affected side
  - Neutral temperature, bland diet may be more tolerable for short term
- Maintain moisture in mouth and hydration
- Avoid frequent consumption of food and drinks high in acid, sugar (sucrose), starch, fizzy cola drinks
- Eliminate tobacco if applicable
  - Snuff and dipping tobaccos may directly elicit a pain stimulus to open carious lesions and gingival abraded areas
- Follow-up Actions:
  - Monitor for pain and return for further evaluation if pain recurs or does not improve
  - If symptoms not relieved or increase
    - Consider EVAC if no improvement, pain increases, swelling develops

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **GINGIVITIS**

### **Introduction:**

- Gingivitis is the most common problem in dentistry and is defined as inflammation of the gingiva, causing bleeding with swelling, redness, exudate and sometimes, pain
- Untreated gingivitis can lead to periodontitis, which will present similarly, but symptoms will be much more pronounced and may require EVAC if periodontal abscesses develop

### **Subjective:**

- Signs and Symptoms:
  - Red, swollen, tender gums
    - Usually painless, but sometimes patients complain of tenderness with brushing
  - Bleeding from the gums with provocation, or spontaneously in advanced cases
  - Bad breath or bad taste in mouth
- Focused History:
  - Dental hygiene regimen
  - Smoking and smokeless tobacco use
  - Stress
  - Oral condition
    - Crowded, malposed dentition, restorations or prosthetic devices impede effective oral hygiene
  - Medications

### **Objective:**

- Physical Exam:
  - Complete vital signs
  - Pain scale (1 – 10)
  - Oral exam
  - Manipulation of gingiva with tongue depressor, dental probe or floss may express blood or purulent discharge

### **Assessment:**

- Differential:
  - Plaque induced: oral hygiene related - plaque, calculus
  - Not plaque induced: bacterial, viral, fungal, denture related, NUG
  - Systemic factors: puberty, pregnancy, Crohn's, leukemia, blood dyscrasias, HIV, diabetes, smoking (vasoconstriction)
  - Medication factors: ASA, blood thinners, calcium channel blockers, hormones antipsychotics, antiepileptic, antirejection meds
  - Nutrition factors: malnutrition, vitamin deficiencies
  - Periodontitis: attachment loss, increased probing depth, elevation of gingival symptoms with possible non-pulpal abscess formation

## **GINGIVITIS CONTINUED**

### **Plan:**

- Maintain good oral hygiene, diet
- Tylenol or NSAIDs for pain
- Remove irritating factors
- Normal saline rinses twice daily
- Periogard (0.12%) rinses
- Caution in acute phase as gingivitis may precipitate (or mask) periodontal abscesses

### **Patient Education:**

- Education:
  - Maintain good oral hygiene
  - Tobacco cessation (of any form), if applicable
- Follow-up Actions:
  - Patient to return to clinic in one week to check for improvement
  - Return for any elevated symptoms
  - If no improvement, consider periodontitis or other etiologic factors

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **NECROTIZING ULCERATIVE GINGIVITIS (NUG)**

### **Introduction:**

- NUG is a painful infection of the gums leading to bleeding and foul breath
- People most likely to get NUG are debilitated patients under stress and smokers
- Other factors in the presentation of NUG include poor dental hygiene, nutritional deficiencies, sleep deprivation, physical/emotional stress, compromised immunity
- Classic presentation: painful gingiva, foul breath, spontaneous gingival bleeding and necrosis of interdental papilla

### **Subjective:**

- Signs and Symptoms:
  - Usually abrupt onset with painful ulceration/necrosis of gingiva and papilla
  - Fever, malaise, lymphadenopathy, loss of appetite
  - Bleeding gingiva
  - Fetor oris: overwhelmingly foul breath

### **Objective:**

- Physical Exam:
  - VS with emphasis on fever
  - Pain scale (1 – 10)
  - Complete HEENT exam
  - Lymphadenopathy is often present
  - Ulcerations are pathognomonic
    - Covered with grey membrane
    - Shape: crateriform

### **Assessment:**

- Differential:
  - Primary herpetic gingivostomatitis: lesions will appear on hard palate, attached gingiva, lateral and ventral surfaces of tongue and around lips (keratinized)
  - Aphthous ulcers
  - Herpes zoster
  - Erosive lichen planus
  - Diphtheria: location, immunizations (throat culture)

### **Plan:**

- Use a soft bristle toothbrush to gently debride gums (may take multiple visits)
- Topical benzacaine prior to brushing (viscous lidocaine)
- Frequent normal saline rinses
- Peridex rinses twice-daily
- Motrin, NSAIDs for pain
  - Narcotics may be required for severe pain

## **NECROTIZING ULCERATIVE GINGIVITIS (NUG) CONTINUED**

### **Plan Continued:**

- If no improvement in 24-48 hours (or with fever or submandibular lymphadenopathy)
  - Antibiotics
    - Amoxicillin
    - Erythromycin
    - Tetracycline
    - Metronidazole (Flagyl)
  - Ensure adequate hydration and nutrition
  - EVAC or transfer with persistent signs/symptoms

### **Patient Education:**

- Good oral hygiene with continued gentle debridement (new tooth brush)
- Good hydration/nutrition (soft bland diet)
- Avoid smoking if applicable
- Mouth rinses PRN
- Avoid spicy foods or other painful agents
- Adequate rest
- Follow-up Actions:
  - Monitor patient daily and be prepare to EVAC/transfer if necessary

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **FRACTURED and AVULSED TEETH**

### **Introduction:**

- Tooth fracture is divided by depth:
  - Affecting only enamel (Ellis Class 1)
  - Exposing the dentin (Ellis Class 2)
  - Exposing the pulp (Ellis Class 3)
- Tooth avulsion:
  - Complete, with or without alveolar fracture
  - Partial, with or without alveolar fracture

### **Subjective and Objective:**

- Complete VS
- Pain scale (1 – 10)
- HEENT, complete oral exam
- History of trauma to the tooth
  - Affecting the enamel
    - No pain, +rough edges to enamel
  - Exposing the dentin
    - Sensitivity to cold air and water
    - No bleeding from the tooth
  - Exposing the pulp
    - Quite painful
    - Bleeding from the tooth will be noted

### **Assessment:**

- Differential:
  - Differential for tooth fracture will be based on the depth of the tooth injury
  - Differential for avulsion should include consideration for mechanism and vector of force in injury, and possible associated oral, alveolar and facial injuries (fractures, lacerations, dislocations, TMJ pain and limited ROM)

### **Plan:**

- Fractured teeth:
  - Affecting only enamel
    - No treatment is required
  - Exposing the dentin
    - NSAIDs, Tylenol, narcotics if severe
    - Intermediate Restorative Material (IRM), Fuji 9 Glass Ionomer (GI) Cement
    - EVAC/dentist ASAP if still symptomatic
    - Routine referral if asymptomatic
  - Exposing the pulp
    - NSAIDs, Tylenol, narcotics if severe pain
    - IRM, Fuji 9 GI Cement
    - EVAC/dentist ASAP

## **FRACTURED and AVULSED TEETH CONTINUED**

### **Plan Continued:**

- Avulsed Teeth
  - If possible, replace tooth in socket immediately, then proceed to dental
  - If not possible to replace or dentist not available, place tooth in:
    - Hank's Balanced Salt Solution (HBSS, Save a Tooth)
    - Place tooth under tongue or in oral vestibule
    - Immerse tooth in milk or moist paper towel
    - Dentist ASAP
  - Tooth should not be scrubbed – gentle rinsing to avoid removing viable PDL fibers
  - If replaced within 30-60 min, chance of retention is greatly improved
- Copious normal saline irrigation, 0.12% Periogard irrigation and rinse
- Evaluate for alveolar or facial bone fracture (Barton bandage stabilization)
- Evaluate for soft tissue lacerations (lip, gingiva/oral mucosa and penetrating extra/intra oral lacerations are common)
- Consider unaccounted teeth or tooth fragments may be lost, swallowed, embedded in soft tissue (lips), or aspirated (consider oral hard tissue, soft tissue (lips), facial and chest radiographs as indicated)
- If bony alveolar ridge is mobile or distorted, apply gentle digital compression to alveolar ridge to compress and re-approximate bony segments
- Consider temporary stabilization of replanted tooth with Fuji 9 GI Cement
- Oral antibiotics are required for an avulsed tooth:
  - Amoxicillin
  - Pen VK
  - Clindamycin
- EVAC at first opportunity

### **Patient Education:**

- Do not manipulate tooth when replaced or if IRM or Fuji 9 GI Cement was placed
- Good oral hygiene with gentle debridement in area of wound (new tooth brush)
- Good hydration/nutrition (soft bland diet as tolerated)
- Avoid smoking and tobacco products, if applicable
- Mouth rinses PRN (0.12% Periogard, normal saline, Listerine)
- Avoid spicy foods or other painful agents
- Adequate rest
- Return to clinic for increased pain, swelling or for any other concerns
- A swallowed tooth is not a concern
- An aspirated tooth is a concern
- Follow-up Actions:
  - EVAC/transfer at first opportunity

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **MANDIBULAR DISLOCATION**

### **Introduction:**

- Mandibular dislocation occurs when the mandibular condyles are displaced
- The patient will present with a wide-open mouth and be unable to close
- Routinely, trauma does cause dislocation - more commonly spontaneous
- Mechanism is typically a wide yawn followed by a biting action
- Dislocation may be recurrent due to laxity of TMJ ligaments or shape of fossa
- Dislocation may be bilateral or unilateral with midline deviation to one side
- Manual reduction may be required

### **Subjective:**

- Signs and Symptoms:
  - Drooling
  - Pain in the jaw and in preauricular area
  - Unable to close mouth
  - Difficulty talking
- Focused History:
  - Recent food intake
    - Requiring wide opening of mouth followed by high bite pressure (think sub sandwich)
  - Dental appointment
  - History of past occurrences
  - Trauma

### **Objective:**

- Physical Exam:
  - Complete VS
  - Pain scale (1 – 10)
  - Mouth locked in wide open position (bilateral or unilateral)
  - Bony prominences noted in the preauricular area (TMJ)
  - TTP over the TMJs and masseter/pterygoid muscle regions
  - Palpate for bony step defects to r/o fracture
  - Malaligned dental occlusion/bite
- Tools:
  - X-ray if available to evaluate for possible fracture

### **Assessment:**

- Simple condylar displacement - reducible
- Consider fracture of the mandibular condyle
- Consider other associated injuries if trauma related
- Consider heme-arthritis or fluid effusion into TMJ capsule - post injury
- Tumor can displace the jaw (rare)

## **MANDIBULAR DISLOCATION CONTINUED**

### **Plan:**

- Reduction of the dislocation ASAP to prevent painful muscle spasm and trismus
  - May require infiltration of local anesthesia and/or premedication (IV Versed/Fentanyl)
  - Once reduced:
    - Consider NSAIDs for inflammation and pain control
    - Warm moist compresses applied to TMJs 15 minutes on/15 minutes off
    - Consider Barton's bandage for 2-3 days while joint complex stabilizes
    - Gentle stretching exercises to regain ROM
    - Avoid opening mouth wide for 6 weeks
- If unable to reduce after 2 attempts
  - Consider NSAIDs for inflammation and pain control
  - Consider Barton's bandage for 2-3 days while joint complex stabilizes
  - Maintain fluids and nutrition
  - EVAC or transfer

### **Patient Education:**

- NSAIDs PRN as indicated for pain and inflammation
- Cut food into small pieces
- Consider a soft diet until pain free
- Follow-up Actions:
  - Return daily for evaluation of mobility and pain control
  - Continue to monitor for nutrition/fluid intake
  - Continued occurrences require dental evaluation

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **TOOTHACHE and TOOTH INFECTION**

### **Introduction:**

- Toothache is a common complaint and is most commonly caused by dental caries, trauma and erupting wisdom teeth
- Pathology:
  - Oral bacteria break down food debris that remains around teeth in plaque and produces a byproduct of acid (*Strep mutans* – sucrose)
  - The acid slowly breaks down the enamel allowing the bacteria to penetrate within the dentin and colonize
  - Progression through the dentin into the pulp zone produces inflammation, infection and pain

### **Subjective:**

- Signs and Symptoms:
  - Pain is likely primary reason for visit
  - Other signs and symptoms are associated with the problem causing the pain: infection, swelling, fetor oris, bad taste, abscess, purulent drainage
  - Fever
  - Trauma:
    - Indirect: restoration placed near pulp, gingival abrasion/recession
    - Direct: chips, fractures, avulsed cusp or restoration
- Focused History:
  - History of trauma
  - History of recent dental procedure
  - Pain history: minor, moderate, severe, intermittent, spontaneous, constant
  - Swelling
  - Drainage

### **Objective:**

- Physical Exam:
  - Vital Signs: evaluation for fever
  - Pain scale (1-10)
  - HEENT exam
  - Pain at a particular tooth or area
  - Evaluate gum line around problem tooth – (abrasion, recession, caries, swelling)
  - Obvious caries
  - Fractures - avulsed cusps, mobile tooth segments, avulsed restorations
  - Visually examine and palpate floor of mouth and neck for induration or TTP
- Tools:
  - Dental x-ray if available may be helpful

## **TOOTHACHE and TOOTH INFECTION CONTINUED**

### **Assessment:**

- Differential:
  - Caries: poor hygiene (plaque, calculus)
  - Trauma: history
  - Sinusitis: involvement of maxillary molars and recent URI type symptoms with associated sinus TTP (“feel pressure on teeth, feels better if I clench”)
  - Cavernous sinus thrombosis: periorbital swelling, presence of vision problems, ocular motor nerve dysfunction
  - Ludwig's Angina: bilateral TTP and swelling in the floor of the mouth, extending below inferior border of mandible into neck regions

### **Plan:**

- Remove pain causing agent if present
- NSAIDs or Tylenol for pain
- If suspicious for caries: cover with IRM or Fuji 9 GI cement and EVAC
- If simple gingival abrasion: cover with fluoride varnish or Fuji 9 GI cement
- If swelling is present: evaluate for cellulitis or space infection, drainage
- Antibiotics if evidence of infection:
  - Amoxicillin or penicillin VK
  - Clindamycin if PCN allergic

### **Patient Education:**

- Good oral hygiene
- Use analgesics as directed
- Use antibiotics as prescribed
- Report increasing pain, fever, swelling, purulent discharge ASAP
- Follow-up Actions:
  - Have patient return in 24 hours to re-evaluate for pain control
  - If no relief of pain in 48 hours, consider EVAC or transfer

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ORAL CANCER**

### **Introduction:**

- Mouth cancer can cause sores or growths inside the mouth, lips, tongue and oropharynx
- Mouth cancer may manifest as white, red and pale or dark colored lesions
- Early lesions may appear as leukoplakia (white) or erythroplakia (red)
  - Leukoplakia: white lesion present for at least two weeks that cannot be removed with rubbing the mucosal surface
    - 70-90 % often associated with smokeless tobacco use
  - Erythroplakia: red lesion present for at least two weeks that cannot be removed with rubbing the mucosal surface
    - 90% are associated with squamous cell carcinoma.
- Advanced lesions may appear as erosions or as masses
- Squamous cell carcinoma is the most prevalent oral cancer and usually occurs after age 50
  - Etiologic risk factors are smoking, alcohol use and combined smoking and alcohol use
- Males have oral cancer twice as often as females

### **Subjective:**

- Focused History:
  - EtOH/tobacco use are primary risk factors
  - Use of dental appliances (dentures) – repeated or chronic mechanical trauma
  - Chemical irritation
  - Systemic disease: diabetes, HIV, HPV infection (oral – genital contact), Candida albicans, syphilis, EBV

### **Objective:**

- Physical Exam:
  - Complete VS
  - Pain scale (1 – 10)
  - Oral exam with palpation of all glands
  - Complete HEENT exam
  - Include neck for lymph node involvement

### **Assessment:**

- Differential:
  - If any red or white lesions exist in mouth that are clearly not transient aphthous ulcers or herpetic vesicles, over two weeks in duration, should receive consult with oral medicine for biopsy
  - EVAC or a dental consult for biopsy

## **ORAL CANCER CONTINUED**

### **Plan:**

- If lesion is suspicious and/or risk factors exist that make it concerning, EVAC or dental consult for biopsy is required to correctly identify and treat possible cancer

### **Patient Education:**

- Modify risk factors to reduce risk of cancer
  - Stop smoking
  - Reduce EtOH use
  - Routine exams
- Follow-up Actions:
  - Continue to monitor any suspicious lesions if EVAC is not imminent

**Preceptor Directive: Blue Directive: Contact Preceptor Immediately**



## Chapter 6

# CARDIOVASCULAR PROTOCOLS

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### MURMUR RECOGNITION

#### **Introduction:**

- A murmur is the noise made via the turbulence of blood flow as it moves through the heart valves
  - The time at which the murmur occurs is one means by which murmurs are classified
  - Normal heart sounds: "lub-dub"
  - Systolic murmur: "lub-shhh-dub"
  - Diastolic: "lub-dub-shhh"
  - Murmurs are generally representative of a structural defect in the heart
  - A new onset murmur with symptoms is an emergency

#### **Subjective:**

- Signs and Symptoms:
  - An asymptomatic murmur is usually an incidental finding on exam
  - A patient with symptoms may complain of:
    - Shortness of breath
    - Dizziness
    - Syncope
    - Chest pain
    - Difficulty with exercise

#### **Objective:**

- Physical Exam:
  - A careful evaluation of heart sounds is essential
    - The point at which the murmur occurs
    - Check hands and feet for edema
    - Check distal pulses
    - Look for distended neck veins
    - Adventitious sounds in lungs
      - Crackles
      - Wheezes
    - Grade and location of murmur

#### **Assessment:**

- Differential:
  - Valve stenosis
  - Valve regurgitation
  - Coarctation of the aorta
  - Atrial septal defect/ventricular septal defect
  - Patent foramen ovale/patent ductus arteriosus

## **MURMUR RECOGNITION CONTINUED**

### **Plan:**

- Patient is symptomatic:
  - Prepare for EVAC
  - Treat per ACLS guidelines as needed
  - Keep patient in clinic and monitor
- Patient is asymptomatic and murmur has not been previously identified:
  - Consider cardiology consult at first opportunity

### **Patient Education:**

- Report to clinic immediately for shortness of breath, chest pain, difficulty with exercise
- Follow-up Actions:
  - Ensure EVAC is carried out expediently
  - Follow up with asymptomatic patient in 5-7 days to assess for stability of murmur

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** if symptomatic
- **Blue Directive: Contact Preceptor Immediately** if asymptomatic

## **SYNCOPE**

### **Introduction:**

- Syncope is a transient, self-limited loss of consciousness (LOC), usually leading to a fall
- Specific causes are commonly elusive (only 50% of the time is a reason identified)
- History is the most important factor in identifying a cause
  - Vagal
  - Hypovolemia
  - Arrhythmia
  - Structural heart disease
- Pre-syncope is more likely and presents with similar symptoms without loss of consciousness
- Red Flags:
  - Syncope with exertion
  - Multiple recurrences within a short time
  - Heart murmur or other findings suggesting heart disease
  - Chest pain

### **Subjective:**

- Signs and Symptoms:
  - Abrupt in onset/transient
  - May lead to other injury
- Focused History:
  - Previous syncopal episodes
  - Food intake
  - History of glycemic disorders
  - Lightheadedness prior to event
  - Nausea prior to event
  - History of cardiac disease
  - Medications

### **Objective:**

- Physical Exam:
  - Complete set of vital signs including orthostatic vital signs
  - Skin may be cool/clammy
  - Cardiac exam may display arrhythmias
  - Neurological exam may display altered LOC and seizure-like activity
- Tools:
  - EKG

## **SYNCOPE CONTINUED**

### **Assessment:**

- Differential:
  - Hypovolemia: tilts will be positive
  - Vasovagal: postural change, blood draw, procedure
  - Seizure disorder: history/evidence of sustained tonic-clonic movement
  - Psychiatric: patient may display suspicious behaviors during and after syncopal episode; consider secondary gain
  - Cardiac: evidence of arrhythmia on EKG or physical exam

### **Plan:**

- Protect patient from injury if seizing
- Protect airway (do not place objects in mouth)
- Identify and avoid offending stimulus
- Treatment is directed towards correcting underlying cause once life-threatening disorders have been ruled out

### **Patient Education:**

- If episode recurs, return for consideration of ED vs EVAC
- Maintain adequate hydration and nutrition
  - Avoid salt restriction
  - Avoid EtOH use
- Have patient avoid events which predispose to syncope (blood draws, standing at attention while locking knees, etc.)
- Follow-up Actions:
  - If known, treatable cause (i.e., hypovolemia), and there are no red flag symptoms, f/u with patient in 24 hours, repeat EKG
  - If patient has repeat episode, immediate ED/EVAC
  - Cardiac disturbances warrant immediate ED/EVAC

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HEART FAILURE**

### **Introduction:**

- Heart failure is a condition where the heart is unable to pump blood efficiently, thereby denying the tissues their needed oxygen
- Heart failure can be left-sided, right-sided or both
- The causes of heart failure are numerous and varied
  - The signs and symptoms of heart failure will help delineate which side of the heart has been damaged
- Left-sided failure is the most common and can be a result of long-standing, untreated hypertension

### **Subjective:**

- Signs and Symptoms:
  - Are dependent on which side of the heart is failing
    - LVF
      - SOB, dyspnea on exertion (DOE), orthopnea
    - RVF
      - Peripheral edema/ascites
- Focused History:
  - History of hypertension
  - History of MI
  - Current medications

### **Objective:**

- Physical Exam:
  - LVF:
    - Increased RR, low pO<sub>2</sub>, tachycardia, hypotension
    - Adventitious sounds in lungs (crackles)
  - RVF:
    - Edema (usually pitting) in extremities
    - Distended neck veins
  - Murmur may be noted
- Tools:
  - EKG:
    - ST elevation indicative of MI
    - Global ST elevation indicative of pericarditis
  - Lab:
    - Cardiac enzymes/BNP are essential, however not likely available
    - CBC-elevated WBC count may indicate pneumonia or other infectious process
    - CMP-elevated BUN/creatinine may indicate renal impairment
  - Rad: CXR may indicate cardiomegaly

## **HEART FAILURE CONTINUED**

### **Assessment:**

- Differential:
  - Acute MI: EKG changes will indicate possible MI
  - Pericarditis: ST elevation in all leads on EKG
  - Hypertensive emergency: systolic >180, diastolic BP >110
  - Acute mountain sickness/high altitude pulmonary edema (HAPE): recent change in elevation may cause pulmonary edema
  - Chronic obstructive pulmonary disease/emphysema: history, increased sputum production

### **Plan:**

- O2 15 LPM via NRB to maintain O2 saturation above 90%
  - Consider ACLS protocol/intubation as needed
- Medications:
  - IV furosemide (under preceptor guidance)
- Cardiac monitor if available
- Monitor urine output
- Do not allow patient to lie down flat
- Immediate EVAC or transfer

### **Patient Education:**

- Restrict salt intake to less than 2 grams per day
- Sit in a comfortable position for respiration
- Low sodium diet
- Continue to monitor urine output/daily weights
- Mitigate blood pressure problems
  - Take prescribed HTN meds daily if applicable
- Follow-up Actions:
  - Maintain close contact with medical preceptor to ensure EVAC

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HYPERTROPHIC CARDIOMYOPATHY (HCM)**

### **Introduction:**

- Hypertrophic Cardiomyopathy (HCM) is the leading cause of sudden death among young athletes
- HCM occurs when the septum is enlarged along with enlargement of the LV tissue
  - This can lead to heart arrhythmias causing sudden death

### **Subjective:**

- Signs and Symptoms:
  - First sign of HCM might be death
  - Shortness of breath especially during exertion
  - Chest pain
    - Syncopal episode post-exertion
- Focused History:
  - Syncopal episodes
  - Family history of sudden cardiac death (SCD)
  - Shortness of breath or chest pain especially with exercise

### **Objective:**

- Physical Exam:
  - Bisferious pulse (double pulse felt with systolic beat at carotid artery)
  - Loud systolic murmur that disappears while squatting and gets louder when standing (outflow obstruction)
- Tools:
  - EKG may show left ventricular hypertrophy (LVH) or non-specific abnormalities

### **Assessment:**

- Differential:
  - MI: EKG will indicate ST elevation
  - Ventricular Tachycardia
  - Ventricular Fibrillation
  - Syncope: patient may have history of numerous episodes
  - Heart failure: adventitious sounds/peripheral edema will be present

### **Plan:**

- Prepare for ACLS intervention
- If suspicious PE/EKG findings, contact preceptor
  - Consider immediate evacuation for cardiology evaluation
- Avoid exertional activities until cleared by cardiology
- Consider screening tactical athletes

## **HYPERTROPHIC CARDIOMYOPATHY (HCM) CONTINUED**

### **Patient Education:**

- Avoid exertional activities until cleared by cardiology
- Patient to consider having family members screened
- HCM is treatable, but care must be taken to follow instructions of cardiologist or death could ensue
- Follow-up Actions:
  - Follow-up actions will likely be performed by cardiology

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **PERICARDITIS**

### **Introduction:**

- Pericarditis is inflammation of the pericardial sac
- Common causes include:
  - Viral illnesses (most common)
  - Bacterial infection
  - Medications
  - Rheumatic disease

### **Subjective:**

- Signs and Symptoms:
  - Chest pain (postural)
  - Difficulty breathing
  - Pain radiating through to back and into shoulders
- Focused History:
  - Recent illness
  - Autoimmune disorders
  - Does pain improve when sitting up? Get worse with lying down?
  - Does pain get worse with deep breathing?
  - Fever, SOB, malaise

### **Objective:**

- Physical Exam:
  - Fever
  - Pericardial friction rub (loudest leaning forward with expiration)
  - Diaphoresis
  - Pulsus paradoxus (>20 mmHg decline in systolic pressure with inspiration) suggests tamponade
- Tools:
  - EKG: global ST elevation, PR depression in inferior leads (II, III, AVF)
  - CBC: elevated WBC count suggests infectious cause
  - CXR: cardiac enlargement

### **Assessment:**

- Differential:
  - Cardiac tamponade: signs of obstructive shock
  - Pleurisy: pleural rub without ECG abnormality
  - Acute MI: EKG with ST elevation, but not in all leads
  - Pneumothorax: absence of breath sounds on one side
  - Pulmonary embolism: risk factors, unilateral calf swelling

## **PERICARDITIS CONTINUED**

### **Plan:**

- Restrict activity
- NSAIDs are treatment of choice (2-4 weeks duration)
- Colchicine once to twice-daily for 3 months reduces recurrence rate

### **Patient Education:**

- Limit activity that causes discomfort
- Low sodium diet
- If SOB worsens despite treatment, consider tamponade, and EVAC or transfer
- Follow-up Actions:
  - Return in 48 hours for recheck of symptoms
  - If at any time condition worsens, consider EVAC or transfer

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HYPERTENSION**

### **Introduction:**

- Hypertension is defined as >130/90
  - Hypertensive urgency
    - Blood pressure of >180/110 without signs of end-organ damage
  - Hypertensive emergency
    - >180/110 associated with signs of end-organ damage
    - Associated with severe, life-threatening symptoms
- Treatment of hypertension is not in the scope of the IDMT

### **Subjective:**

- Signs and Symptoms:
  - “The Silent Killer”
  - If symptomatic, consider hypertensive urgency/emergency
  - Most likely, HTN will not be symptomatic
  - Headache is most frequent symptom
  - Sustained elevated BP is the primary sign for HTN
- Focused history:
  - Family history of HTN, CVD, MI, SCD, stroke
  - Diabetes
  - Vision changes

### **Objective:**

- Physical Exam:
  - Neuro
    - Altered mental status
  - Retinal exam
    - Narrowing of arterioles
    - Cotton wool spots
  - Cardiovascular
    - S4 gallop
    - Bruits
  - Lungs
    - Rales

### **Assessment:**

- There is no real differential for HTN. The list below represents possible ramifications of unrecognized or untreated HTN:
  - Stroke: focal neurological deficit
  - Renal failure: elevated BUN/creatinine
  - Aortic dissection: severe persistent chest pain
  - Elevated intracranial pressure: history of trauma, pupil differences
  - Blindness

## **HYPERTENSION CONTINUED**

### **Plan:**

- 3-5 day BP check
- If patient has an existing diagnosis of HTN, but is not compliant with medications (common):
  - Consider supervised daily intake of medication
- Asymptomatic hypertension does not generally require evacuation
  - However, recommend preceptor contact if >130/90 on at least two different days
- There are several potential medications for treatment with which you should be familiar but IDMTs do NOT treat HTN. Target BP <130/90.
  - ACE Inhibitors (lisinopril, benazapril)
  - ARBs (valsartan, losartan)
  - CCBs (Calcium Channel Blockers - amlodipine, nifedipine)
  - Thiazides (hydrochlorothiazide)
  - Beta Blockers (metoprolol, carvedilol (mixed beta and alpha))

} First Line therapies

### **Patient Education:**

- Low sodium diet
- Exercise
- Weight loss
- Monitor BP daily if possible
- Follow-up Actions:
  - Return for headache, chest pain, shortness of breath

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **LYMPHANGITIS and LYMPHADENITIS**

### **Introduction:**

- The lymph system is important in the delivery of toxins throughout the body to their respective waste systems
- Causes of lymphadenitis include bacterial, viral and parasitic infections
- Generally, lymphadenitis will arise from the site of an infected wound

### **Subjective:**

- Signs and Symptoms:
  - Throbbing pain at infection site
  - Pain in lymph nodes
  - Patient may complain of red streaking near site
  - Fever, chills, malaise
- Focused History:
  - Recent injury or infection
  - Constitutional symptoms
  - Recent body fluid exchange (think Mono)
  - Recent travel
  - Speed of development

### **Objective:**

- Physical Exam:
  - Fever
  - Cellulitis
  - Swollen, tender lymph nodes
  - Red streaking from infection site toward lymph nodes
  - Tachycardia
- Tools:
  - CBC if available will likely indicate leukocytosis with a left shift
  - This is a clinical diagnosis

### **Assessment:**

- Differential:
  - Mononucleosis: recent exposure to sick contact, splenomegaly, swollen tonsils
  - Syphilis: history, presence of painless chancre on genitalia
  - Cat scratch fever: enlarged lymph nodes proximal to inoculation site
  - Necrotizing fasciitis: non-blanching erythema, patient will be extremely ill
  - Systemic immune disease (HIV, CMV): global involvement of lymph nodes

## **LYMPHANGITIS and LYMPHADENITIS CONTINUED**

### **Plan:**

- Moist heat
- Elevation
- Medication:
  - Cephalexin
  - Augmentin
- If resistant organism (MRSA):
  - Trimethoprim-sulfamethoxazole
  - Clindamycin

### **Patient Education:**

- Keep area clean/dry
- Finish antibiotics
- Return to clinic for boggiess at site of infection (abscess may be forming)
- Return to clinic daily until told otherwise
- Follow-up Actions:
  - If no improvement in 48 hours, consider EVAC or transfer for IV antibiotics

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **LYMPHEDEMA**

### **Introduction:**

- Lymphedema is a condition of localized fluid retention and tissue swelling caused by a compromised lymphatic system
- Lymphedema may be caused by trauma, infectious disease or cancer
- Patients with lymphedema will complain of swollen, achy limbs

### **Subjective:**

- Signs and Symptoms:
  - Swelling of the affected limb (usually marked and unilateral)
  - Thickened, fibrotic skin
  - Aching discomfort
- Focused History:
  - Congenital?
  - Recent trauma
  - Exposure to mosquitoes/biting flies (Filariasis)
  - History of cancer
  - History of lymph node resection/radiation treatment
  - Worse with warm weather, menstrual cycle

### **Objective:**

- Physical Exam:
  - Unilateral marked edema in affected limb
    - May be pitting edema in early stages
  - Thickened skin
  - Hyperpigmentation of skin

### **Assessment:**

- Differential:
  - Congenital
  - Filariasis: recent travel to developing countries with exposure to mosquitoes/biting flies
  - Malignancy: constitutional symptoms, family history
  - Inflammatory disease: signs of infection
  - Chronic venous insufficiency: no known exposures, older, smokers
  - DVT: recent long distance travel (possible), unilateral leg pain, warmth and swelling/edema

### **Plan:**

- No cure for lymphedema
- Treatment focuses on control
  - Intermittent elevation of extremity
  - TED hose
  - Lymphatic massage toward trunk
- Avoid infection in affected limb
- Consider EVAC or transfer if unable to control locally

## **LYMPHEDEMA CONTINUED**

### **Patient Education:**

- Keep affected limb clean and dry
  - Infection in lymphedema is difficult to treat
  - Excellent skin and nail care are important
- Avoid heat, vigorous exercise, constrictive clothing
- Follow-up Actions:
  - Return to clinic if no relief of symptoms in 24-48 hours with elevation/compression

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



# **SHOCK**

## **Introduction:**

- Shock is defined as a reduction in arterial blood flow such that the metabolic needs of the body are unable to be met
- There are several variations of shock, each requiring different considerations for treatment

## **Subjective:**

- Signs and Symptoms:
  - Altered mental status is common
  - Agitation
  - Confusion
  - Restlessness
- Focused History:
  - Acquired from bystander if necessary
  - Mechanism of injury if trauma
  - Recent illness
  - History of cardiovascular disease (CVD)

## **Objective:**

- Physical Exam:
  - Hypotension
  - Tachycardia
  - Weak, thready pulse
  - Cool mottled extremities
  - Altered mental status (obtunded)
- Tools:
  - Only if extended EVAC time (do not delay EVAC):
    - EKG - may show tachycardia, other cardiac insult
    - Labs - CMP for electrolytes, glucose/CBC for WBC count

## **Assessment:**

- Differential:
  - Hypovolemic shock: blood loss or dehydration
  - Cardiogenic shock: arrhythmia, recent MI
  - Septic shock: hypotension with signs of infection
  - Neurogenic shock: recent spinal cord trauma

## **SHOCK CONTINUED**

### **Plan:**

- ABC's
- Stabilize with fluids
  - IV crystalloid (normal saline or lactated Ringer's)
    - Careful examination of the lungs after each bolus of fluid
    - Do not over-infuse crystalloids
      - Can lead to electrolyte imbalance
- Immediate EVAC or transfer

### **Patient Education:**

- Follow-up Actions:
  - Will be completed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **ANEMIA**

### **Introduction:**

- Defined as a low hemoglobin or hematocrit
- The most common cause of anemia is iron deficiency anemia and is more common in females (menstruation) than in males
- There are a number of other causes of anemia
- If labs are available they will provide confirmation

### **Subjective:**

- Signs and Symptoms:
  - Fatigue
  - Palpitations
  - Dyspnea on exertion
  - Pica
- Focused History:
  - Menstrual cycle (frequency, amount, etc.)
  - Current pregnancy
  - History of anemia
  - Recent illness
  - Blood in stool

### **Objective:**

- Physical Exam:
  - VS may indicate mild to severe tachycardia, low pO<sub>2</sub>
  - Smooth tongue (atrophic glossitis, sign of pernicious anemia)
  - Cheilosis
  - Nail changes
    - Brittle
    - Spooning (koilonychia)
- Tools:
  - Labs: CBC may indicate low H&H
  - Stool guaiac if available

### **Assessment:**

- Differential:
  - Iron deficiency anemia: responds to a trial of PO iron replacement
  - Occult blood loss: history of UGI or LGI bleeding
  - Hemolytic anemia: G6PD deficiency + use of medications (i.e., primaquine), hemoglobinuria
  - Vitamin B12/folate deficiency: consider MVI
  - Anemia of chronic disease: patient will likely have history of known renal disease, other chronic disease

## **ANEMIA CONTINUED**

### **Plan:**

- If occult blood:
  - Evacuate/transfer/GI consult
- If no occult blood:
  - Consider symptomatic treatment:
  - Ferrous sulfate TID
  - Vitamin C taken in conjunction with ferrous sulfate (to facilitate iron absorption)
- Correct underlying condition

### **Patient Education:**

- Eat a properly balanced diet
- Repeat CBC in 60 days (if available)
- Return immediately for increasing symptoms, chest pain, LOC
- Continue oral ferrous sulfate for 3-6 months once HCT returns to normal
- Follow-up Actions:
  - Expect symptoms to begin resolving as HCT climbs (approximately 3 weeks)
  - If symptoms do not begin resolving in 2-3 weeks with therapy, consider EVAC or transfer for GI/hematology consult

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **LYMPHOMA**

### **Introduction:**

- Lymphoma can be categorized as Hodgkin or non-Hodgkin lymphoma and represents a cancerous process generally presenting with painless, swollen lymph nodes in the neck

### **Subjective:**

- Signs and Symptoms:
  - Non-Hodgkin
    - Painless lymphadenopathy is predominant presenting symptom
    - Age near 50
  - Hodgkin
    - B-symptoms (night sweats, weight loss, fever, pruritus)
    - Increased lymph node pain with EtOH ingestion (more common with Hodgkin lymphoma)
    - Bi-modal age distribution:
      - Age 15-40
      - Age 50-60

### **Objective:**

- Physical Exam:
  - VS: fever may be present
  - Lymphadenopathy
  - Unintentional weight loss (>10% body weight in previous 6 months)
  - Splenomegaly/hepatomegaly
- Tools:
  - CBC: anemia, pancytopenia
  - CXR: mediastinal enlargement

### **Assessment:**

- Differential:
  - Hodgkin: more likely to have B-symptoms
  - Non-Hodgkin: less likely to have B-symptoms
  - Leukemia: presence of fever, anemia, constitutional symptoms

### **Plan:**

- If suspicion exists for lymphoma, immediate evacuation is warranted

### **Patient Education:**

- Recommend counseling only be done by oncology
- Follow-up Actions:
  - Will be performed by hospital

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 7

# PULMONARY PROTOCOLS

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### ASTHMA. ACUTE

#### **Introduction:**

- Asthma is a condition characterized by a reversible obstruction to air flow caused by increased resistance in the medium-sized bronchi
- The reaction is a response to an external trigger or stimuli that induces bronchial smooth muscle spasm, mucosal edema, heavy secretions, and inflammation
- Common triggers include cold air, exercise, smoke, allergens, or respiratory tract infections

#### **Subjective:**

- Signs and Symptoms:
  - Dyspnea, wheeze, cough and chest tightness
  - May be episodic with asymptomatic periods
- Focused History:
  - Timing, triggers, other URI-type symptoms
  - Use of a rescue inhaler (how often)
  - History of allergies or rash
  - Smoking history, living situation
  - Personal or family history of asthma

#### **Objective:**

- Physical Exam:
  - Assess vital signs: emphasis on pulse oximetry
  - Nasal mucosal swelling, secretions and polyps, possible eczema
  - Wheezing or prolonged expiratory phase
    - During a severe exacerbation the airflow may be too limited to produce wheeze
  - Accessory muscles of respiration
- Tools:
  - Spirometry and/or peak flow to assess severity
  - X-ray usually normal, but may show hyperinflation

#### **Assessment:**

- Differential:
  - Vocal cord dysfunction: flattened inspiratory loop on spirometry
  - Foreign body aspiration: history
  - Angioedema: swelling and allergic reaction evident
  - Viral infection: URI signs and symptoms
  - Pulmonary embolus: chest pain with history of unilateral lower extremity pain and swelling

## **ASTHMA. ACUTE CONTINUED**

### **Plan:**

- Immediate oxygen to maintain saturation of >90%
- Medications:
  - Bronchodilators (SABA - short-acting beta-agonist):
    - Albuterol, levalbuterol
    - Severe exacerbations frequently require higher doses – 6-12 puffs every 30-60 minutes by MDI or 2.5 mg by nebulizer
  - Systemic corticosteroids:
    - Prednisone burst or taper

### **Patient Education:**

- If good response to medications, release with course of inhaled SABA and oral corticosteroid
- Follow-Up Actions:
  - Close medical follow-up for asthma action plan and re-evaluation of medications with provider
  - If incomplete or poor response, evacuation or hospitalization
    - Stabilize: prepare for ACLS intervention
    - Continue to monitor airway, oxygen saturation and mental status

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **COUGH**

### **Introduction:**

- 5<sup>th</sup> most prevalent symptom among patients seen in primary care
- Normal physiologic function of the respiratory system
  - Only mechanism that clears secretions, mucus, and foreign bodies from the lung
- Most acute coughs related to viral URI, bronchitis or ENT causes
  - Examples: laryngitis, allergies and post-nasal drip (PND)

### **Subjective:**

- Signs and Symptoms:
  - Distinguish between acute (<3 weeks), persistent (3-8 weeks) and chronic (>8 weeks)
- Focused History:
  - Age
  - Tobacco use history
  - Duration of cough
  - Dyspnea (at rest or with exertion)
  - Vital signs (heart rate, respiratory rate and temp)
  - Alleviating or aggravating factors (e.g., exercise or eating)

### **Objective:**

- Physical Exam:
  - Pulse oximetry
  - Tachycardia, tachypnea, fever: suspect pneumonia
  - Adventitious lung sounds: suspect community-acquired pneumonia (CAP)
  - Purulent sputum: suspect bacterial infections in patients with chronic obstructive pulmonary disease or cystic fibrosis
    - Poor predictor of pneumonia in healthy adults
  - Wheezing and rhonchi: suspect acute bronchitis
    - Wheezing does not always equal asthma
- Tools:
  - Chest X-ray:
    - Acute cough patient with abnormal vital signs or if chest exam suggests pneumonia
    - Cough while being administered ACE inhibitor therapy and post-infectious cough are excluded by history or further diagnostic testing
      - When chest film is negative, PND, asthma and gastroesophageal reflux disease are most likely causes
  - If pertussis is suspected get confirmatory testing



## **COUGH CONTINUED**

### **Assessment:**

- Differential:
  - Acute Cough:
    - Acute respiratory tract infection
    - Asthma
    - Allergic rhinitis and hay fever
  - Chronic Cough:
    - Environmental exposures (smoke/pollution)
    - Pertussis infection
    - PND (upper airway cough syndrome)
    - Asthma
    - GERD

### **Plan:**

- Treatment of acute cough should target underlying etiology of the illness, the cough reflex, and any additional factors that exacerbate the cough
- Antibiotics do not improve cough severity or duration in patients with uncomplicated acute bronchitis
  - Cough will last 1-3 weeks regardless
- Evaluation and management of persistent cough often requires multiple visits and therapeutic trials
- Cough suppressants like guaifenesin/dextromethorphan (robatussin DM) and benzonatate (tessalon perles) may help some patients if more serious etiologies are ruled out.

### **Patient Education:**

- Follow-up Actions:
  - Refer patients with persistent or chronic cough if empiric treatment trials fail or if they have recurrent symptoms
  - Evacuation/ER if difficulty breathing, chest pain or fever >100.4 that is uncontrolled with acetaminophen or ibuprofen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PNEUMONIA**

### **Introduction:**

- The most common pneumonia clinically encountered is community-acquired pneumonia (CAP)
  - 4-5 million cases diagnosed annually with 25% of those requiring hospitalization
- Most deadly infectious disease in the US
  - 8<sup>th</sup> leading cause of death
- Risk factors:
  - Older age
  - Alcoholism or tobacco use
  - Comorbid medical conditions - especially asthma or COPD or immunosuppression

### **Subjective:**

- Signs and Symptoms:
  - Fever, cough with or without sputum production, tachypnea and dyspnea
  - May also include sweats, chills, rigors, chest discomfort, pleurisy, hemoptysis, fatigue, myalgias, anorexia, headache, and abdominal pain
- Focused History:
  - Atypical pneumonia may be associated with nausea, vomiting or abdominal pain

### **Objective:**

- Physical Exam:
  - Clinical evaluation is <50% sensitive compared to chest x-ray for the diagnosis of CAP
  - HEENT and full respiratory exam
  - Pneumonia Severity Index if considering hospitalization
- Tools:
  - Imaging required for diagnosis: pulmonary opacity on chest x-ray is required to establish diagnosis
    - If CXR unavailable, treat empirically

### **Assessment:**

- Differential:
  - Pleurisy: sharp or burning pain when breathing
  - Pulmonary embolism: acute onset with dyspnea and pleuritic chest pain
  - Bronchitis: auscultation of all lobes of the lung should still be possible

### **Plan:**

- Medications:
  - Antibiotic monotherapy is no longer recommended, contact preceptor
  - Macrolide antibiotics (azithromycin or clarithromycin)
  - Doxycycline
  - Amoxicillin
- If patients are at risk for drug resistance or are high-risk:
  - Fluoroquinolone (levofloxacin)

## **PNEUMONIA CONTINUED**

### **Patient Education:**

- Stop smoking
- Complete all medications as prescribed
- Get all recommended vaccinations:
  - Influenza annually
  - Pneumovax and Hib as appropriate
- Follow-up Actions:
  - Return if no improvement within 48 hours or sooner if deterioration
  - Patients should have follow-up x-ray at 6-8 weeks
    - Patient will improve before X-ray normalizes

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **BRONCHITIS, ACUTE**

### **Introduction:**

- Acute bronchitis is inflammation of the lower airways, commonly following a URI
- Cause is usually a viral infection, although it is sometimes a bacterial infection

### **Subjective:**

- Signs and Symptoms:
  - Cough
    - May or may not report a fever
    - Possible sputum production
    - Subjective dyspnea
    - URI symptoms
- Focused History:
  - Smoking history (COPD), recent URI

### **Objective:**

- Physical Exam:
  - HEENT and full respiratory exam
  - May hear scattered rhonchi and wheezing (may clear with cough)
- Tools:
  - Chest x-ray is necessary only if findings suggest pneumonia

### **Assessment:**

- Differential:
  - Pneumonia: fever, consolidation
  - Influenza: high fever, myalgias, seasonal
  - Asthma: cough with activity, expiratory wheeze
  - COPD: chronic with smoking history, older patient
  - Tuberculosis: fatigue, weight loss, night sweats

### **Plan:**

- Medications:
  - Acetaminophen
  - Possibly antitussives
    - Benzonatate
  - Inhaled beta-agonist for wheezing
  - Oral antibiotics only for high-risk patients
- Patients require only symptomatic treatment

## **BRONCHITIS, ACUTE CONTINUED**

### **Patient Education:**

- Stop smoking
- Hydrate
- Cough can take 2-3 weeks to resolve
- Get all recommended vaccinations:
  - Influenza annually
  - Pneumovax and Hib as appropriate
- Follow-up Actions:
  - Return if no improvement within 2-3 weeks
  - Re-evaluate or refer patients with poor response or deterioration

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PULMONARY EMBOLISM**

### **Introduction:**

- A pulmonary embolism (PE) occurs when a deep vein thrombosis dislodges and travels to the lung, causing loss of oxygenation of the blood flowing to that area of the lung
- PE is a common, serious, and potentially fatal event
- Hypercoagulability can be caused by medications, disease or inherited gene defects
- The clinical diagnosis of PE is notoriously difficult
  - Clinical findings depend on both size of embolus and patient's pre-existing cardiopulmonary status
  - Common symptoms of PE are not specific

### **Subjective:**

- Signs and Symptoms:
  - Acute unexplained SOB without significant other symptoms
  - Dyspnea, tachypnea, tachycardia, chest pain with inspiration
- Focused History:
  - Recent trauma
  - Prolonged travel or rest
  - Oral birth control or hormone replacement therapy
  - History of blood clots in the family

### **Objective:**

- Physical Exam:
  - Tachypnea (RR >16), decreased oxygen saturation, possible crackles and rales, wheezing, tachycardia, accentuated S2
  - May be hypotensive and anxious
  - Evidence of DVT – leg edema and pain
- Tools:
  - ECG is abnormal in 70% of patients with sinus tachycardia and non-specific ST and T wave changes
  - Plasma levels of D-dimer are usually elevated
    - 95-97% sensitivity for venous thromboembolism

### **Assessment:**

- Differential:
  - Myocardial infarction: diaphoresis, chest pain and ECG changes
  - Pneumothorax: history of trauma with decreased breath sounds
  - Severe bronchospasm: wheezing and coughing
  - Pneumonia: toxic clinical appearance
  - Pericarditis: distant heart sounds, distended neck veins

## **PULMONARY EMBOLISM CONTINUED**

### **Plan:**

- Evacuate patients with PE or DVT and those with risk factors and suspicion of PE
- Administer supplemental oxygen to maintain saturation > 92%
- Administer IV fluids to maintain cardiac function, anti-coagulant therapy per preceptor
- Prepare for ACLS intervention

### **Patient Education:**

- Avoid being stationary for long periods of time to prevent DVT and PE
- Do not allow ANY activity or strain during PE or DVT that could dislodge additional thrombus
- Follow-up Actions:
  - Emergently evacuate patients with PE, and those with risk factors or suspicion of PE
  - Consult pulmonologist or internist

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **PNEUMOTHORAX**

### **Introduction:**

- Pneumothorax, or accumulation of air in the pleural space, is classified as spontaneous or traumatic
  - Primary spontaneous affects tall, thin males 10-30 years old; associated with smoking/family history
  - Secondary spontaneous occurs as a complication of COPD, asthma, cystic fibrosis, pneumonia, other interstitial lung diseases and menstruation
  - Traumatic pneumothorax results from penetrating or blunt trauma

### **Subjective:**

- Signs and Symptoms:
  - Chest pain on affected side; sharp and stabbing
  - Dyspnea
  - Mild tachycardia
  - Onset of symptoms usually acute and severe

### **Objective:**

- Physical Exam:
  - Full respiratory exam
  - If pneumothorax is large, diminished breath sounds, decreased tactile fremitus and decreased movement of the chest can be noted
- Tools:
  - Chest x-ray will show a visceral pleural line

### **Assessment:**

- Differential:
  - Esophageal spasm: chest pain without shortness of breath
  - Severe bronchospasm: wheezing and coughing
  - Pneumonia: toxic clinical appearance
  - Pericarditis: distant heart sounds, distended neck veins

### **Plan:**

- Administer oxygen in the highest concentration available
- A small and stable pneumothorax (<15% of the hemithorax) may be treated with observation only or simple needle aspiration
- Close observation in a monitored setting; monitor for tension pneumothorax which will require needle decompression/chest tube
- EVAC or transfer to higher levels of care ASAP



## **PNEUMOTHORAX CONTINUED**

### **Patient Education:**

- Patients with pneumothorax should avoid air travel unless a chest tube is in place
- Bed rest and close monitoring are advised until the pneumothorax is improved and resolving
- Patients that smoke need to be advised to quit
- Follow-up Actions:
  - Patients with recurrent or non-resolving pneumothorax may need surgical treatment
  - 30% of spontaneous pneumothoraces will recur

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## Chapter 8

# GASTROINTESTINAL PROTOCOLS

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### GASTROINTESTINAL “RED FLAG” SYMPTOMS

- Unexplained weight loss
- Organomegaly
- Abdominal mass
- Hematochezia
- Severe abdominal pain
- Bloody diarrhea
- Positive fecal occult blood
- Severe dehydration
- Family history of colon cancer or IBD (inflammatory bowel disease)

### DYSPEPSIA

#### Introduction:

- Refers to acute, chronic, or recurrent pain or discomfort centered in the upper abdomen
- Epigastric pain or burning, early satiety, post-prandial fullness
- Occurs in 15% of adults
- Dyspepsia or epigastric pain is a common symptom among all gastrointestinal disorders

#### Subjective:

- Signs and Symptoms:
  - Epigastric pain or burning
  - Early satiety, postprandial fullness
  - Bloating, nausea and vomiting
- Focused History:
  - Chronicity, location, quality, relationship to meals
  - Offending medications, alcohol and caffeine usage
  - Social situation: possible anxiety or depression

#### Objective:

- Physical Exam:
  - Full abdominal exam: rarely reveals abnormalities
  - Epigastric area may have tenderness to palpation
- Tools:
  - Labs (including testing for *H. pylori*)
  - Abdominal imaging if necessary

## **DYSPEPSIA CONTINUED**

### **Assessment:**

- Differential related to possible etiology:
  - GERD: reflux of stomach contents causing heartburn symptoms
  - IBS: chronic functional disorder characterized by abdominal pain or discomfort with alternations in bowel habits; no abnormal findings usually noted
  - IBD: severe abdominal pain with bloody diarrhea; may have positive family history
  - PUD: break in gastric or duodenal mucosa; epigastric pain is hallmark; endoscopy required for diagnosis
  - Cholelithiasis: gallstones that are frequently asymptomatic and detected with ultrasound; may have biliary pain in RUQ with radiation to the scapula

### **Plan:**

- Start empiric treatment if less than 55 years old with no “red flag” symptoms
  - Proton pump inhibitor trial for 2-4 weeks
    - If improved, continue therapy
    - If not improved, consider other causes and further testing
- Severe symptoms or “red flags”: EVAC or transfer
- If H. Pylori is positive, eradication therapy required - Antibiotic + PPI (multiple regimens exist). Contact preceptor before starting any antibiotics.

### **Patient Education:**

- Mild Symptoms:
  - Reassurance and lifestyle changes
  - Avoid inciting factors such as alcohol and caffeine
  - Encourage small, low-fat meals
- Follow-up Actions:
  - Mild symptoms: return for further evaluation if symptoms do not improve within one month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **NAUSEA and VOMITING**

### **Introduction:**

- Nausea: vague sensation of sickness or “queasiness”
- Vomiting: effortless reflux of liquid or food contents
- Complications:
  - Dehydration
  - Electrolyte abnormalities
  - Bleeding secondary to mucosal tears at gastroesophageal junction
  - Esophageal rupture
- Possible etiologies:
  - Acute symptoms without abdominal pain suggests: food poisoning, infectious gastroenteritis, drugs or systemic illness
  - Acute onset of severe pain and vomiting: peritoneal irritation
  - Persistent vomiting: pregnancy, intestinal dysmotility (gastroparesis), CNS or systemic disorders
  - Vomiting after meals: bulimia or psychogenic causes
  - Associated neurologic symptoms (headache, vertigo): CNS disorder/illness

### **Subjective:**

- Signs and Symptoms:
  - Nausea and vomiting with a varied range of severity
  - May have abdominal pain
- Focused History:
  - Recent changes in medications or diet
  - Possible sick contacts with similar symptoms

### **Objective:**

- Vital Signs:
  - Assess hemodynamic status: hypotension, tachycardia (possible shock)
- Physical Exam:
  - Full gastrointestinal exam, including the mouth with vomiting
- Tools:
  - Possible labs for serum electrolytes, liver enzymes, pancreatic enzymes
  - Possible abdominal imaging

## **NAUSEA and VOMITING CONTINUED**

### **Assessment:**

- Differential related to possible etiology:
  - Viral gastroenteritis: diarrhea common, but onset of vomiting before pain makes appendicitis less likely; usually mild and self-limiting; pain is usually bilateral
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea
  - Gastritis: inflammation of the gastric mucosa
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux symptoms
  - GERD: reflux of stomach contents causing heartburn symptoms

### **Plan:**

- Mild Symptoms:
  - Antiemetic medications:
    - Ondansetron
    - Promethazine (PO) - observe for potential side effects
- Severe Symptoms:
  - IV ondansetron
  - IV hydration
  - Possible EVAC or transfer

### **Patient Education:**

- Diet:
  - Ingest clear liquids (broths, tea, soups, carbonated beverages)
  - Ingest small quantities of dry foods (soda crackers)
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 48 hours

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-10**
- **Blue Directive: Contact Preceptor Immediately** for severe symptoms

## **CONSTIPATION**

### **Introduction:**

- Constipation: difficult or infrequent passage of stool, hardness of stool, or a feeling of incomplete evacuation
- Occurs in 10-15% of adults, more common in females
- Etiologies:
  - Primary constipation: not attributed to any structural abnormalities or systemic disease
  - Secondary constipation:
    - Systemic disorders (thyroid, diabetes)
    - Medications (opioids, NSAIDs)
    - Obstructing colonic lesions (prolapse, cancer)
    - Most common etiologies:
      - Inadequate fiber and/or fluid intake
      - Poor bowel habits (history of holding bowel movements)

### **Subjective:**

- Signs and Symptoms:
  - Possible descriptions:
    - Infrequent stools (fewer than 3/week)
    - Hard stools
    - Excessive straining
    - Sense of incomplete evacuation
- Focused History:
  - Bowel history schedule and characteristics

### **Objective:**

- Physical Exam:
  - Full abdominal exam
  - Possible DRE: assessment for anal strictures, rectocele, prolapse, pelvic floor motion
- Tools:
  - Possible labs if necessary
  - Possible abdominal imaging if necessary

### **Assessment:**

- Differential related to possible etiology:
  - Fecal impaction: cramps with watery mucous or fecal material around the impacting mass
  - Obstruction: abdominal pain that comes and goes; unable to defecate, possible swelling
  - IBS: chronic functional disorder characterized by abdominal pain or discomfort with alternations in bowel habits; no abnormal findings usually noted
  - Medication usage: opioids
  - Thyroid disease: may cause constipation; rule out with labs and thyroid exam

## **CONSTIPATION CONTINUED**

### **Plan:**

- Conservative measures should be taken prior to the use of medications (see patient education)
- Medications:
  - Laxatives:
    - Initial treatment
      - Osmotic laxatives: polyethylene glycol 3350
    - Secondary treatment: stimulant laxatives
      - For incomplete response to osmotic laxatives - as needed as a “rescue agent”
        - Bisacodyl

### **Patient Education:**

- Conservative Measures:
  - Address adverse psychosocial issues
  - Optimal toileting habits: regular timing
  - Emphasize adequate dietary fluid and fiber intake (15-20 grams per day)
  - Regular exercise
  - Discontinue offending medication (if applicable)
- Follow-up Actions:
  - Mild symptoms: return for further evaluation if symptoms do not improve within one month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DIARRHEA. ACUTE**

### **Introduction:**

- <2 weeks duration
- Acute non-inflammatory diarrhea: mild, self-limited
  - Caused by a virus or non-invasive bacteria
  - Examples: enterotoxigenic *E. coli*, *Vibrio cholerae*
- Acute inflammatory diarrhea: increased severity
  - Caused by an invasive or cytotoxin-producing bacterium
  - Examples: *Campylobacter*, *Salmonella*, enterohemorrhagic *E. coli*, *C. difficile*

### **Subjective:**

- Signs and Symptoms:
  - Non-inflammatory: watery, non-bloody diarrhea with possible cramps, bloating, nausea, vomiting
  - Inflammatory: bloody diarrhea (dysentery) due to colonic tissue damage; abdominal pain
- Focused History:
  - Community/close-contact outbreaks: suggests viral etiology or food source
  - Recent antibiotic use: suggests *C. difficile* infection
  - Traveling history: “traveler’s diarrhea”
  - Exposure to improperly prepared or stored or unpurified water

### **Objective:**

- Vital Signs:
  - Inflammatory: fever likely present
- Physical Exam:
  - Evaluate mental status
  - Evaluate hydration status and possible dehydration
  - Abdominal exam may have tenderness to palpation
  - Inflammatory diarrhea: possible peritoneal findings
  - DRE for sphincter competence
- Tools:
  - Stool studies if diarrhea persists over 7 days

### **Assessment:**

- Differential related to etiology:
  - Viral gastroenteritis: diarrhea common, but onset of vomiting before pain makes appendicitis less likely; usually mild and self-limiting; pain is usually bilateral
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea
  - Traveler’s diarrhea: benign, self-limited disease occurring about 1 week into travel
  - IBS: chronic functional disorder characterized by abdominal pain or discomfort with alternations in bowel habits; no abnormal findings usually noted



## **DIARRHEA, ACUTE CONTINUED**

### **Assessment Continued:**

- Differential:
  - IBD: severe abdominal pain with bloody diarrhea; may have positive family history

### **Plan:**

- Mild to moderate illness:
  - Rehydration: possible IV fluids (NS or LR) or oral rehydration with Pedialyte or Gatorade
  - Anti-diarrheal agents (if no “red flags”):
    - Loperamide
    - Bismuth subsalicylate
- Empiric antibiotics:
  - Consider only in patients with non-hospital acquired diarrhea with moderate to severe fever, bloody stools, severe dehydration
  - Ciprofloxacin or azithromycin (Southeast Asia)
- EVAC or transfer for any “red flag” symptoms:
  - Fever
  - Bloody diarrhea
  - Severe abdominal pain
  - Profuse watery diarrhea with dehydration
  - Hospital-acquired diarrhea
  - Systemic illness

### **Patient Education:**

- Diet:
  - Increase oral fluids containing carbohydrates and electrolytes
  - Avoid high-fiber foods, fats, milk products, caffeine, and alcohol
  - Encourage easily digested foods (soups, crackers, bananas, applesauce, rice, toast)
- Follow-up Actions:
  - Return for further evaluation if symptoms not improved within 48 hours
  - For chronic diarrhea (>4 weeks) a full work-up and referral are needed

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **TRAVELER'S DIARRHEA**

### **Introduction:**

- Usually benign, self-limited disease occurring about 1 week into travel
- Susceptible due to marked change in climate, social conditions, sanitation standards and facilities
- Diarrhea usually develops in 2-10 days
- Bacteria cause 80%
  - Most common pathogens: enterotoxigenic *E. coli*, *Shigella* species, *Campylobacter jejuni* (Southeast Asia)
- Prophylaxis is not considered unless patient is immunocompromised or mission is vital

### **Subjective:**

- Signs and Symptoms:
  - 3 or more loose stools per day
  - Abdominal cramps, nausea, vomiting
  - Stools may be bloody in more severe cases
  - Illness can subside spontaneously in 1-5 days, but 10% remain symptomatic for 1 week or longer
- Focused History:
  - Travel history
  - Exposures
  - Sick contacts

### **Objective:**

- Vital Signs:
  - Rare to have fever, but can be present in more severe cases
- Physical Exam:
  - May be normal in mild illness
  - May have abdominal tenderness

### **Assessment:**

- Differential:
  - Viral gastroenteritis: diarrhea common, but onset of vomiting before pain makes appendicitis less likely; usually mild and self-limiting; pain is usually bilateral
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea
  - IBS: chronic functional disorder characterized by abdominal pain or discomfort with alternations in bowel habits; no abnormal findings usually noted
  - IBD: severe abdominal pain with bloody diarrhea; may have positive family history

## **TRAVELER'S DIARRHEA CONTINUED**

### **Plan:**

- Rehydration: possible IV fluids (NS or LR) or oral rehydration with Pedialyte/Gatorade
- Anti-diarrheal agents (if no “red flag” symptoms):
  - Loperamide
- Empiric antibiotics:
  - 1-3 day course of ciprofloxacin
  - Single dose of azithromycin 1000 mg if in Southeast Asia
- Prophylactic antibiotics:
  - Single daily dose of ciprofloxacin 500 mg
- “Red flag” symptoms: EVAC or transfer

### **Patient Education:**

- Diet:
  - Increase oral fluids containing carbohydrates and electrolytes
  - Avoid high-fiber foods, fats, milk products, caffeine, and alcohol
  - Encourage easily digested foods (soups, crackers, bananas, applesauce, rice, toast)
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 48 hours

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **GASTROINTESTINAL BLEEDING**

### **Introduction:**

- Upper GI Bleed:
  - 4-10% mortality
  - Self-limited in 80% of patients
  - Etiology: PUD, portal hypertension, neoplasms, vascular anomalies, Mallory-Weiss tears, erosive gastritis or esophagitis
- Lower GI Bleed:
  - 95% of causes arise from colon
  - Etiology: diverticulosis, neoplasms, colitis, IBD, anorectal disease (hemorrhoids, fissures)

### **Subjective:**

- Signs and Symptoms:
  - Upper GI bleed:
    - Hematemesis (bright red blood or “coffee grounds”)
    - Melena in most cases (black, tarry stool)
  - Lower GI bleed:
    - BRBPR (bright red blood per rectum)
    - Hematochezia in most cases

### **Objective:**

- Physical Exam:
  - Vital signs: assess hemodynamic status: hypotension, tachycardia (possible shock)
  - Full gastrointestinal exam including DRE
  - Signs of shock (pallor, diaphoresis, etc.)
- Tools:
  - Occult blood (guaiac)
  - Labs: CBC
  - Possible radiology studies: CT or MRI
  - Possible upper or lower endoscopy

### **Assessment:**

- Differential related to type of bleeding noted:
  - Brown stools mixed or streaked with blood: rectosigmoid or anus (hemorrhoids/fissure)
  - Large volumes of BRB: colonic source
  - Maroon stools: right colon or small intestine
  - Black stools (melena): UGI source
  - Painless, large volume bleeding: diverticular source
  - Bloody diarrhea with cramping/abdominal pain: colitis (infectious versus inflammatory)

## **GASTROINTESTINAL BLEEDING CONTINUED**

### **Plan:**

- Mild Symptoms:
  - May need further diagnostic tests and or radiology studies: referral
- Severe Symptoms:
  - Stabilize and prepare for ACLS intervention
  - 2 large bore IVs (18 gauge or larger)
  - Infusion with NS/LR
  - Cross match for packed red blood cells
  - EVAC or transfer

### **Patient Education:**

- Encourage compliance with medical recommendations
- Follow-up Actions:
  - Return if bleeding reoccurs after discharge from ER or hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for severe symptoms
- **Blue Directive: Contact Preceptor Immediately** for mild symptoms

## **GASTROESOPHAGEAL REFLUX DISEASE (GERD)**

### **Introduction:**

- Gastroesophageal reflux disease or “heartburn”
- Develops when reflux of stomach contents causes troublesome symptoms and complications
- Affects 20% of adults
- Most patients have mild disease, but some can have esophageal mucosal damage
- Etiologies:
  - Relaxation of lower esophageal sphincter (LES)
  - Hiatal hernia
  - Truncal obesity

### **Subjective:**

- Signs and Symptoms:
  - Heartburn 30-60 minutes after meals
  - May be exacerbated by bending or lying flat
  - Possible regurgitation
  - May present with cough/hoarseness
- Focused History:
  - Timing of symptoms, types of food
- “Red Flag” Symptoms:
  - Dysphagia, odynophagia, weight loss, iron deficiency anemia

### **Objective:**

- Physical Exam:
  - Abdominal exam likely to be normal in uncomplicated disease
- Tools:
  - Possible endoscopy by GI if severe or if symptoms are uncontrolled on medication

### **Assessment:**

- Differential:
  - PUD: break in gastric or duodenal mucosa; epigastric pain is hallmark; endoscopy required for diagnosis
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux symptoms
  - Gastritis: inflammation of the gastric mucosa
  - Acute pancreatitis: abrupt onset of deep epigastric pain often with radiation to the back; labs will show elevated pancreatic enzymes
  - Perforated peptic ulcer: sudden, intense pain over epigastrium

## **GASTROESOPHAGEAL REFLUX DISEASE (GERD) CONTINUED**

### **Plan:**

- In the majority of patients without complicated disease or “red flags” empiric treatment may be initiated:
  - Proton pump inhibitor (first-line)
  - H<sub>2</sub>-receptor antagonists

### **Patient Education:**

- Lifestyle Modifications:
  - Elimination of irritating foods: caffeine, alcohol, acidic foods
  - Weight loss
  - Smaller meals
  - Do not lie down within 3 hours after eating
  - Elevate the head of the bed
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve after 2-4 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PILL-INDUCED ESOPHAGITIS**

### **Introduction:**

- Injury to the esophagus through direct, prolonged mucosal contact
- Commonly implicated medications:
  - NSAIDs
  - Antibiotics:
    - Doxycycline
    - Tetracycline
    - Clindamycin
    - Trimethoprim-sulfamethoxazole
- Injury most likely when pills are swallowed without water or when supine (hospitalized patients)

### **Subjective:**

- Symptoms and Signs:
  - Severe retrosternal chest pain, odynophagia, and dysphagia several hours after taking a pill
  - May occur suddenly and persist for days
- Focused History:
  - Medication usage

### **Objective:**

- Physical Exam:
  - Palpation of chest wall may reveal discomfort
- Tools:
  - Possible endoscopy

### **Assessment:**

- Differential:
  - Infectious esophagitis: CMV, Candida, HSV; medication usually not involved
  - Esophageal spasm: intermittent pain not related to food or medication intake
  - Angina pectoris: suspect with cardiac risk factors and chest pain; cardiac work-up needed
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux or esophageal symptoms
  - Perforated peptic ulcer: sudden, intense pain over epigastrium

### **Plan:**

- Eliminate offending agent
- If pain does not subside or is severe then a GI consult may be necessary



## **PILL-INDUCED ESOPHAGITIS CONTINUED**

### **Patient Education:**

- Prevention: take pills with 4 oz of water and remain upright for at least 30 minutes
- Known offending agents should not be given to patient
- Follow-up Actions:
  - Return for further evaluation if symptoms not improved within 48 hours

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **GASTRITIS**

### **Introduction:**

- Gastritis: inflammation of the gastric mucosa
- Etiologies:
  - Infection (*Helicobacter pylori*)
  - Drugs (NSAIDs)
  - Alcohol use
  - Stress
  - Autoimmune disease
- Classification:
  - Erosive or non-erosive
  - Acute or chronic

### **Subjective:**

- Signs and Symptoms:
  - Epigastric pain, plus or minus nausea, vomiting
  - Many cases are asymptomatic
  - Possible dyspepsia
  - GI bleeding may occur
  - Anorexia
- Focused History:
  - Timing of symptoms
  - Types of food eaten
  - Medication use

### **Objective:**

- Physical Exam:
  - Abdominal exam likely to be normal in uncomplicated disease
  - Abdomen may be tender to palpation
- Tools:
  - Possible endoscopy if severe

### **Assessment:**

- Differential:
  - PUD: break in gastric or duodenal mucosa; epigastric pain is hallmark; endoscopy required for diagnosis
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux symptoms
  - GERD: reflux of stomach contents causing heartburn symptoms
  - IBS: chronic functional disorder characterized by abdominal pain or discomfort with alternations in bowel habits; no abnormal findings usually noted
  - Acute pancreatitis: abrupt onset of deep epigastric pain often with radiation to the back; labs will show elevated pancreatic enzymes

## **GASTRITIS CONTINUED**

### **Plan:**

- In the majority of patients without complicated disease or “red flags” empiric treatment may be initiated
  - Proton pump inhibitor

### **Patient Education:**

- Elimination of offending medication or habit (alcohol) if applicable
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2-4 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **PEPTIC ULCER DISEASE (PUD)**

### **Introduction:**

- Peptic ulcer: break in gastric or duodenal mucosa
  - Arises when mucosal defense factors are impaired or overwhelmed by aggressive luminal factors (acid)
- 5x more common in duodenum
- More common in smokers
- Etiology:
  - *H. pylori*: 75-90% prevalence
  - NSAID-induced: 10-20% prevalence
- For diagnosis, must note lesions on upper endoscopy

### **Subjective:**

- Signs and Symptoms:
  - Epigastric pain (dyspepsia) is the hallmark of PUD, present in 80-90% of patients
    - Pain is usually not severe and described as gnawing, dull, aching, "hunger-like"
    - 50% of patients report resolution of symptoms with antacid
    - May cause nocturnal pain that awakens patient
  - May be asymptomatic
- Focused History:
  - Timing of symptoms, types of food, medication use

### **Objective:**

- Physical Exam:
  - Often normal in uncomplicated PUD
  - May have mild, localized epigastric tenderness to deep palpation
- Tools:
  - *H. pylori* testing
  - Upper endoscopy (must have for diagnosis)

### **Assessment:**

- Differential:
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux symptoms
  - GERD: reflux of stomach contents causing heartburn symptoms
  - Gastritis: inflammation of the gastric mucosa
  - Acute pancreatitis: abrupt onset of deep epigastric pain often with radiation to the back; labs will show elevated pancreatic enzymes
  - Perforated peptic ulcer: sudden, intense pain over epigastrium

## **PEPTIC ULCER DISEASE (PUD) CONTINUED**

### **Plan:**

- First line: proton pump inhibitors (PPIs):
  - Many to choose from, but all are equally efficacious when treating PUD
  - Results in over 90% healing of duodenal ulcers at 4 weeks and 90% of gastric ulcers within 8 weeks
  - PPIs provide faster relief and more rapid healing than H2-receptor antagonists
- Second line: H2-receptor antagonists
- If *H. pylori* positive, then eradication therapy is indicated:
  - Antibiotics + PPI (multiple regimens exist)

### **Patient Education:**

- Elimination of offending medication (if applicable)
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 2-4 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **APPENDICITIS**

### **Introduction:**

- Appendicitis: acute inflammation of the vermiform appendix
- Initiated by obstruction of the appendix by a fecalith, inflammation, foreign body or neoplasm
- Most common abdominal surgical emergency (10% of population)
- Common between ages of 10 to 30
- If not recognized and treated immediately, gangrene and perforation may develop within 36 hours

### **Subjective:**

- Signs and Symptoms:
  - Early: vague, colicky periumbilical or epigastric pain
  - Later: within 12 hours pain shifts to RLQ
    - Steady ache worsened by walking, coughing
    - Nausea and vomiting
    - Sense of constipation is typical
  - Be cognizant of “atypical” presentations

### **Objective:**

- Physical Exam:
  - Vitals: temperature less than 100.4°F is typical
  - RLQ: localized tenderness and guarding with gentle palpation
  - Light percussion may also elicit pain
  - Rebound tenderness may be present
  - Positive peritoneal signs: psoas and obturator
- Tools:
  - Diagnosis can be confirmed by CT or US
  - CBC may demonstrate an elevated WBC count

### **Assessment:**

- Differential:
  - Acute salpingitis or tubo-ovarian abscess: young females with fever and abdominal pain or pelvic tenderness
  - Ovarian torsion: sudden, severe pain in right or left lower abdominal quadrants in females
  - Ruptured ectopic pregnancy: severe pain, pelvic tenderness, shock, positive HCG
  - Diverticulitis: likely known diverticulosis; pain in left lower quadrant with fever
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea

## **APPENDICITIS CONTINUED**

### **Plan:**

- Medications:
  - IV fluids/antibiotics
  - Consider narcotics for pain control
- EVAC or transfer

### **Patient Education:**

- Provide reassurance: mortality rate is extremely low
- Encourage compliance with medical recommendations

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **IRRITABLE BOWEL SYNDROME (IBS)**

### **Introduction:**

- IBS: chronic functional (no abnormal findings) disorder characterized by recurrent abdominal pain or discomfort with alternations in bowel habits
- Pain with two out of three of the following features:
  - Relieved with defecation
  - Onset associated with a change in frequency of stool
  - Onset associated with a change in form of stool
- More common in women

### **Subjective:**

- Signs and Symptoms:
  - Abdominal pain: intermittent, crampy, lower abdomen
  - IBS with constipation: infrequent bowel movements, straining, hard/lumpy stools
  - IBS with diarrhea: loose or watery stools, >3 stools per day, urgency, fecal incontinence
  - IBS with mixed symptoms also present
  - Also may have: feeling of incomplete evacuation, passage of mucus, bloating/feeling of distention
  - Patients may have other somatic or psychological complaints, such as dyspepsia, chest pain, headaches, fatigue, myalgias, anxiety, depression
- Focused History:
  - Life stressors
  - Mental health history

### **Objective:**

- Physical Exam:
  - Usually normal
  - May have abdominal tenderness in lower abdomen that is not pronounced
- Tools:
  - Further diagnostic testing usually unnecessary

### **Assessment:**

- Differential:
  - Psychiatric disorders (e.g., depression, panic disorder, anxiety): careful history and interview
  - IBD: severe abdominal pain with bloody diarrhea; may have positive family history
  - Viral gastroenteritis: diarrhea common, but onset of vomiting before pain makes appendicitis less likely; usually mild and self-limiting; pain is usually bilateral
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea
  - Gastritis: inflammation of the gastric mucosa



## **IRRITABLE BOWEL SYNDROME (IBS) CONTINUED**

### **Plan:**

- Drug therapy reserved only for moderate to severe symptoms that do not respond to general conservative measures:
  - Anti-diarrheal agents: loperamide
  - Anti-constipation agents: polyethylene glycol

### **Patient Education:**

- General Measures:
  - Reassurance and support
  - Emphasis that disease is chronic, will reoccur, and that coping mechanisms should be found
  - Moderate exercise is beneficial
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 month

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DIVERTICULOSIS**

### **Introduction:**

- Presence of colonic diverticula varying from a few millimeters to several centimeters
  - Diverticula: saclike mucosal outpouchings that protrude from a tubular surface
- Incidence increases with age (30% at age 60)
- Most are asymptomatic and found incidentally at endoscopy
  - Diverticula only cause symptoms if they become inflamed or infected, resulting in diverticulitis
- Etiology is uncertain: may result from a lifelong low-fiber diet

### **Subjective:**

- Signs and Symptoms:
  - 90% have uncomplicated disease and no specific symptoms
  - Some patients have non-specific complaints of abdominal pain, constipation, and fluctuating bowel habits
- Focused History:
  - Diet and fiber intake

### **Objective:**

- Physical Exam:
  - Usually normal
  - Abdominal exam may reveal mild LLQ tenderness

### **Assessment:**

- Diagnosed only after imaging or endoscopy: barium enema, CT/MRI, colonoscopy
- No real differential after diverticula are noted on imaging

### **Plan:**

- Encourage a high fiber diet
- Fiber supplements:
  - Psyllium
  - Methylcellulose

### **Patient Education:**

- Follow-up Actions:
  - In a patient with known diverticulosis, proceed to ER or EVAC for signs of diverticulitis (tenderness in the left lower quadrant and fever)

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DIVERTICULITIS**

### **Introduction:**

- Inflammation of a colonic diverticulum may have a large range of severity:
  - Local inflammation (mild disease)
  - Abscess
  - Perforation or fistula
  - Peritonitis (severe disease)

### **Subjective:**

- Signs and Symptoms:
  - Acute abdominal pain in the LLQ
  - Nausea and vomiting
  - Constipation or loose stools may be present
  - Bleeding is uncommon

### **Objective:**

- Physical Exam:
  - Vital signs: fever
  - Abdominal exam
    - Peritoneal signs may be present: rebound, guarding
    - LLQ tenderness and possible mass may be noted with palpation
    - Abdominal distention

### **Assessment:**

- Differential:
  - Appendicitis: acute inflammation of vermiform appendix; presents with pain in the RLQ
  - Ovarian torsion: sudden, severe pain in right or left lower abdominal quadrants in females
  - Ruptured ectopic pregnancy: severe pain, pelvic tenderness, shock, positive HCG
  - IBD: severe abdominal pain with bloody diarrhea; may have positive family history
  - Bacterial gastroenteritis: diarrhea with more severe symptoms - may have a fever and bloody diarrhea

### **Plan:**

- Mild symptoms, no peritoneal signs and a presumptive diagnosis of diverticulitis: empiric medical therapy
  - Possibilities include:
    - Amoxicillin and clavulanate potassium
    - Metronidazole plus either ciprofloxacin or trimethoprim-sulfamethoxazole
- Severe symptoms or “red flags”: EVAC or transfer - surgical consultation necessary

## **DIVERTICULITIS CONTINUED**

### **Patient Education:**

- Diet:
  - Clear liquid diet, advance diet once improved (usually in 3 days)
  - Recommend high fiber diet
- Follow-up Actions:
  - For mild symptoms return for further evaluation if symptoms do not improve within 48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HEMORRHOIDS**

### **Introduction:**

- Hemorrhoids: subepithelial vascular cushions consisting of connective tissue, smooth muscle fibers, and AV communications between terminal branches of arteries and veins
- External hemorrhoids: arise from inferior hemorrhoidal veins
- Internal hemorrhoids: arise from terminal branches of superior rectal artery and rectal veins
- Thrombosed hemorrhoid: thrombosis of external plexus that results in a hematoma
- May become symptomatic from activities that increase venous pressure
  - Straining at stool, constipation, pregnancy, obesity, prolonged sitting

### **Subjective:**

- Signs and Symptoms:
  - Bleeding (BRBPR), prolapse, mucoid discharge
  - Pruritus
  - Pain and discomfort
    - External hemorrhoids: pain usually present
      - Thrombosed external hemorrhoid: acute onset of exquisite pain
    - Internal hemorrhoids: unusual to have pain

### **Objective:**

- Physical Exam:
  - Examine perianal area for fistulas, fissures, skin tags, condylomas, anal masses or dermatitis
  - External hemorrhoids: readily visible on perianal inspection
    - Thrombosed hemorrhoid: tense and bluish perianal nodule
  - Internal hemorrhoids:
    - Non-prolapsed are not visible, but may protrude with gentle straining
    - Prolapsed are visible as protuberant purple nodules covered by mucosa
    - Upon DRE, usually not palpable nor painful

### **Assessment:**

- Differential for BRBPR:
  - Colon cancer: family history; weight loss, night sweats, anorexia
  - External hemorrhoids: seen readily on exam
  - Internal hemorrhoids: usually painless bleeding
  - Anal fissure: mucosal tear in anus; pain with defecation

## **HEMORRHOIDS CONTINUED**

### **Plan:**

- Fiber supplementation may be needed:
  - Psyllium
  - Methylcellulose
- Stool softeners:
  - Docusate
- Symptomatic hemorrhoids:
  - Preparation H
  - Witch hazel pads
  - Topical hydrocortisone
- Thrombosed hemorrhoid: if within first 24-48 hours, EVAC or transfer for removal of the clot
  - If after 48 hours consider EVAC, but conservative management should be followed.

### **Patient Education:**

- Conservative Measures:
  - High fiber diet and increased fluid intake
  - Warm sitz baths 2-3 times daily
- Follow-up Actions:
  - Mild symptoms: return for further evaluation if symptoms do not improve within 1 week

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **JAUNDICE**

### **Introduction:**

- Jaundice is a symptom of liver and biliary tract disorders that causes yellowing of the skin and eyes
- Results from accumulation of bilirubin in body tissues
  - Bilirubin: a product of heme metabolism
- Etiology may be non-hepatic or hepatic:
  - Unconjugated hyperbilirubinemia:
    - Overproduction due to hemolysis, impaired hepatic uptake, impaired conjugation
  - Conjugated hyperbilirubinemia:
    - Impaired excretion from liver or from biliary obstruction

### **Subjective:**

- Signs and Symptoms:
  - Unconjugated: mild jaundice
  - Conjugated: may be asymptomatic or have possible RUQ discomfort, light-colored stools, dark urine, jaundice
  - If severe hepatocellular disease:
    - Malaise
    - Anorexia
    - RUQ discomfort
    - Nausea/vomiting
    - Weight loss

### **Objective:**

- Physical Exam:
  - Unconjugated: variable according to disease process, but possible splenomegaly if hemolytic disorder (e.g., sickle cell disease, G6PD deficiency)
  - Conjugated: variable according to disease process but possible enlarged tender liver
  - If severe: vascular spiders, palmar erythema, ascites
- Tools:
  - Labs: increased liver associated enzymes (AST/ALT), increased serum/urine bilirubin
  - Imaging may be needed for diagnosis: US, CT or MRI

### **Assessment:**

- Differential related to possible etiology:
  - Acute viral hepatitis: infection with hepatitis A,B,C,D,E; usually presents with jaundice and viral-type symptoms (malaise, myalgias, nausea, vomiting)
  - Cholelithiasis: gallstones that are frequently asymptomatic and detected with ultrasound; may have biliary pain in RUQ with radiation to the scapula
  - Acute cholecystitis: steady, sudden, severe pain in RUQ with nausea and vomiting; exam usually has a positive Murphy's sign and positive peritoneal signs
  - Acute pancreatitis: abrupt onset of deep epigastric pain often with radiation to the back; labs will show elevated pancreatic enzymes

## **JAUNDICE CONTINUED**

### **Plan:**

- EVAC or immediate referral for diagnostic work-up

### **Patient Education:**

- See specific disease processes
- Encourage compliance with medical recommendations

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **HEPATITIS**

### **Introduction:**

- Infection of liver hepatocytes by hepatotropic viruses: A, B, C, D, E
- Hepatitis A:
  - Fecal-oral route, vaccine available
  - Clinical recovery within 3 months, does not cause chronic disease
- Hepatitis B:
  - Inoculation by infected blood or by sexual contact, vaccine available
  - Clinical recovery within 3-6 months
  - Chronic disease develops in 1-2% with risk for cirrhosis/hepatocellular carcinoma
- Hepatitis C:
  - Inoculation by infected blood, low risk of infection by sexual contact, no vaccine available
  - Clinical recovery within 3-6 months
  - Chronic disease develops in 85% with risk for cirrhosis/hepatocellular carcinoma
- Hepatitis D:
  - Causes hepatitis only in association with HBV infection and clears only when HBV clears
- Hepatitis E:
  - Fecal-oral route, self-limited illness, rarely progresses to chronic disease

### **Subjective:**

- Signs and Symptoms:
  - Variable ranging from asymptomatic infection without jaundice to a fulminating disease with jaundice and death within a few days
  - Malaise, myalgias, arthralgias, fatigue, anorexia, nausea, vomiting, diarrhea
- Focused History:
  - Travel
  - Sexual contacts
  - IV drug usage
  - Transfusions or exposure to blood products
  - Tattoos and body piercings

### **Objective:**

- Physical Exam:
  - Vital Signs: fever may be present
  - Full gastrointestinal exam
  - May have enlarged, tender liver
- Tools:
  - Labs: CBC, PT/PTT/INR, hepatic function panel, acute hepatitis panel
  - Rad: further imaging may be necessary (US/CT/MRI)
  - Potential liver biopsy

## **HEPATITIS CONTINUED**

### **Assessment:**

- Differential:
  - Differentiate between hepatitis A,B,C,D,E
  - Other viruses that cause hepatitis:
    - Infectious mononucleosis
    - Cytomegalovirus infection
    - Herpes simplex virus
    - Spirochetal disease: syphilis

### **Plan:**

- Referral for further work-up and labs
- If severe disease (acute liver failure):
  - Stabilize
  - EVAC or transfer

### **Patient Education:**

- Preventive: safe sexual encounters, use of PPE
- Acute Symptoms:
  - Bed rest
  - Strenuous physical exertion, alcohol and hepatotoxic agents (acetaminophen) should be avoided

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **CHOLELITHIASIS**

### **Introduction:**

- Gallstones (hardened deposits of cholesterol or bilirubin)
- More common in women than men; highest rates with age >60 and in Mexican-Americans
- Associated with overall increased cardiovascular and cancer mortality
- Risks: obesity, pregnancy, rapid weight loss, diabetes, glucose intolerance, insulin resistance, prolonged fasting >5 days, hypertriglyceridemia, certain medications (ceftriaxone, hormone replacement therapy)
- Classified according to their predominant chemical composition: cholesterol or calcium bilirubinate stones

### **Subjective:**

- Signs and Symptoms:
  - Frequently asymptomatic and only detected with ultrasonography
  - Classic biliary pain occurs in 10-25%
    - Infrequent episodes of steady severe pain in epigastrium or right upper quadrant with radiation to right scapula
- Focused History:
  - Weight concerns, medication usage, family or personal history of glucose intolerance or diabetes

### **Objective:**

- Physical Exam:
  - Abdominal exam is usually normal
  - Can have tenderness to palpation over epigastrium and RUQ

### **Assessment:**

- Differential:
  - PUD: break in gastric or duodenal mucosa; epigastric pain is hallmark; endoscopy required for diagnosis
  - Dyspepsia: pain and discomfort centered in the upper abdomen, does not involve reflux symptoms
  - GERD: reflux of stomach contents causing heartburn symptoms
  - Gastritis: inflammation of the gastric mucosa
  - *H. pylori* infection: more likely to be present in PUD; leads to dyspepsia

### **Plan:**

- NSAIDs can relieve biliary pain
- If symptomatic, patients may need referral to surgery for cholecystectomy

## **CHOLELITHIASIS CONTINUED**

### **Patient Education:**

- Possible protective factors: low-carbohydrate diet, caffeine, high-fiber diet, statin usage, NSAIDs
- Follow-up Actions:
  - Return for further evaluation if symptoms increase in frequency/severity or pain increases - possible surgical referral needed
  - If signs/symptoms of acute cholecystitis develop, EVAC or transfer

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ACUTE CHOLECYSTITIS**

### **Introduction:**

- Over 90% of cases are associated with gallstones: acute attack when a stone becomes impacted in the cystic duct and inflammation develops
- Attack is often precipitated by a large or fatty meal
- Characterized by the sudden appearance of steady pain in the RUQ or epigastrium

### **Subjective:**

- Signs and Symptoms:
  - Steady, severe pain in the RUQ or epigastrium
  - Nausea and vomiting (75%)
  - Pain may radiate to right scapula
- Focused History:
  - History of gallbladder problems or gallstones
  - Dietary intake

### **Objective:**

- Physical Exam:
  - Vital signs: low-grade fever is common
  - Tenderness in RUQ
  - Positive Murphy's sign
  - Muscle guarding
  - Rebound tenderness
- Tools:
  - Labs: CBC might show an elevated white blood cell count (leukocytosis)

### **Assessment:**

- Differential:
  - Appendicitis (high-lying appendix): pain is usually not sudden and severe
  - Acute hepatitis: infection with hepatitis A,B,C,D,E; usually presents with jaundice and viral-type symptoms (malaise, myalgias, nausea, vomiting)
  - Cholelithiasis: gallstones that are frequently asymptomatic and detected with ultrasound; may have biliary pain in RUQ with radiation to the scapula
  - Acute pancreatitis: abrupt onset of deep epigastric pain often with radiation to the back; labs will show elevated pancreatic enzymes
  - Perforated peptic ulcer: sudden, intense pain over epigastrium

## **ACUTE CHOLECYSTITIS CONTINUED**

### **Plan:**

- Stabilize
- NPO
- Medications:
  - IV analgesics under preceptor guidance
  - IV antibiotics under preceptor guidance
- EVAC or transfer - surgical consult necessary

### **Patient Education:**

- Encourage compliance with medical recommendations

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **ACUTE PANCREATITIS**

### **Introduction:**

- Pancreatitis: inflammation of the pancreas (and possible adjacent tissues) caused by the release of activated pancreatic enzymes
- Most cases are due to:
  - Biliary tract disease: gallstones blocking the pancreatic duct
  - Heavy alcohol intake
- Other possible associations: hypercalcemia, hypertriglyceridemia, abdominal trauma, drugs (metronidazole, sulfonamides, corticosteroids, etc.)
- Increased risk factors:
  - Smoking
  - Abdominal adiposity/obesity
  - Older age
- Mortality: 5% or 20% depending on disease severity
- Following an acute episode, the risk of developing chronic pancreatitis is 13-16%

### **Subjective:**

- Signs and Symptoms:
  - Abrupt onset of deep epigastric pain, often with radiation to the back
    - Worse with walking/lying supine
    - Better with sitting and leaning forward
  - Nausea, vomiting, sweating, anxiety, weakness
- Focused History:
  - History of previous episodes or history of biliary tract disease
  - Alcohol intake

### **Objective:**

- Physical Exam:
  - Vitals: fever, tachycardia, hypotension (possible shock)
  - Upper abdominal tenderness, most often with peritoneal signs (guarding, rigidity, or rebound)
  - Abdomen may be distended with absent bowel sounds
  - Pallor, cool/clammy skin
  - Mild jaundice
- Tools:
  - Labs: elevated pancreatic enzymes (amylase, lipase)

### **Assessment:**

- Differential:
  - Appendicitis (high-lying appendix): pain is usually not sudden and severe
  - Acute hepatitis: infection with hepatitis A,B,C,D,E; usually presents with jaundice and viral-type symptoms (malaise, myalgias, nausea, vomiting)
  - Perforated peptic ulcer: sudden, intense pain over epigastrium
  - Acute cholecystitis: steady, sudden, severe pain in RUQ with nausea and vomiting; exam usually has a positive Murphy's sign and positive peritoneal signs

## **ACUTE PANCREATITIS CONTINUED**

### **Plan:**

- Stabilize
- NPO: need to “rest” the pancreas
- Medication:
  - IV hydration: early fluid resuscitation
  - IV analgesics under preceptor guidance
- EVAC or transfer

### **Patient Education:**

- If applicable:
  - Eliminate alcohol consumption
  - Weight loss and healthy diet plan
  - Tobacco cessation

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **MOTION SICKNESS**

### **Introduction:**

- Caused by repetitive angular and linear acceleration and deceleration
- Triggers may involve conflicting vestibular, visual, and proprioceptive inputs
- More common in women
- Incidence ranges from <1% on airplanes to nearly 100% on ships in rough seas
- Risk factors: poor ventilation, emotional factors, migraine headaches, hormonal factors (pregnancy, OCPs)

### **Subjective:**

- Signs and Symptoms:
  - Vague abdominal discomfort
  - Nausea and vomiting
  - Possible: dizziness, headache, fatigue, weakness and inability to concentrate

### **Objective:**

- Physical Exam:
  - Usually normal abdominal exam/HEENT exam

### **Assessment:**

- Diagnosis is clinical and usually straightforward

### **Plan:**

- Prophylactic and preventive measures:
  - Anticholinergic medication: scopolamine
  - Antihistamines: diphenhydramine or meclizine
  - Nausea medication: promethazine (PO only) - observe for side effects

### **Patient Education:**

- Minimize exposure and position yourself where motion is the least (middle of ship, close to water level near wings in an airplane)
- Minimize discrepancy between vestibular and visual stimuli: ride in front seat of car, keep eyes on the horizon, don't try reading
- Avoid rear-facing seats
- Follow-up Actions:
  - Return for further evaluation if prophylactic measures do not work or if having worsening symptoms

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## Chapter 9

# GENITOURINARY PROTOCOLS

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### **ABNORMAL UTERINE BLEEDING**

#### **Introduction:**

- Normal menstrual bleeding lasts an average of 5 days, with a mean blood loss of 40 ml (1.3 oz)
  - Menorrhagia: >80 ml per cycle can cause anemia
  - Polymenorrhea: bleeding > every 21 days
  - Oligomenorrhea: bleeding < every 35 days
- Abnormal Uterine Bleeding (AUB) in women ages 19-39 years is often the result of pregnancy, structural lesions, anovulatory cycles, use of hormonal contraception or endometrial hyperplasia

#### **Subjective:**

- Signs and Symptoms:
  - Change in menstrual pattern or amount of bleeding
- Focused History:
  - LMP, duration and amount of flow
  - Related pain with presence of clots, degree of inconvenience caused by bleeding
  - Medication history, family history, sexual history
  - Pregnancy history

#### **Objective:**

- Physical Exam:
  - Pelvic exam for vulvar, vaginal or cervical lesions, pregnancy, uterine masses or infection
  - Physical exam to look for signs of thyroid disease and polycystic ovarian syndrome (PCOS)
- Tools:
  - Pregnancy test and CBC if available

#### **Assessment:**

- Differential:
  - PCOS: causes anovulation, hirsutism, acne, weight gain and infertility
  - Pregnancy: positive pregnancy test
  - PID: pelvic pain, fever, cervical motion tenderness
  - Stress and weight loss or gain: can cause anovulation

## **ABNORMAL UTERINE BLEEDING CONTINUED**

### **Plan:**

- After ruling out pregnancy and infection, treat symptomatically
- Medications:
  - Possible OCPs under preceptor guidance
- EVAC or transfer if patient is not hemodynamically stable

### **Patient Education:**

- Stress and environmental changes often cause menstrual irregularities
  - The cycle will often regulate when life normalizes
- Heavy bleeding soaking > 1 tampon or pad an hour is an emergency
- Follow-up Actions:
  - Return if bleeding impacts activities
  - Return if bleeding is not controlled with treatment provided

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **DYSMENORRHEA**

### **Introduction:**

- Menstrual pain associated with menstrual cycles in the absence of pathologic findings
- 50-75% of women are affected at some time
  - 5-6% have incapacitating pain
- Pain is produced by uterine vasoconstriction, anoxia, and sustained contractions mediated by prostaglandins

### **Subjective:**

- Signs and Symptoms:
  - Pelvic pain that is low, midline, wave-like and cramping
    - Often radiating to the back and inner thighs
  - May last for 1 or more days
  - May be associated with:
    - Nausea, diarrhea, headache, and flushing

### **Objective:**

- Physical Exam:
  - Pelvic exam is normal between menses
  - Exam during menses may produce discomfort
    - No pathologic findings

### **Assessment:**

- Differential:
  - Uterine fibroids: sometimes palpable
  - Endometriosis: disabling pain during menses, may cause dyspareunia and radiate to abdomen
  - PID: pelvic pain, fever, cervical motion tenderness

### **Plan:**

- NSAIDs:
  - Should be started 1-2 days before expected menses and continued until menses stop
- Continuous use of oral contraceptives or Mirena IUD to suppress menstruation

### **Patient Education:**

- Follow-up Actions:
  - Return if soaking a tampon or pad per hour
  - Return if medications are not controlling symptoms or symptoms are impairing activities

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **VAGINITIS**

### **Introduction:**

- Inflammation and infection of the vagina are common gynecologic problems, resulting from a variety of pathogens, allergic reactions, atrophy or friction
- Normal secretions during the middle of the cycle can be confused with vaginitis by concerned women

### **Subjective:**

- Signs and Symptoms:
  - Vaginal irritation, pain or unusual malodorous discharge
  - Possibly pain with urination if external vulva is irritated
- Focused History:
  - Recent sexual history and LMP
  - Contraceptive use or changes in medications
  - Recent antibiotic use, tampons or douches

### **Objective:**

- Physical Exam:
  - Careful inspection of the vulva and speculum exam of the vagina and cervix
  - Bi-manual exam of the pelvis to assess for tenderness and signs of infection
- Tools: GC/chlamydia if indicated, KOH/wet prep, UA

### **Assessment:**

- Differential:
  - Candidiasis: white, curd-like discharge; hyphae and spores on KOH
  - Trichomonas: pruritus, frothy discharge, “strawberry cervix”, motile organisms on wet mount
  - Bacterial vaginosis: green/gray thin discharge w/fishy odor; clue cells on wet prep
  - GC/chlamydia: sometimes asymptomatic, but can cause painful cervical motion and purulent discharge

### **Plan:**

- Candidiasis: fluconazole oral or miconazole vaginal
- Trichomonas: metronidazole or tinidazole oral (treat partner as well)
- Bacterial vaginosis (BV): metronidazole oral or clindamycin vaginal

### **Patient Education:**

- Take all medications as prescribed and do not take metronidazole with alcohol
- Wear cotton underpants and loose clothing
- Follow-up Actions: return if no improvement within one week

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **PELVIC INFLAMMATORY DISEASE (PID)**

### **Introduction:**

- Pelvic inflammatory disease (PID) is a polymicrobial infection of the upper reproductive tract associated with *N. gonorrhoeae* and *Chlamydia trachomatis*
- Most common in young, nulliparous, sexually active women
- A leading cause of infertility and ectopic pregnancy
- More likely with recent sexual contact, onset of menses, history of PID, recent insertion of IUD

### **Subjective:**

- Signs and Symptoms:
  - Lower abdominal pain, chills and fever
  - Menstrual disturbances
  - May have postcoital bleeding
  - Urinary frequency and low back pain

### **Objective:**

- Physical Exam:
  - Temperature >101° F
  - Purulent cervical discharge with cervical motion tenderness, adnexal tenderness
- Tools: Pregnancy test to rule out ectopic pregnancy

### **Assessment:**

- Differential:
  - Ectopic pregnancy: positive pregnancy test
  - Appendicitis: negative pelvic exam, more focal RLQ pain
  - Ovarian cyst: no cervical discharge

### **Plan:**

- Medications:
  - Mild to moderate - single dose of Rocephin plus doxycycline and metronidazole
- Severe disease or those that meet criteria for hospitalization should be evacuated or sent to a higher level of care with IV access
  - If the patient has not responded to outpatient therapy within 72 hours, or if they have nausea, vomiting or high fever they should be admitted

### **Patient Education:**

- Despite treatment, ¼ of women will develop long-term sequelae
  - Repeated episodes, chronic pelvic pain, ectopic pregnancy or infertility
- Follow-up Actions:
  - If the patient has not responded to outpatient therapy within 72 hours - admit
  - If the patient has nausea, vomiting or high fever - admit

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ECTOPIC PREGNANCY**

### **Introduction:**

- Ectopic pregnancy occurs in about one of 150 live births
- Fertilized ovum is prevented from reaching the uterus and implants 98% of the time in the ovarian tube
- In the US, undiagnosed or undetected ectopic pregnancy is one of the most common causes of maternal death during the first trimester

### **Subjective:**

- Signs and Symptoms:
  - Severe lower quadrant pain
    - Sudden, stabbing, intermittent, no radiation
    - Shock occurs in 10%, often after pelvic exam
- Focused History:
  - At least 2/3 give a history of abnormal menstruation and may have been infertile

### **Objective:**

- Physical Exam:
  - Pelvic mass may be palpated
  - Abdominal distention and mild paralytic ileus present
- Tools:
  - Pregnancy test

### **Assessment:**

- Differential:
  - Appendicitis: negative pelvic exam, more focal RLQ pain
  - Ovarian cyst: no cervical discharge
  - Urinary calculi: flank pain more likely
  - PID: more likely with recent sexual contact, onset of menses, history of PID, recent insertion of IUD

### **Plan:**

- Evacuate patients with suspected ectopic pregnancy
  - Surgical treatment is definitive
  - Pre-hospital rupture can cause hemorrhage

### **Patient Education:**

- Repeat tubal pregnancy occurs in about 10% of cases
- Follow-up Actions:
  - Emergently evacuate patients with suspected ectopic pregnancy

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **BREAST MASS**

### **Introduction:**

- Breast cancer affects 1 in 8 females
- Breast cancer in males is rare; the incidence is only 1% of that in women and usually occurs after age 70
  - Poorer prognosis than women
- Risk factors:
  - Advanced age
  - Delayed child bearing
  - Positive family history of breast cancer or genetic mutations (BRCA1, BRCA2)

### **Subjective:**

- Signs and Symptoms:
  - Presenting complaint in 70% of patients is a lump
    - 90% of masses are found by the patient
    - 60% are in the upper/outer portion
  - Single, non-tender, firm to hard mass with ill-defined margins
  - Skin or nipple retraction
  - Axillary lymphadenopathy
  - Erythema, edema, pain
  - Fixation of mass to skin or chest wall

### **Objective:**

- Physical Exam:
  - Inspection of the breast with the patient sitting, arms at sides and then overhead
  - Palpation of the breast seated and supine
  - Palpate the lymph nodes
  - Assess for nipple discharge

### **Assessment:**

- Differential:
  - Fibrocystic breast: diffuse nodularity and fluctuant tenderness around menstrual cycle
  - Fibroadenoma: mobile, non-tender rubbery nodule
  - Lipoma: superficial, mobile, fatty tumor
  - Males: gynecomastia or breast bud

### **Plan:**

- In general any female presenting for a solitary breast mass should be considered for surgical referral
  - A non-tender, firm or hard mass with poorly delineated margins is most worrisome



## **BREAST MASS CONTINUED**

### **Patient Education:**

- Patients should recognize and report any breast changes to their clinicians
- Clinical breast exams are offered every 3 years for women aged 25-39 years, annually for women 40 years and older
  - Controversy exists regarding different guidelines among medical professional organizations

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **DYSURIA**

### **Introduction:**

- Painful urination is a common reason for patients to seek urgent medical attention
- Cystitis will be diagnosed in 50-60% of female cases
- In older men, dysuria may be a symptom of prostatitis
- In younger men urethritis accounts for the majority
  - Higher risk for STI
- The key objective in evaluation is to exclude serious upper urinary tract disease such as pyelonephritis

### **Subjective:**

- Signs and Symptoms:
  - Painful or burning with urination
- Focused History:
  - Consider age and sex
  - Has there been a fever
  - New back or flank pain
  - Nausea or vomiting
  - Vaginal discharge or pregnancy possibility
  - Instrumentation of urethra or bladder

### **Objective:**

- Physical Exam:
  - Fever, tachycardia or hypotension suggest urosepsis and possibility of need for evacuation
  - Focused exam in women if uncomplicated limited to CVA tenderness, lower abdomen and pelvic exam if the history suggests vulvovaginitis or cervicitis
  - Renal imaging when severe flank or back pain is present, the possibility of complicated kidney infection or of hydronephrosis
- Tools:
  - UA/culture
  - GC/Chlamydia

### **Assessment:**

- Acute cystitis: dysuria, urgency, frequency
- Acute pyelonephritis: back pain and fever
- Vaginitis: vaginal itching and discharge
- Interstitial cystitis: pain with bladder filling relieved by emptying
- Urethritis/cervicitis: positive history, findings on exam

## **DYSURIA CONTINUED**

### **Plan:**

- Treatment is directed to the underlying cause of dysuria
- Antibiotic treatment is supported for most women with multiple and typical symptoms of UTI
- Refer if repeated urinary infections secondary to anatomic abnormalities, infections associated with nephrolithiasis or persistent interstitial cystitis/painful bladder syndrome
- EVAC or transfer if urinary retention or obstruction or pyelonephritis with obstruction

### **Patient Education:**

- Follow-up Actions:
  - Return if symptoms not improving with treatment within 2-3 days or if worsening; fever > 100.4° F, difficulty urinating or gross hematuria

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CYSTITIS**

### **Introduction:**

- Infection of the bladder caused commonly by coliform bacteria (*Escherichia coli*)
- Rare in men - requires further investigation
- Uncircumcised men, those with BPH and those having anal sex are more at risk

### **Subjective:**

- Signs and Symptoms:
  - Frequency, urgency, dysuria, hesitancy, suprapubic discomfort
  - Women may experience gross hematuria and symptoms may appear following intercourse

### **Objective:**

- Physical Exam:
  - Possible suprapubic tenderness but otherwise unremarkable

### **Assessment:**

- Differential:
  - Vulvovaginitis: history and pelvic exam can distinguish
  - Prostatitis/urethritis: urethral discharge or prostatic tenderness distinguishes
  - Bladder carcinoma: gross hematuria that does not resolve

### **Plan:**

- Medications:
  - Consult local antibiogram or other sources for up to date treatments
    - TMP-SMX (Bactrim)
    - Nitrofurantoin
    - Fluoroquinolones
  - Urinary analgesics (phenazopyridine) may provide symptomatic relief

### **Patient Education:**

- Maintain adequate fluid and water intake
- Finish all medication to prevent recurrence
- Follow-up Actions:
  - Return if symptoms do not resolve following antibiotic treatment in 48 hours or if symptoms recur
  - Return if urine continues to have blood
  - Return if fever >100.4° F

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ACUTE PYELONEPHRITIS**

### **Introduction:**

- Acute pyelonephritis is an infectious inflammatory disease involving the kidney parenchyma and renal pelvis
- Most common causative agents include *E. coli*, *Proteus*, *Klebsiella*, *Enterobacter* and *Pseudomonas*
- The infection usually spreads from the lower urinary tract

### **Subjective:**

- Signs and Symptoms:
  - Fever
  - Flank pain
  - Irritative voiding symptoms
  - Shaking and chills
  - Associated nausea and vomiting are common

### **Objective:**

- Physical Exam:
  - Fever and tachycardia may be present
  - Costovertebral angle tenderness usually pronounced
- Tools:
  - UA: pyuria, bacteriuria and varying degrees of hematuria; white cell casts may be seen
    - Urine culture should be ordered to determine antimicrobial sensitivity
  - CBC: will show leukocytosis and a left shift

### **Assessment:**

- Differential:
  - Appendicitis: positive heel tap, peritoneal signs
  - Cholecystitis: history of symptoms with eating, insidious onset
  - Diverticulitis: LLQ pain with more prominent diarrhea
  - Lower-lobe pneumonia: fever, cough, chills
  - Acute epididymitis: pain in the epididymis

### **Plan:**

- Medications:
  - Fluoroquinolones are first line treatment
    - Oral ciprofloxacin or levofloxacin
- Evacuate site for any complicating factors:
  - Severe urinary signs and symptoms (i.e., inability to urinate), inability to tolerate pain or oral medications, intractable nausea and vomiting

## **ACUTE PYELONEPHRITIS CONTINUED**

### **Patient Education:**

- Sepsis and shock can occur with acute pyelonephritis; close follow-up is important
- Inadequate therapy could result in kidney abscess formation
- Take all medication as prescribed
- Follow-up Actions:
  - Return if symptoms do not begin to improve within 48 hours
  - Fevers can persist up to 72 hours but return if fever  $>101^{\circ}$  F with antipyretics

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **PROSTATITIS**

### **Introduction:**

- Acute bacterial prostatitis is usually caused by *E. coli*
- Likely routes of infection include ascent up the urethra and reflux of infected urine into the prostatic ducts
- Urinalysis is suggestive but not inclusive

### **Subjective:**

- Signs and Symptoms:
  - Perineal, sacral or suprapubic pain
  - Fever and irritative voiding complaints are common
  - Varying degrees of obstructive symptoms may occur as the acutely inflamed prostate swells

### **Objective:**

- Physical Exam:
  - Fever
  - Exquisitely warm and tender prostate on exam – take care or manipulation can result in septicemia
- Focused History:
  - History of symptoms and degree of difficulty urinating

### **Assessment:**

- Differential:
  - Acute pyelonephritis: while more common in women, it can occur in men, positive CVA tenderness
  - Acute epididymitis: testicular pain (epididymis)
  - Acute diverticulitis: abdominal pain, bloody diarrhea

### **Plan:**

- Medications:
  - Patients with no or low-grade fever can begin treatment with fluoroquinolones to start
    - Oral levofloxacin, ciprofloxacin or trimethoprim/sulfamethoxazole
- If severe signs and symptoms, evacuation, hospitalization and IV antibiotics may be necessary

### **Patient Education:**

- Follow-up Actions:
  - Return if symptoms do not start to resolve within 48 hours of starting medication
  - Return if difficulty urinating
  - Return if unable to tolerate PO medications
  - Return if fever >100.4° F

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ACUTE EPIDIDYMITIS**

### **Introduction:**

- Most cases of acute epididymitis are infectious and can be divided into two categories with different age distributions and etiologic agents
  - Sexually transmitted forms: men <40 associated with urethritis and as a result of *Chlamydia trachomatis* or *Neisseria gonorrhoeae*
  - Non-sexually transmitted forms: typically older men, associated with UTI and prostatitis

### **Subjective:**

- Signs and Symptoms:
  - Pain in the scrotum behind the testis with tenderness of the epididymis, with or without pain in the testis
  - Fever, irritative voiding symptoms
  - Possible associated symptoms of urethritis and discharge or cystitis

### **Objective:**

- Physical Exam:
  - Fever and scrotal swelling are usually apparent
  - Usual Course:
    - Early the epididymis may be distinguishable from the testis
    - Later the two may appear as one enlarged tender mass
  - The prostate may be tender on rectal exam

### **Assessment:**

- Differential:
  - Trauma: history or signs of trauma
  - Torsion: usually acute onset of severe pain without fever
  - Testicular tumor: painless mass
  - Hernia: may hear bowel sounds over mass in testicle, may be reducible

### **Plan:**

- Medications:
  - If suspicious for STI:
    - Ceftriaxone 250 mg IM to treat gonorrhea
    - Doxycycline or azithromycin to treat chlamydia
  - If suspicious for other bacterial etiology:
    - Levofloxacin, ciprofloxacin, trimethoprim-sulfamethoxazole or doxycycline
- Scrotal support/elevation and bed rest
- Ibuprofen for pain



## **ACUTE EPIDIDYMITIS CONTINUED**

### **Patient Education:**

- Use condoms until symptoms resolve
- Use scrotal support for comfort
- Take all antibiotics until completed
- Follow-up Actions:
  - Return in one month for a re-evaluation of the scrotum
  - Follow up if symptoms persist or progress
  - Return if fever >100.4° F

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **NEPHROLITHIASIS**

### **Introduction:**

- Kidney stone pain is generally acknowledged as one of the worst types of pain a person can suffer
- Stones in the kidney generally do not cause pain until they move into a position that obstructs the normal flow of urine – usually as it passes into the ureter
- Men are affected 2.5 times more than women
- Urinary calculi are commonly composed of calcium (85%) and are radiopaque on plain abdominal films

### **Subjective:**

- Signs and Symptoms:
  - Sudden severe pain
    - Localized in the flank and is usually severe, unrelenting
    - May be associated with nausea and vomiting
  - Patients are constantly moving trying to find a comfortable position
  - As the stone progresses down the ureter the pain may be referred down the ipsilateral groin
  - Stone size does not correlate with the severity of the symptoms

### **Objective:**

- Physical Exam:
  - Examine the patient between the lower chest and groin
  - Examine the scrotum for epididymitis or torsion
  - In females check for adnexal tenderness
  - Check for CVA tenderness
- Tools:
  - UA will often show blood and may show infection

### **Assessment:**

- Differential:
  - Lower lobe pneumonia: abnormal breath sounds
  - Inguinal hernia: palpable defect
  - Epididymitis: tender testis and epididymis
  - Gynecologic infection: abnormal pelvic exam

### **Plan:**

- Medications:
  - Pain control: ketorolac or a narcotic such as morphine
  - Anti-emetics as needed: ondansetron or promethazine
- Oral hydration if tolerated and IV as required
- Evacuate or admit if intractable nausea, vomiting or pain; urinary obstruction or signs of infection

## **NEPHROLITHIASIS CONTINUED**

### **Patient Education:**

- Maintain good hydration
- Increased water and citrus juice can prevent stone formation
- Stones <5-6 mm in diameter usually pass spontaneously
- Follow-up Actions:
  - Return if not able to urinate, if pain becomes unmanageable or if fever >100.4° F

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## TESTICULAR “RED FLAG” SYMPTOMS

- Non-reducible mass that obscures normal spermatic structures
- Mass that is part of or attached to the testes and does not transilluminate
- Sudden onset of pain, exquisite tenderness and a high-riding, horizontally displaced testis (torsion)
- Scrotal or perineal erythema, necrotic or blistered skin lesions, toxic appearance (Fournier’s gangrene)

## PAINLESS SCROTAL MASS

### Introduction:

- A painless scrotal mass is often noticed by the patient but may be an incidental finding on routine exam
- Testicular cancer:
  - Most common solid cancer in males ages 15-35
  - Up to 20x increased risk with history of cryptorchidism

### Subjective:

- Signs and Symptoms:
  - Enlarged testicle and/or mass that is painless
  - Testicle may have feeling of fullness
  - May enlarge with bearing down or position change
- Focused History:
  - Duration of symptoms, systemic symptoms, history of infertility, history of cryptorchidism

### Objective:

- Physical Exam:
  - Evaluate for systemic disorders that can cause edema
  - Detailed inguinal and genital exam
    - Standing and recumbent for reducible masses
    - Palpate for swelling, masses and tenderness
    - Transilluminate any masses to determine solidity

## **PAINLESS SCROTAL MASS CONTINUED**

### **Assessment:**

- Differential:
  - Hydrocele: cystic swelling, size can increase with standing, transilluminates, can be large
  - Spermatocele: cystic mass at the upper pole of the testis, adjacent to the epididymis, transilluminates
  - Inguinal hernia: increases in size when standing or with bearing down, possible bowel sounds, if incarcerated it will not be reducible and + pain
  - Varicocele: feels like a “bag of worms”, usually on the left, can cause fullness/pain, can cause infertility
  - Cancer: painless, mass fixed to testicle

### **Plan:**

- Treatment is directed at the underlying cause
- Not all masses require treatment
- Incarcerated hernia is a surgical emergency
- Suspected testicular cancer requires evacuation, ASAP consultation

### **Patient Education:**

- Follow-up Actions:
  - Return if worsening symptoms, pain or infertility concerns
  - Return if fever  $>100.4^{\circ}\text{F}$

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **SCROTAL PAIN**

### **Introduction:**

- Scrotal pain can occur in males of any age
- Age, onset of symptoms, and other findings can help determine the cause
- Expeditious diagnosis and treatment are required to prevent the loss of a testis

### **Subjective:**

- Signs and Symptoms:
  - Pain in scrotum or testis
- Focused History:
  - Location, onset, duration, associated symptoms, preceding events including injuries, straining and sexual contact

### **Objective:**

- Physical Exam:
  - Review vital signs and assess pain
  - Focused exam of abdomen, inguinal region and genitals
    - Assess for tenderness, masses, bladder distention and CVA tenderness
    - Genital exam with patient standing and supine
    - Examine penis for lesions and discharge
    - Testicle exam for asymmetry, swelling, erythema or discoloration
    - Test cremasteric reflex

### **Assessment:**

- Differential:
  - Testicular torsion: sudden, severe, unilateral pain; absent cremasteric reflex; asymmetric, high-riding testicle; most common in young men
  - Incarcerated inguinal hernia: long history of painless swelling, now with acute pain, not reducible, possible vomiting and constipation
  - Appendiceal torsion: acute onset of pain in the upper pole of the testis, cremasteric reflex present
  - Orchitis: scrotal and abdominal pain, nausea, fever with scrotal swelling; viral illness rare in vaccinated population

### **Plan:**

- If testicular torsion is suspected emergency surgery is generally required within 6-12 hours to save the testis
- If incarcerated hernia is suspected, immediate surgical consult is required
- Management of acute torsion of the appendix testis usually includes conservative treatment, which includes rest, ice, and NSAIDs
  - Recovery is generally slow with this approach, and pain may last for several weeks to months

## **SCROTAL PAIN CONTINUED**

### **Patient Education:**

- Always consider testicular torsion in patients with acute scrotal pain, particularly the young population
- Follow-up Actions:
  - Return if symptoms do not resolve following treatment or if symptoms recur
  - Return if fever >100.4° F

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **SEXUALLY TRANSMITTED INFECTION (STI)**

### **Introduction:**

- STIs are a preventable major risk to mission readiness, and prevention starts with changing sexual behaviors that put people at risk
- CDC recommends prevention and control focuses on:
  - Education and counseling
  - Identification of infected persons
  - Effective diagnosis and treatment
  - Evaluation/treatment, counseling of sex partners
  - Vaccination for preventable STIs

### **Subjective:**

- Signs and Symptoms:
  - Vaginal/urethral discharge, genital ulcers, skin lesions and pelvic pain
  - Many patients will be asymptomatic
  - Most common are gonorrhea and chlamydia which classically present with urethral discharge
- Focused History:
  - Unprotected sex in the past 6 weeks
  - History of STIs

### **Objective:**

- Physical Exam:
  - Genital and pelvic exam
    - Evaluate for discharge, cervical redness, adnexal or cervical motion tenderness
    - Evaluate genitals for lesions
  - Exam of the abdomen
    - Check for suprapubic tenderness
  - Assess for enlarged lymph nodes

### **Assessment:**

- Differential:
  - Trichomonas: malodorous, frothy discharge in females, males usually asymptomatic
  - Gonorrhea/chlamydia: yellow to green discharge, cervical erythema and tenderness
  - Herpes: vesicular skin lesions
  - Syphilis: large, single painless ulcer, lymphadenopathy



## **SEXUALLY TRANSMITTED INFECTION (STI) CONTINUED**

### **Plan:**

- Medications:
  - Treat for GC/chlamydia concurrently
    - Ceftriaxone IM and azithromycin
  - Herpes - acyclovir or valacyclovir
  - Treat for syphilis - penicillin
- Notify public health of positive testing to ensure partner treatment and counseling
- No sexual activity until partner is treated

### **Patient Education:**

- Follow-up Actions:
  - All patients should have HIV serology, gonorrhea/chlamydia, syphilis (RPR), acute hepatitis panel
  - Always treat patient as if co-infected with chlamydia

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 10

# ENDOCRINOLOGY PROTOCOLS

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### HYPOTHYROIDISM

#### **Introduction:**

- Hypothyroidism indicates that there is a lower level of thyroid hormone circulating in the bloodstream than the body requires for homeostasis
- Hypothyroidism is noted by its constellation of symptoms
- Dysfunction of the thyroid may be related to dysfunction of the hypothalamus, the pituitary or the thyroid gland itself; most common cause is autoimmune

#### **Subjective:**

- Signs and Symptoms:
  - Symptoms will be nonspecific:
    - Cold intolerance
    - Weight gain
    - Fatigue
    - Lethargy
    - Weakness
    - Hair loss
    - Depression
    - Enlargement of the thyroid gland (goiter)

#### **Objective:**

- Physical Exam:
  - Vital signs:
    - Bradycardia
    - Diastolic hypertension is possible
  - Thin nails
  - Thin hair
  - Peripheral edema
  - Palpably enlarged thyroid
- Tools:
  - Thyroid function tests (TSH/free T4); consider EKG if arrhythmia noted

#### **Assessment:**

- Differential:
  - Hyperthyroid: tachycardia, weight loss
  - Mononucleosis: abdominal pain, swollen tonsils
  - Anemia: female patient, heavy cycles, recent blood loss
  - Goiter: poor diet, developing nations
  - Adrenal disease: unusual tanning of the skin, hypotension, weight loss

## **HYPOTHYROIDISM CONTINUED**

### **Plan:**

- Routine evacuation
- Refer to PCM/endocrinology at first opportunity
- FYSA: First line medication is levothyroxine/synthroid and the goal is to get the TSH between 0.5-5.0 mU/L

### **Patient Education:**

- Evacuation or transfer to ER only appropriate if evidence of profound hypothyroidism is noted (bradycardia, low blood pressure, arrhythmia)
- Follow-up Actions:
  - If symptoms worsen, return immediately

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HYPERTHYROIDISM**

### **Introduction:**

- Hyperthyroidism occurs when there is excess thyroid hormone circulating in the blood
- The most common cause of this problem is Graves' disease, which is an autoimmune disorder
- Thyroid storm is a variation of hyperthyroidism with severe symptoms potentially leading to coma and death from cardiovascular collapse

### **Subjective:**

- Signs and Symptoms:
  - Nervousness
  - Heat intolerance
  - Weight loss
  - Diarrhea
- Focused History:
  - Family history of thyroid disease
  - Erectile dysfunction
  - Decreased libido

### **Objective:**

- Physical Exam:
  - Vital signs: may be tachycardic with an arrhythmia
  - Upper eye lid retraction
  - Lid lag
  - Exophthalmos ("bug-eyed")
  - Fine tremor of the hands
  - Hyperreflexia
  - Diffusely enlarged thyroid
- Tools:
  - Thyroid function tests (TSH/free T4); consider EKG if arrhythmia noted

### **Assessment:**

- Differential:
  - Hypothyroidism: bradycardia, weight gain
  - Adrenal disease: skin tanning, hypotension, weight loss
  - Diabetes: often co-exists with thyroid disease
  - Orbital tumor: if exophthalmos is present
  - Thyroid storm: marked tachycardia, delirium, fever

## **HYPERTHYROIDISM CONTINUED**

### **Plan:**

- If vital signs are normal, but suspicious for hyperthyroidism:
  - Routine evacuation
  - Refer to PCM/endocrinologist at first opportunity
- If evidence of thyroid storm:
  - Immediate EVAC or transfer
  - Supportive care while awaiting transport
- FYSA: patients are typically put on beta blockers and methimazole to control symptoms until evaluation by endocrinology.

### **Patient Education:**

- Avoid strenuous activity
- Work should be in a cool environment
- Return to clinic for worsening symptoms, heart palpitations, chest pain, eye pain

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **DIABETES**

### **Introduction:**

- Type II diabetes occurs in adults or children when insulin is no longer able to carry glucose into cells to use for energy
- That unused glucose then circulates in the blood, damaging vessels and nerves
- Long-term, uncontrolled diabetes can lead to blindness, heart disease, amputation of limbs and death
- This disease is highly associated with obesity

### **Subjective:**

- Signs and Symptoms:
  - The 3 P's
    - Polydipsia (frequent thirst)
    - Polyphagia (frequent hunger)
    - Polyuria (frequent urination)
  - Weight loss
  - Malaise
- Focused History:
  - Frequency of urination
  - Family history
  - Ethnicity

### **Objective:**

- Physical Exam:
  - Vital signs: likely to be normal except weight (obesity)
  - Skin changes (acanthosis nigricans)
  - Candidiasis (oral or frequent vaginal infections)
- Tools:
  - Lab:
    - UA: positive ketones and glucose in urine

### **Assessment:**

- Differential:
  - Thyroid disease: brady or tachycardia, goiter, eye findings
  - UTI: positive nitrites/leukocyte esterase on urine dipstick
  - HIV: suspect if oral candidiasis is present
  - Type I diabetes: very high initial blood sugars, less likely to have family history

### **Plan:**

- Immediately EVAC or transfer
- If unable to EVAC or transfer:
  - Insulin if available and under preceptor guidance
  - IV with fluid hydration
  - Check BS daily and watch for increasing symptomology
  - Low-carbohydrate diet

## **DIABETES CONTINUED**

### **Patient Education:**

- This is likely to be a life-long problem
- Strict adherence to medication regimen, diet and exercise can reduce mortality and morbidity
- Lose weight
- Reduce carbohydrate intake
- Follow-up Actions:
  - Return daily for blood sugar checks, UA dipstick until EVAC or transfer

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **DIABETIC KETOACIDOSIS (DKA)**

### **Introduction:**

- DKA is an emergent, life-threatening complication of both type I and type II diabetes that can lead to coma and death
- DKA occurs when body cells are unable to use glucose for energy and resort to the metabolism of fat to create energy

### **Subjective:**

- Signs and Symptoms:
  - The 3 P's: polyuria, polydipsia, polyphagia
  - Lethargy
  - Confusion
  - Abdominal pain
- Focused History:
  - Recent illness
  - Weight loss
  - History of diabetes with non-adherence to medication regimen

### **Objective:**

- Physical Exam:
  - Vital signs: tachycardia, hypothermia, hypotension, rapid and deep breathing
  - Altered mental status
  - Acetone "fruity" breath
  - Abdominal exam may be tender to palpation
- Tools:
  - UA: positive ketones and glucose in urine
  - Fingerstick glucose: 350-900 mg/dL

### **Assessment:**

- Differential:
  - Drug overdose: consider environment, exposures
  - Pancreatitis: PE findings, history, EtOH use
  - Shock: recent illnesses/exposures
  - Diabetes mellitus: non-compliance with medication regimen

### **Plan:**

- Immediately EVAC or transfer
- If unable to EVAC or transfer:
  - Supportive care (BLS/ACLS)
  - IV with fluid hydration; insulin if available and under preceptor guidance
  - Keep patient in clinic under supervision until EVAC or transfer



## **DIABETIC KETOACIDOSIS (DKA) CONTINUED**

### **Patient Education:**

- This is likely to be a life-long problem
- Strict adherence to medication regimen, diet and exercise can prolong life
- Lose weight
- Reduce carbohydrate intake
- Follow-up Actions:
  - EVAC or transfer; treat as appropriate

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **CUSHING SYNDROME**

### **Introduction:**

- Cushing syndrome is a constellation of symptoms associated with long-term use of corticosteroids
- Cushing Syndrome vs. Cushing Disease
  - Cushing syndrome
    - The clinical manifestations of an iatrogenic cause (inappropriate dosing of steroids)
  - Cushing disease
    - The pituitary gland secretes too much ACTH
    - Usually secondary to pituitary adenoma

### **Subjective:**

- Signs and Symptoms:
  - Truncal obesity
  - Purple striae on the abdomen
  - Thin skin
  - Moon facies
  - Buffalo hump
- Focused History:
  - Family history of pituitary disease
  - Recent ingestion of steroids
  - Weight gain

### **Objective:**

- Physical Exam:
  - Hypertension
  - Glucose intolerance
  - Altered mental status
  - Muscle wasting
  - Weakness

### **Assessment:**

- Differential:
  - Cushing disease: consider adenoma, vision changes, headaches, etc.
  - Diabetes: associated high blood sugar, visual disturbances, slow wound healing
  - Thyroid disease: goiter, tenderness to palpation at base of anterior neck
  - Electrolyte disturbance: lab findings, mental status

## **CUSHING SYNDROME CONTINUED**

### **Plan:**

- Wean patient off steroids:
  - Rapid reduction in steroid dose without replacement can cause Addisonian crisis (not enough cortisol)
  - The body creates steroid as needed
  - If the body is getting steroid from an exogenous source, it will cease production until it is needed again
  - The adrenal glands take time to catch up once exogenous steroids are stopped
- EVAC or transfer; refer to PCM/endocrinology when feasible

### **Patient Education:**

- Do not self-prescribe steroids or increase dosage without provider consultation
- Return if symptoms worsen
- Follow-up Actions:
  - Return to clinic in 1 week if no improvement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 11

# NEUROLOGY PROTOCOLS

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### HEADACHE “RED FLAG” SYMPTOMS

- “Thunderclap” headache: severe headache that peaks within a few seconds (subarachnoid hemorrhage)
- Red eye and halos around lights (acute angle-closure glaucoma)
- Headache with systemic symptoms (sepsis, thyrotoxicosis, cancer)
- Onset of headache after age 50
- Neurologic symptoms or signs
- Progressively worsening headache
- Severe hypertension associated with headache

### MIGRAINE HEADACHE

#### Introduction:

- Episodic primary headache disorder that is a clinical diagnosis
- Auras occur in about 25% of patients, usually just before the headache
  - Auras: temporary neurological disturbances that can affect sensation, balance, muscle coordination, speech or vision
- Most common cause of recurrent moderate to severe headache
  - 1-year prevalence for men: 6%
  - 1-year prevalence for women: 18%
- Pathophysiology:
  - Neurovascular pain syndrome with altered central neuronal processing and involvement of the trigeminovascular system
- Triggers include:
  - Red wine
  - Skipping meals
  - Excessive stimuli (flashing lights, strong odors)
  - Weather changes
  - Sleep deprivation
  - Stress
  - Hormonal factors

#### Subjective:

- Signs and Symptoms:
  - Pulsatile pain, usually unilateral
  - Nausea and vomiting
  - Sensitivity to light (photophobia) and sound (phonophobia)
  - Possible visual auras (most common aura)

## **MIGRAINE HEADACHE CONTINUED**

### **Subjective Continued:**

- Focused History:
  - Personal or family history of migraines
  - Known personal or familial triggers

### **Objective:**

- Physical Exam:
  - Requires full neurological evaluation
  - If patient is experiencing an aura, may find visual field abnormalities, numbness, speech disturbances, ataxia
  - Patient may appear uncomfortable and prefer lying down in a dark, quiet room

### **Assessment:**

- Differential:
  - Tension headache: pericranial tenderness “bandlike”, tight quality, daily headaches, worse with stress/fatigue, most intense at neck, can overlap with migraine
  - Cluster headache: severe, incapacitating headache that occurs in recurring patterns
  - Post-concussive: follows head injury (refer)
  - Meningitis: fever, neck pain and stiffness

### **Plan:**

- Medications:
  - Initial treatment: acetaminophen or NSAIDs
    - If above ineffective, then Cafergot or a triptan
  - If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient’s condition
  - Nausea/vomiting: ondansetron or promethazine

### **Education:**

- Elimination of triggers
- For stress, behavioral interventions
- Keep a written headache journal
- Follow-up Actions:
  - Return if symptoms do not improve within 48 hours
  - If headache remains uncontrolled or increases in severity, consider EVAC or transfer
  - EVAC or transfer for “red flag” symptoms

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **CLUSTER HEADACHE**

### **Introduction:**

- Benign, severe, incapacitating headache that occurs in recurring patterns
- Patients typically are very agitated with behavior such as pacing, yelling or thrashing

### **Subjective:**

- Signs and Symptoms:
  - Pain typically unilateral in temporal-orbital area occurring at the same time each day or in a pattern or group “clusters”
  - Pain may wake patient from sleep
  - Pain is excruciating, but peaks within minutes and usually resolves within an hour

### **Objective:**

- Physical Exam:
  - Requires full neurological exam
  - May have nasal congestion, rhinorrhea, lacrimation, facial flushing and Horner’s syndrome (ptosis, miosis, enophthalmos, and anhidrosis) on the ipsilateral side

### **Assessment:**

- Differential:
  - Tension headache: pericranial tenderness “bandlike”, tight quality, daily headaches, worse with stress/fatigue, most intense at neck, can overlap with migraine
  - Migraine headache: photophobia, phonophobia, nausea/vomiting
  - Post-concussive: follows head injury (refer)
  - Meningitis: fever, neck pain and stiffness

### **Plan:**

- Subcutaneous or intranasal sumatriptan
- 100% oxygen via non-rebreather mask at 12-15 L/min for 15-20 minutes

### **Patient Education:**

- Reduce stress, regulate sleep cycle, eat regular meals, hydrate
- Avoid triggers if possible
- Daily preventative medication is indicated if headaches are frequent or cause severe disability
- New onset of headache or change in headache requires work up: EVAC/transfer
- Follow-up Actions:
  - Return if symptoms do not improve within 48 hours
  - If headache remains uncontrolled or increases in severity, consider EVAC/transfer
  - EVAC/transfer for “red flag” symptoms

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **TENSION HEADACHE**

### **Introduction:**

- Most common type of headache disorder; associated with emotional stress and muscular fatigue

### **Subjective:**

- Signs and Symptoms:
  - Mild, generalized pain generally without the incapacitation, nausea or photophobia of a migraine
  - Pain typically bilateral, described as band-like or vise-like, non-throbbing

### **Objective:**

- Physical Exam:
  - Requires full neurological exam
  - Muscle tenderness in the head, neck or shoulders

### **Assessment:**

- Differential:
  - Migraine headache: photophobia, phonophobia, nausea/vomiting
  - Post-concussive: follows head injury (refer)
  - Meningitis: fever, neck pain and stiffness
  - Cluster headache: severe, incapacitating headache that occurs in recurring patterns

### **Plan:**

- Acetaminophen or NSAID immediately
- If certified in Battlefield Acupuncture (BFA) and with preceptor concurrence, consider administering up to 10 treatment sessions as an alternative to NSAIDs as long as there is clinical benefit and no worsening of the patient's condition
- Identify potential triggers
  - Sleep irregularities
  - Poor posture
  - Emotional stressors
  - TMJ dysfunction
  - Neck pain or eyestrain

### **Patient Education:**

- Reduce stress, regulate sleep cycle, eat regular meals, hydrate
- Avoid triggers if possible
- Increase exercise, avoid tobacco and alcohol
- Follow-up Actions:
  - Return if symptoms do not improve within 48 hours
  - If headache remains uncontrolled or increases in severity, consider EVAC/transfer
  - EVAC/transfer for "red flag" symptoms

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately for approval if considering battlefield acupuncture (BFA)**
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103 if not considering battlefield acupuncture (BFA)**

## **HEAD INJURY**

### **Introduction:**

- Trauma is the most common cause of death in young people, and head injury accounts for almost half of these trauma-related deaths
- Field screening should be done for traumatic brain injury and concussion as they can cause long-standing complications

### **Subjective:**

- Signs and Symptoms:
  - Commonly headache
  - Worrisome symptoms include:
    - Nausea and vomiting
    - Dizziness, blurred vision, weakness
    - Aphasia (trouble finding/understanding words)
    - Balance and coordination disorder and seizure
  - Problems with cognition are equally worrisome
- Tools:
  - CT scanning: important role in demonstrating intracranial hemorrhage, cerebral edema, and displacement of midline structures

### **Objective:**

- Physical Exam:
  - Requires complete neurological exam: pay attention to level of consciousness and extent of brainstem dysfunction
  - Ask Military Acute Concussion Evaluation (MACE) questions

### **Assessment:**

- Differential:
  - Concussion: a transient alteration in mental status that may include symptoms such as headache, nausea, disorientation, irritability; may or may not include LOC
  - Epidural hematoma: headache, confusion, somnolence, seizures, may lead to coma, death; LOC
  - Subdural hematoma: similar to epidural hematoma, but longer interval to onset of symptoms
  - Diffuse axonal injury: persistent LOC, coma, or persistent vegetative state

### **Plan:**

- Referral needed for:
  - Focal neurologic deficits, altered consciousness or skull fracture
  - Late complications of head injury like post-traumatic seizure or post-concussive syndrome
    - TBI center preferred
- Management of specific symptoms
- Do not return to full duty status until asymptomatic off medication
- Provide patient support and reassurance



## **HEAD INJURY CONTINUED**

### **Patient Education:**

- Most patients make a full recovery following head injury or concussion
- Follow-up Actions:
  - Return immediately if any worsening headache, vomiting or visual disturbances

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **SUBARACHNOID HEMORRHAGE**

### **Introduction:**

- Spontaneous hemorrhage frequently results from the rupture of an arterial saccular ("berry") aneurysm or from an arteriovenous malformation
- Between 5-10% of strokes are due to subarachnoid hemorrhage
- Trauma is the most common cause

### **Subjective:**

- Signs and Symptoms:
  - Patients with aneurysms may experience: headaches, nausea and neck stiffness a few hours or days before massive subarachnoid hemorrhage occurs
  - Sudden "thunderclap" headache of a severity never experienced before followed by nausea and vomiting
  - Loss or impairment of consciousness
  - Irritability, confusion, coma and death as hemorrhage progresses

### **Objective:**

- Physical Exam:
  - Requires complete neurological exam
  - Altered mental status will be displayed as symptoms worsen
  - Nuchal rigidity (signs of meningeal irritation)
  - Focal neurologic deficits possible
- Tools:
  - CT will show hemorrhage has occurred
  - Lumbar puncture may demonstrate red blood cells in the cerebrospinal fluid

### **Assessment:**

- Differential:
  - Meningitis: constitutional symptoms
  - Migraine headache: generally lacking altered mental status
  - Acute hypertensive crisis: vital signs

### **Plan:**

- EVAC or transfer: all patients should be evacuated and seen by a neurosurgeon
- Conscious patients should be advised against any straining or exertion
- The major aim of treatment is to prevent further hemorrhage

### **Patient Education:**

- Proceed to the ER if you have the "worst headache of your life"
- Follow-up Actions:
  - Continue to follow up with specialty care (neurology)

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **SEIZURE**

### **Introduction:**

- A seizure is an uncommon event that can be caused by many different ailments and processes
- Many are brief and can be self-limited
- Etiologies include:
  - Alcohol and drug withdrawal
  - Hypo or hyperglycemia or uremia
  - Trauma
  - Infectious diseases

### **Subjective:**

- Signs and Symptoms:
  - Abrupt onset of abnormal muscle activity
  - Prodrome of confusion, peculiar behavior, automatisms, or other psychic phenomena preceding event
  - May lose consciousness
- Focused History:
  - Trauma and injuries
  - Medications, alcohol and drug history
  - Talk to witnesses about the seizure - did the patient lose consciousness, urinary incontinence, length of seizure, post-event confusion (post-ictal state)

### **Objective:**

- Physical Exam:
  - Complete neurological exam to include the mental status exam
- Tools:
  - CBC for signs of infection
  - Fingerstick/UA for glucose level
  - ECG for detecting arrhythmia as etiology for syncope

### **Assessment:**

- Differential:
  - Alcohol or drug associated seizures: withdrawal
  - Heat stroke: hyperthermia
  - Panic attack: evidence of anxiety disorder between attacks with clear relationship
  - Syncope: events occur with postural change, emotional stress, pain or straining
  - Epilepsy

## **SEIZURE CONTINUED**

### **Plan:**

- Medications are rarely indicated for a first seizure
- Urgent evacuation is not normally required for a patient with a single seizure that spontaneously resolved – refer for routine neurology consult
- If the seizure lasts > 5 minutes then consider status epilepticus and prepare for ACLS intervention
  - IV access
    - Lorazepam
    - Diazepam
    - Evacuate the patient to advanced care with secure airway

### **Patient Education:**

- No driving, no swimming, no weapons handling or other dangerous activities until medically cleared
- Avoid sports/activities where there could be injuries to self or others should a seizure occur
- Avoid alcohol and stress
- Get 8 hours of sleep a night
- Follow-up Actions:
  - Return in 2-4 weeks for evaluation

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **GUILLAIN-BARRÉ SYNDROME**

### **Introduction:**

- This acute polyradiculoneuropathy sometimes follows infective illness, inoculations, or surgical procedures
- Probably has an immunologic basis, but the precise mechanism is unclear

### **Subjective:**

- Signs and Symptoms:
  - Main complaint is weakness which varies widely in severity – proximal emphasis, symmetric distribution
  - Ascending paralysis: usually begins in the legs, spreading involving the arms and one or both sides of the face
  - The muscles of respiration can be affected

### **Objective:**

- Physical Exam:
  - Requires complete neurological exam
  - Neuropathic and radicular pain are commonly present
  - Loss of neurological function in ascending pattern (DTRs, etc.)
  - Patient may have autonomic disturbances which can be life-threatening:
    - Tachycardia, cardiac irregularities, hypo or hypertension, flushing, sweating, pulmonary dysfunction and impaired sphincter control

### **Assessment:**

- Differential:
  - Poliomyelitis: tone is reduced, nearly always in an asymmetric manner; proximal muscles usually are affected more than distal ones, and legs are affected more commonly than arms
  - Botulism: bilateral cranial neuropathies associated with symmetric descending weakness
  - Tick paralysis: usually begins with paresthesias and a sense of fatigue and weakness; usually no autonomic dysfunction

### **Plan:**

- EVAC or transfer the patient for immediate evaluation
  - All patients should be hospitalized until their condition is stable and there is no respiratory compromise
- Supportive care; prepare for ACLS intervention

### **Patient Education:**

- Most patients make a good recovery but this may take many months
- About 20% of patients are left with persistent disability

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **MONONEUROPATHIES**

### **Introduction:**

- An individual nerve may be injured along its course or may be compressed, angulated, or stretched by neighboring anatomic structures, especially at a point where it passes through a narrow space (entrapment neuropathy)
- With involvement of a sensory or mixed nerve, pain is commonly felt distal to the lesion
- The precise neurologic deficit depends on the nerve involved

### **Subjective:**

- Signs and Symptoms:
  - Paresthesias
  - Feelings of pain and weakness in a nerve root distribution
- Focused History:
  - Length of symptoms
  - Precipitating factors
  - Provocating motions
  - Consider “Saturday Night Palsy”

### **Objective:**

- Physical Exam:
  - Neurological exam of the extremity
  - Percussion of the nerve at the site of the lesion may lead to paresthesias in its distal distribution

### **Assessment:**

- Differential:
  - Peripheral nerve tumor: presence of mass
  - Diabetic neuropathy: history of uncontrolled diabetes
  - Postherpetic neuralgia: follows varicella zoster virus (VZV) infection

### **Plan:**

- If acute compression neuropathy, no treatment is needed
  - Recovery generally occurs within 2 months
- In chronic compressive or entrapment neuropathies, avoidance of aggravating factors and correction of any underlying systemic conditions are important
  - Surgical decompression may be helpful

### **Patient Education:**

- Avoid leaning on elbows, wrists or other joints
- Ensure heavy gear is not putting pressure on nerve bundles like shoulders and neck
- Follow-up Actions:
  - Return for further evaluation if not improving within 2 weeks

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **BELL'S PALSY**

### **Introduction:**

- Bell's Palsy is an idiopathic facial paresis that is attributed to an inflammatory reaction involving the facial nerve near the stylo-mastoid foramen
- Evidence suggests reactivation of herpes simplex or varicella zoster virus infection in some instances

### **Subjective:**

- Signs and Symptoms:
  - Unilateral facial paresis comes on abruptly but may worsen over a day or more
  - Pain about the ear may accompany the weakness
  - Disturbance of taste is common

### **Objective:**

- Physical Exam:
  - Neurologic exam may show unilateral facial paresis from forehead to chin (forehead will not wrinkle)
    - Ipsilateral restriction of eye closure
    - Difficulty with fine facial movements
    - No other neurologic impairments

### **Assessment:**

- Differential:
  - Herpes zoster infection: burning and painful with lesions
  - Lyme disease: rash, myalgias and history of tick exposure
  - Tumor
  - Stroke: presents with facial paralysis from the eye down (forehead will wrinkle)

### **Plan:**

- Re-assurance; early treatment (preferably within 3 days) with oral steroids, +/- anti-virals and eye protection

### **Patient Education:**

- Bell's Palsy improves in 85% of patients within 21 days without treatment
- Get plenty of rest and avoid stressful events
- Follow-up Actions:
  - Return if any concerns, if any eye problems, or symptoms not improving within 21 days

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 12

# PSYCHIATRIC PROTOCOLS

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### SIGECAPS

- S – sleep changes
- I – loss of interest in activities
- G – feelings of guilt or worthlessness
- E – loss of energy
- C – reduced cognition, difficult concentration
- A – loss or change in appetite or weight
- P – psychomotor agitation or lethargy
- S – suicidal ideation

### ADJUSTMENT DISORDER

#### Introduction:

- Anxiety or depression regarding an identifiable stress
- Acute if less than 6 months
- Stress:
  - Subjectively defined and the response is a function of personality and physiologic endowment
  - Can lead to an impairment in social or occupational functioning
  - Can lead to maladaptive behavior(s) such as alcohol, drugs, overeating, affairs, running away, etc.
- Major symptom must be specified in the diagnosis (i.e., adjustment disorder with depressed mood)

#### Subjective:

- Signs and Symptoms:
  - Depression and/or anxiety
  - May develop a physical symptom in response to stress, such as pain
  - Subjective responses: fear, rage, guilt, shame, irritability, restlessness, fatigue, increased startle reaction, inability to concentrate, sleep disturbances
- Focused History:
  - SIGECAPS
  - Inquire about stress-producing events
  - History of personal or family psychiatric disorders
  - Assess patient's risk for harm to self or others (SI/HI)



## **ADJUSTMENT DISORDER CONTINUED**

### **Objective:**

- Physical Exam:
  - Vital signs: note any changes in weight
  - Appearance:
    - Pay attention to personal hygiene
    - May demonstrate: tearful eyes, furrowed brows, slumped posture, poor eye contact, lack of facial expression, little body movement, speech changes (soft voice, use of monosyllabic words)

### **Assessment:**

- Key to Diagnosis:
  - Emotional or behavioral symptoms in response to an identifiable stressor
- Differential:
  - Normal reaction to significant stressor
  - Anxiety disorders: feelings of nervousness, uneasiness
  - Major depressive disorder: syndrome of mood, physical and cognitive symptoms
  - Dysthymia: chronic sad feelings over a period of 2 or more years
  - Organic disorders that may lead to depressive symptoms: endocrine disorders (thyroid, diabetes), neurologic disorders (cerebral tumors, head trauma), etc.

### **Plan:**

- Stress reduction techniques
- Supportive psychotherapy:
  - Engage mental health resources
  - Emphasis on strengthening existing coping mechanisms
- Medication:
  - For limited, short-term use only in emergent situations:
    - Lorazepam
  - Referral is always appropriate for first-line treatment and is needed for any possible long-term medication (SSRIs, SNRIs, etc.)

### **Patient Education:**

- Prognosis:
  - The longer the symptoms persist the worse the prognosis

## **ADJUSTMENT DISORDER CONTINUED**

### **Patient Education Continued:**

- Follow-up Actions:
  - Encourage compliance with psychotherapy
  - Return for further evaluation if symptoms worsen or do not improve within 1 month
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **POST TRAUMATIC STRESS DISORDER (PTSD)**

### **Introduction:**

- Exposure to a traumatic, life-threatening event (based on patient's perception)
- Characterized by "re-experiencing" a traumatic event and decreased responsiveness and avoidance of current events when associated with the trauma
- More common when associated with physical injury
- Veterans data: 13% Iraq, 6% Afghanistan
- Associated problems (20-40%): divorce, parenting problems, difficulties with law, substance abuse
- 75% of cases include comorbid depression or panic disorder

### **Subjective:**

- Signs and Symptoms:
  - Intrusive symptoms: flashbacks, nightmares
  - Avoidance symptoms: withdrawal
  - Physiologic hyperarousal: startle reactions, intrusive thoughts, sleep problems, nightmares, hyperalertness, irritability
- *DSM-5* criteria: symptoms must last for more than 1 month
- Symptoms may be precipitated or exacerbated by events that are a reminder of original event
- Symptoms frequently arise after a long latency period
- Focused History:
  - SIGECAPS
  - Inquire about traumatic events
  - History of personal or family psychiatric disorders
  - Assess patient's risk for harm to self or others (SI/HI)

### **Objective:**

- Physical Exam:
  - Usually no specific positive findings on exam
  - Note mood, affect, dress and appearance

### **Assessment:**

- Key to Diagnosis:
  - History of exposure to life-threatening event followed by intrusive or avoidance symptoms
- Differential:
  - Acute stress disorder: occurs after a traumatic event similar to PTSD, but only lasts 2-28 days
  - Anxiety disorders: feelings of nervousness, uneasiness
  - Panic disorder: short-lived, recurrent, unpredictable episodes of intense anxiety accompanied by marked physiologic manifestations

## **POST TRAUMATIC STRESS DISORDER (PTSD) CONTINUED**

### **Plan:**

- Psychotherapy:
  - Engage mental health resources
  - Involves the patient confronting the traumatic event and learning to view it with less reactivity
- Medications:
  - SSRIs are pharmacotherapy of choice: referral is needed

### **Patient Education:**

- Prognosis:
  - The sooner therapy is initiated the better the prognosis
  - Best in those with good premorbid psychiatric functioning
- Follow-up Actions:
  - Encourage compliance with psychotherapy
  - Return for further evaluation if symptoms worsen or do not improve within 1 month
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **ANXIETY DISORDERS**

### **Introduction:**

- Principle components are psychological and somatic
- Generalized Anxiety Disorder (GAD):
  - Most common anxiety disorder (women > men) characterized by excessive, almost daily anxiety and worry
  - The focus of the worry is not restricted - the patient can have multiple worries that often shift over time
  - Typically appears between ages 20-35
  - Needs to be present for at least 6 months
- Panic Disorder: short-lived (<10 minutes), recurrent, unpredictable episodes of intense anxiety accompanied by marked physiologic manifestations
- Phobic Disorders: fears of a specific object or situation out of proportion to the danger posed

### **Subjective:**

- Signs and Symptoms:
  - Apprehension, worry, irritability, difficulty in concentrating, insomnia
  - Somatic complaints:
    - Cardiac: tachycardia, palpitations, increased blood pressure
    - GI: increased acidity, epigastric pain, nausea
    - Neurologic: headache, dizziness, near-syncope
  - Panic Disorder alarm response or feelings of impending doom: paresthesias, choking, smothering feelings
- Focused History:
  - SIGECAPS
  - Inquire about anxiety-producing situations, stresses and fears
  - Personal or family history of anxiety disorders
  - Assess patient's risk for harm to self or others (SI/HI)

### **Objective:**

- Physical Exam:
  - Usually no specific positive findings on exam
  - Note mood, affect, dress and appearance

### **Assessment:**

- Differential:
  - PTSD: intrusive and avoidance symptoms after exposure to a traumatic event
  - Acute stress disorder: occurs after a traumatic event similar to PTSD, but only lasts 2-28 days
  - Panic disorder: short-lived, recurrent, unpredictable episodes of intense anxiety accompanied by marked physiologic manifestations
  - Substance induced anxiety disorder
  - Anxiety disorder due to a general medical condition: thyroid, etc.

## **ANXIETY DISORDERS CONTINUED**

### **Plan:**

- Behavioral/Psychological Therapy:
  - Engage mental health resources
  - Relaxation, desensitization, emotive imagery, individual or group therapy
- Peer Support Groups
- Medication
  - For limited, very short-term use only in emergent situations
    - Lorazepam or diazepam
- Referral is always appropriate for first-line therapy and is needed for any possible long-term medication (SSRIs, SNRIs, etc.)

### **Patient Education:**

- Prognosis:
  - Anxiety disorders are usually chronic and difficult to treat, but all can be relieved to varying degrees
- Follow-up Actions:
  - Encourage compliance with psychotherapy
  - Return for further evaluation if symptoms worsen or do not improve within 1 month
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **DEPRESSION**

### **Introduction:**

- Depressive disorders are characterized by sadness severe enough or persistent enough to interfere with function
- 30% of primary care patients are seen for depression
- Etiology:
  - Includes genetic factors, developmental problems (personality problems, childhood events), psychosocial stresses (divorce, unemployment)
- Major Depressive Disorder:
  - Syndrome of mood, physical and cognitive symptoms
  - Episodes that include 5 mental or physical symptoms that last more than 2 weeks
  - One of the symptoms must be depressed mood or loss of interest or pleasure in usual activities (anhedonia)
- Dysthymia:
  - Chronic depressive disturbance of sadness over a period of 2 or more years
  - Symptoms are milder but last longer than major depressive disorder
- Bipolar Variant:
  - Depressive symptoms and manic symptoms
    - Mania: mood state characterized by elation with hyperactivity, over involvement in activities, increased irritability, flight of ideas, easy distractibility, little need for sleep

### **Subjective:**

- Signs and Symptoms:
  - SIGECAPS
    - S – sleep changes
    - I – loss of interest in activities
    - G – feelings of guilt or worthlessness
    - E – loss of energy
    - C – reduced cognition, difficult concentration
    - A – loss or change in appetite or weight
    - P – psychomotor agitation or lethargy
    - S – suicidal ideation
  - Other: anxiety, loss of sexual drive

### **Objective:**

- Physical Exam:
  - Vital signs: note any changes in weight
  - Appearance:
    - Pay attention to personal hygiene
    - May demonstrate: tearful eyes, furrowed brows, slumped posture, poor eye contact, lack of facial expression, little body movement, speech changes (soft voice, use of monosyllabic words)

## **DEPRESSION CONTINUED**

### **Assessment:**

- Differential:
  - Major depressive disorder: severe depressed mood not due to one specific stressor
  - Dysthymia: chronic sad feelings over a period of 2 or more years
  - Bipolar: depressive and manic symptoms
  - Substance-induced depressive disorder
  - Organic disorders that may lead to depressive symptoms: endocrine disorders (thyroid, diabetes), neurologic disorders (cerebral tumors, head trauma), etc.

### **Plan:**

- Behavioral or psychological therapy
- Medication:
  - Referral is needed for any possible long-term medication (SSRIs, SNRIs, etc.)
- If manic episode, then EVAC or transfer

### **Patient Education:**

- Follow-up Actions:
  - Encourage compliance with psychotherapy
  - Return for further evaluation if symptoms worsen or do not improve within 1 month
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **SUICIDE**

### **Introduction:**

- Most serious complication for psychiatric disorders
- Lifetime risk:
  - Hospitalized for depression: 10-15%
  - Bipolar disorder: 20%
- Women more likely to attempt, men are more likely to complete
- Alcohol usage is a significant factor in many attempts
- High risk: acute situational problems, severe depression, many comorbid psychiatric illnesses with schizophrenia being the highest

### **Subjective:**

- Signs and Symptoms:
  - Severe depression
  - Anxiety, pain, fear
  - A dramatic improvement may be seen right before the suicide
- Focused History:
  - SIGECAPS
  - Personal or family history of psychiatric disorders
  - Suicide attempts or family history of completed suicides

### **Objective:**

- Physical Exam:
  - Evaluate patient's mood status
  - Direct evaluation:
    - Plans or concerns about the future
    - Personal reactions to attempting suicide
    - Thoughts about the reactions of others
  - Assess risk by inquiring about:
    - Intent, plans, means; possible rehearsal or preparations
    - Suicide-inhibiting factors such as strong ties to children or church

### **Assessment:**

- Differential: consider co-morbid disorders
  - Anxiety disorders: feelings of nervousness, uneasiness
  - Major depressive disorder: severe depressed mood not due to one specific stressor
  - Adjustment disorder: anxiety or depression regarding an identifiable stress
  - Bipolar: depressive and manic symptoms
  - Dysthymia: chronic sad feelings over a period of 2 or more years

## **SUICIDE CONTINUED**

### **Plan:**

- Suicidal Ideation:
  - If any suspicion, immediately assign one-to-one direct observation
  - Do not allow the patient out of sight and do not allow patient to access anything harmful
  - Guns and medications should be removed
- EVAC or transfer to appropriate facility

### **Patient Education:**

- For any psychiatric disorder, always provide the following education:
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **INSOMNIA**

### **Introduction:**

- Insomnia includes difficulty getting to sleep, staying asleep, intermittent wakefulness, early awakening
- Common factors:
  - Stress, caffeine, physical discomfort, daytime napping, early bedtime
- Psychiatric disorders may be associated with persistent insomnia: depression, manic disorders
- Other contributing factors:
  - Alcohol abuse, heavy smoking, withdrawal from sedatives (benzodiazepines)
- Contributing medical conditions:
  - Pain disorders, asthma, thyroid disorders, sleep apnea, restless leg syndrome

### **Subjective:**

- Signs and Symptoms:
  - Difficulty getting to sleep, staying asleep, intermittent wakefulness, early awakening
- Focused History:
  - SIGECAPS
  - Stressors
  - Medications
  - Medical history
  - Caffeine intake
  - Use of nutritional supplements

### **Objective:**

- Physical Exam:
  - Usually no specific positive findings on exam
  - Evaluate for possible signs of sleep apnea: obesity, large neck circumference, nasal obstruction, enlarged tonsils or tongue
  - Full physical should be performed, including a neurological examination

### **Assessment:**

- Try to determine and fix primary underlying cause
- Differential:
  - Primary insomnia
    - No etiology noted
  - Secondary or acute insomnia
    - Acute distress such as grief reaction
    - Depression and all psychiatric disorders
    - Sleep apnea: daytime fatigue, snoring

## **INSOMNIA CONTINUED**

### **Plan:**

- Determine and treat primary underlying cause
- Psychological therapy:
  - More appropriate for primary insomnia
  - Sleep hygiene counseling
- Medical therapy:
  - More appropriate for secondary insomnia
  - May use antihistamines such as diphenhydramine or hydroxyzine as a less potent alternative to zolpidem
  - Short-term usage only as a last resort
    - Zolpidem
      - Female maximum dosage: 5 mg
      - Male dosage: 5-10 mg (use minimum effective dosage)
      - May only dispense 5 tabs maximum

### **Patient Education:**

- Sleep Hygiene:
  - Go to bed only when sleepy
  - Use bedroom only for sleeping and sex
  - If still awake after 20 minutes, leave and return when sleepy
  - Avoid caffeine/nicotine/alcohol/nighttime fluids
  - Daily exercise
  - Relaxation techniques + bedtime ritual
- Follow-up Actions:
  - Return for further evaluation if symptoms do not improve within 1 month
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ALCOHOLISM**

### **Introduction:**

- Alcohol use disorder: at-risk drinking + moderate to severe alcohol misuse
- Definition according to the National Institute on Alcohol Abuse and Alcoholism:
  - >4 drinks/day or 14 drinks per week for men or >3 drinks/day or 7 drinks per week for women
- Drink defined by CDC:
  - 12 oz beer, 8 oz malt liquor, 5 oz wine, 1.3 oz “shot”
- Higher prevalence of psychiatric disorders
- Male > Female (4:1)
- Major Criteria:
  - Physical dependence as manifested by evidence of withdrawal
  - Tolerance to the effects of alcohol
  - Evidence of alcohol-associated illness, such as alcoholic liver disease, cerebellar degeneration
  - Continued drinking despite strong medical and social contraindications and life disruptions
  - Impairment in social and occupational functioning

### **Subjective:**

- Signs and Symptoms:
  - Intoxication: drowsiness, errors of commission, disinhibition, dysarthria
  - Overdose: respiratory depression, stupor
  - Withdrawal:
    - Mild withdrawal: 8 hours after last drink - tremors, anxiety, weakness, headache, nausea and vomiting
    - Seizures may occur in the first 24-72 hours
    - Delirium tremens: may occur in the first 24-72 hours
      - Acute psychosis with mental confusion, tremor, sensory hyperacuity, visual hallucinations (bugs), diaphoresis, dehydration, electrolyte disturbances, seizures, cardiovascular abnormalities
- Focused History:
  - SIGECAPS
  - Family history of alcoholism or other psychiatric disorder
  - CAGE questions:
    - C: have you ever felt the need to Cut down on your drinking?
    - A: have people Annoyed you by criticizing your drinking?
    - G: have you ever felt Guilty about your drinking?
    - E: have you ever needed a drink first thing in the morning? (Eye-opener)

## **ALCOHOLISM CONTINUED**

### **Objective:**

- Physical Exam:
  - Chronic findings: Dupuytren's contracture of palmar fascia, vascular spiders, signs of hypogonadism and feminization in men (gynecomastia, testicular atrophy)
  - Intoxication: drowsiness, psychomotor dysfunction, dysarthria, ataxia, nystagmus
  - Mild withdrawal (8 hours after last drink): elevated vital signs, tremor, sweating, hyperreflexia
  - Seizures (24-72 hours after last drink)
  - Delirium tremens (24-72 hours after last drink)
    - Autonomic lability: tachycardia, increased temperature
    - Marked tremors and ataxia
  - Overdose: loss of consciousness, arrhythmias, respiratory depression, seizures, coma, death

### **Assessment:**

- Differential:
  - Primary alcohol use disorder: when no other major psychiatric diagnosis exists
  - Secondary alcohol use disorder: when alcohol is used as self-medication to mask another psychiatric disorder
  - Alcohol withdrawal could also be mistaken for other sedative withdrawals (benzodiazepines)

### **Plan:**

- Alcoholism:
  - ADAPT referral
  - Psychological counseling, social support (AA)
- Withdrawal:
  - Stabilize
  - Benzodiazepines (IV only for very severe withdrawal symptoms)
  - EVAC or transfer
- Overdose:
  - Stabilize
  - EVAC or transfer

### **Patient Education:**

- Encourage compliance with all medical recommendations
- SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **DRUG OVERDOSE**

### **Introduction:**

- Opioids: decrease CNS activity and sympathetic outflow by action on opiate receptors in the brain
- Benzodiazepines: CNS depressant
- Stimulants: CNS activators (amphetamines and cocaine)

### **Subjective:**

- Signs and Symptoms:
  - Opioid overdose: delirium, loss of consciousness, respiratory depression
  - Benzodiazepine overdose: effects similar to alcohol - drowsiness, respiratory depression, stupor
  - Stimulant overdose: anxiety, agitation, seizures

### **Objective:**

- Physical Exam:
  - Opioid overdose: decreased respiratory rate and depth, pinpoint pupils, pulmonary edema, coma, death
  - Benzodiazepine overdose: effects similar to alcohol - respiratory depression, stupor, shock syndrome, coma, death
  - Stimulant overdose: cardiovascular collapse, tachycardia, hypertension, arrhythmias, myocardial infarction, TIAs, seizures, stroke, hyperthermia

### **Assessment:**

- Consider other substance dependencies
- Consider other co-morbid disorders:
  - Anxiety disorders: feelings of nervousness, uneasiness
  - Major depressive disorder: severe depressed mood not due to one specific stressor
  - PTSD: intrusive and avoidance symptoms after exposure to a traumatic event
  - Panic disorder: short-lived, recurrent, unpredictable episodes of intense anxiety accompanied by marked physiologic manifestations
  - Bipolar: depressive and manic symptoms

### **Plan:**

- Suspected misuse/dependency:
  - Utilize mental health resources
  - Overdose:
    - EVAC or transfer
    - Medications (under preceptor guidance)
      - Opioids: IV/IM/intranasal naloxone
      - Benzodiazepines: IV flumazenil (controversial)
      - Stimulants: IV diazepam

## **DRUG OVERDOSE CONTINUED**

### **Patient Education:**

- Encourage compliance with all medical recommendations
- SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **EATING DISORDERS**

### **Introduction:**

- Anorexia Nervosa:
  - Disturbance of body image and fear of becoming fat
  - Body weight 15% below expected
- Bulimia Nervosa:
  - Uncontrolled episodes of binge eating at least once weekly for 3 months
  - Recurrent compensation to prevent weight gain: vomiting, laxatives, diuretics, fasting, excessive exercise
- Depression and/or anxiety may be present
- Predominantly in young females, middle to upper class

### **Subjective:**

- Signs and Symptoms:
  - Anorexia Nervosa:
    - Severe emaciation and malnutrition
    - Cold intolerance
    - Abdominal distress, bloating, constipation
    - Amenorrhea
  - Bulimia Nervosa:
    - Usually within 20% of desirable body weight
    - Feelings of guilt and depression after bingeing
- Focused History:
  - SIGECAPS
  - Personal or family history of psychiatric disorders
  - Assess patient's risk for harm to self or others (SI/HI)

### **Objective:**

- Physical Exam:
  - Anorexia Nervosa:
    - Bradycardia, hypotension, hypothermia
    - Loss of body fat, dry/scaly skin, increased lanugo body hair
    - Parotid enlargement and edema
  - Bulimia Nervosa:
    - Poor dentition and/or scars on knuckles
    - Dehydration
    - Hemorrhoids
    - Swollen parotid glands

## **EATING DISORDERS CONTINUED**

### **Assessment:**

- Differentiate between anorexia nervosa and bulimia
- Evaluate for other comorbid psychiatric disorders
  - Anxiety disorders: feelings of nervousness, uneasiness
  - Major depressive disorder: severe depressed mood not due to one specific stressor
- Evaluate for other endocrine and metabolic disorders such as thyroid disorders, chronic infections, malabsorption syndromes, type I diabetes, CNS tumors
- Evaluate for substance abuse, such as use of amphetamines

### **Plan:**

- Behavioral and psychological therapy:
  - Engage mental health resources
- Medication:
  - Antidepressants may be warranted
- Acute illness or concern:
  - Hospitalization may be required - EVAC or transfer

### **Patient Education:**

- Encourage compliance with all medical recommendations
- Follow-up Actions:
  - SI/HI precautions: call 911, proceed to the ER, or tell supervisor immediately if having thoughts of SI/HI

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## Chapter 13

# INFECTIOUS DISEASE PROTOCOLS

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### EMERGENT PATIENT CARE

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- Emergency and cardiac medications can be administered per ACLS/EMS/TCCC protocols; contact preceptor after patient has been stabilized
- Do not wait for a preceptor consultation to treat your patient in an emergent situation

### FEVER AND HYPERTHERMIA

#### Introduction:

- Fever is a common symptom of infection defined as body temperature of  $>100.4^{\circ}\text{F}$
- Fever can also be seen in heat injuries, drug reactions, malignancies and rheumatologic conditions

#### Subjective:

- Signs and Symptoms:
  - Temperature  $> 100.4^{\circ}\text{F}$
- Focused History:
  - How high is the temperature
  - Speed of onset
  - Is the fever constant
  - Have you noticed rash, headache, diarrhea, lymph nodes, localized pain, stiff neck, pain
  - Are you taking any medications
  - Do you know anyone with similar symptoms
  - Travel

#### Objective:

- Physical Exam:
  - Evaluate other vital signs
  - Evaluate for pallor, diaphoresis, rigors, mental status changes, rash (especially petechiae or purpura), jaundice, stiffness of body parts
  - Feel for inflammatory changes, range of motion, lymph node tenderness and enlargement; evaluate for hepatosplenomegaly and peritoneal signs/tenderness
  - Auscultate: lungs, heart for murmurs, abdomen

## **FEVER AND HYPERTHERMIA CONTINUED**

### **Assessment:**

- Differential:
  - Depends on associated symptoms
  - Viral illness, bacterial infection, sepsis, malignancy
  - Medication related hyperthermia is rare but potentially lethal
    - Temperatures reported up to 105.9°F

### **Plan:**

- Treatment should be tailored to the underlying cause
  - Viral illness: most common
    - Treat with hydration and acetaminophen
  - Acetaminophen
  - Temperature > 104°F:
    - Symptomatic treatment with alcohol sponges, ice bags, ice baths will help lower the body temperature
- Evacuate or transfer if temperature > 104°F, heat stroke, altered mental status or seizure

### **Patient Education:**

- Directions:
  - Activity as tolerated unless patient needs isolation
  - Acetaminophen preferred unless liver dysfunction
- Follow-up Actions:
  - If fever does not respond to treatment in 72 hours or symptoms progress, seek further medical care

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **FEVER OF UNKNOWN ORIGIN**

### **Introduction:**

- Fever of Unknown Origin (FUO) is fever over 101°F on several occasions for at least 3 weeks
  - OR no established diagnosis after being hospitalized for more than 3 days or after 3 outpatient visits
- Most cases represent unusual manifestations of common diseases

### **Subjective:**

- Signs and Symptoms:
  - Fever of > 101°F on multiple occasions at least 3 weeks in duration
- Focused History:
  - Age, family, social history
  - Exposure, occupational, dietary and travel
  - Recent hospital stays

### **Objective:**

- Physical Exam:
  - Observe the patient while the temperature is being taken to rule out factitious fever
  - Tachycardia, chills, piloerection
  - Careful physical exam to reveal subtle clues
- Tools:
  - All patients with FUO should have a CXR
  - Routine labs if available (CBC, UA, HIV)

### **Assessment:**

- Differential:
  - Infection (25-40% of cases): chest x-ray, CBC, urine, lymphadenopathy, look for source
  - Cancer (25-40% of cases): lymphoma and leukemias present with fever and will show CBC abnormalities
  - Autoimmune (10-20% of cases): long-standing and usually in older patients

### **Plan:**

- Starting antibiotics or corticosteroids without a diagnosis may delay the diagnosis and mask symptoms
- Evacuate, transfer, or admit:
  - Any patient with FUO and progressive weight loss and constitutional symptoms
  - Any rapidly declining patient that needs work-up

## **FEVER OF UNKNOWN ORIGIN CONTINUED**

### **Patient Education:**

- Follow-up Actions:
  - Return for evaluation if any new or concerning symptoms
  - Return if fever > 101°F persists longer than 3 weeks

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **TOXIC SHOCK SYNDROME**

### **Introduction:**

- Toxic shock syndrome (TSS) is caused by staphylococcal or streptococcal exotoxins
- Women with preexisting staphylococcal colonization of the vagina using tampons are at highest risk
- Any focus (nasopharynx, bone, rectum, wound) harboring a toxin-producing *S. aureus* strain can cause TSS

### **Subjective:**

- Signs and Symptoms:
  - Sudden onset with fever of 102.2°F to 104.9°F
  - Hypotension, diffuse macular erythroderma and involvement of at least 3 other organ systems
    - Likely to cause vomiting, diarrhea, myalgia, mucositis, hepatic damage and confusion
    - Commonly causes respiratory distress
    - Renal impairment is frequent and common
  - The syndrome may progress within 48 hours to syncope, shock and death

### **Objective:**

- Physical Exam:
  - Review vital signs for abnormalities
  - Head to toe exam assessing for multisystem organ involvement and symptoms of shock

### **Assessment:**

- Differential:
  - Kawasaki disease: common in children with a maculopapular rash
    - Does not cause shock
  - Meningococcemia: fever, nausea, vomiting, headache, and petechial rash
  - Scarlet fever: a diffuse erythematous eruption that generally occurs in association with group A streptococcal pharyngitis

### **Plan:**

- Medications:
  - Start IV antibiotics immediately (under preceptor guidance)
- Patients suspected of having TSS should be hospitalized/evacuated immediately
  - Prepare for ACLS intervention
- Tampons, diaphragms and other foreign bodies should be removed immediately
- Suspected primary sites should be decontaminated or debrided thoroughly
- Local measures include fluid resuscitation and circulatory support
- Evacuate/hospitalize patients immediately if you suspect TSS

## **TOXIC SHOCK SYNDROME CONTINUED**

### **Patient Education:**

- Evacuate or transfer patients immediately if you suspect TSS
- Follow-up Actions:
  - Women who have a history of TSS should refrain from using tampons or diaphragms as recurrences are common during the first 4 months

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **FATIGUE**

### **Introduction:**

- Fatigue is often poorly described and ill-defined
- For optimal function, 7-9 hours of sleep a night is required
- A detailed description of the patient's fatigue and thorough review of systems may point to an underlying cause
  - Never rule out psychogenic causes

### **Subjective:**

- Signs and Symptoms:
  - Three major components
    - Generalized weakness (difficulty initiating activities)
    - Easy fatigability (difficulty completing activities)
    - Mental fatigue (concentration and memory)
- Focused History:
  - Quality of sleep; medication history; alcohol or recreational drug use; weight loss; length of symptoms; night sweats; travel or exposures; muscle or joint pain; depression screening including SI/HI

### **Objective:**

- Physical Exam:
  - Tailored to patient's complaint and differential
  - Assess interaction and general appearance
  - Vital signs and pulse oximetry

### **Assessment:**

- Differential:
  - Hyper/hypothyroidism: thyroid exam plus H and P
  - COPD or sleep apnea/insomnia
  - Depression: careful history
  - Drug side effects: any new medications
  - Infections: assess vitals and exam

### **Plan:**

- Treatment should be tailored to the underlying cause
  - Resistance training and aerobic exercise lessens fatigue and improves performance for a number of chronic conditions
  - EVAC or transfer if infection not responsive to standard treatment; difficult to control thyroid disease; severe psychological disease or malignancy

## **FATIGUE CONTINUED**

### **Patient Education:**

- Attention to proper sleep/rest, hydration, nutrition, exercise and time management are key to prevention and treatment strategies
- Follow-up Actions:
  - Return for further evaluation if fatigue impairs activities of daily living

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **CENTRAL NERVOUS SYSTEM INFECTION**

### **Introduction:**

- Central nervous system infection is a medical emergency which can be caused by almost any infectious agent including bacteria, mycobacteria, fungi, spirochetes, protozoa, helminths and viruses
  - Example clinical syndrome: meningitis
- The first step toward etiologic diagnosis is cerebrospinal fluid examination
- History and exam can help make a clinical diagnosis

### **Subjective:**

- Signs and Symptoms:
  - Headache
  - Fever
  - Sensory disturbances
  - Neck and back stiffness
  - Nearly all patients have at least two of the following:
    - Fever, headache, stiff neck, or altered mental status

### **Objective:**

- Physical Exam:
  - Positive Kernig and Brudzinski signs
  - Depending on the etiology of infection there may be other findings

### **Assessment:**

- Differential:
  - Brain abscess: vomiting, fever, altered mental status
  - "Neighborhood" infection: purulent infection in an area close to the CNS that spills some of the inflammatory products into the cerebrospinal fluid (e.g., bacterial sinusitis, mastoiditis, osteomyelitis of a vertebrae)

### **Plan:**

- Patients with suspected meningitis, encephalitis and brain or paraspinous abscess should be admitted or evacuated for urgent evaluation and treatment
- Antibiotics (IV) should be started immediately upon consultation with the medical preceptor

### **Patient Education:**

- Encourage patient to follow all medical recommendations

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **BITES**

### **Introduction:**

- Cat and human bites have higher rates of infections than dog bites
  - Hand bites are particularly concerning for possibility of closed space infection
- The animal inflicting the bite, the location of the bite and the type of injury are important determinants of whether the wound will become infected
  - Bites inflicted by children rarely become infected because they are usually superficial; bites by adults become infected in 15-30% of cases
  - Cat bites are worst at up to 50% infection rate with dogs at only 5%
  - Extremity bites have a higher infection rate than head, face or neck

### **Subjective:**

- Signs and Symptoms:
  - Pain
  - Bleeding
  - Possible numbness
- Focused History:
  - It is important to elicit a history of how the bite occurred including if the animal bite was provoked
  - An unprovoked animal bite is concerning for rabies

### **Objective:**

- Physical Exam:
  - Check for pulses, function of the bitten part, examine for teeth that may be retained in the wound
  - Puncture wounds have a higher risk of infection than lacerations
  - Careful exam to assess for tendon laceration or joint space penetration
- Tools:
  - Assess the need for HIV testing, rabies prophylaxis
  - Tetanus vaccination
  - Radiographs to look for fractures and presence of foreign bodies (teeth)

### **Assessment:**

- Differential:
  - Provoked animal bite
  - Unprovoked animal bite
  - Injury during altercation

## **BITES CONTINUED**

### **Plan:**

- Medications:
  - Antibiotic prophylaxis for cat and hand bites or for patients at risk for severe complications
    - Amoxicillin-clavulanate (1st line) or clindamycin with ciprofloxacin
- Vigorous cleansing and irrigation of the wound
- Debridement of necrotic material
- Only suture for cosmetic (face) or mechanical reasons
  - Never suture an infected hand or puncture wound
- For hand wounds, orthopedic consult will likely be needed

### **Patient Education:**

- Take all medications exactly as prescribed
- Acetaminophen or NSAIDs for discomfort
- Follow-up Actions:
  - Return immediately if signs of infection, joint pain near bite or fever > 100.4°F

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HERPES VIRUS**

### **Introduction:**

- Herpes virus 1 and 2 affect primarily the oral and genital areas respectively
- Asymptomatic shedding of either virus is common but decreases after the first year of initial infection

### **Subjective:**

- Signs and Symptoms:
  - HSV-1: painful vesicles form moist ulcers after several days and epithelialize over 1-2 weeks if untreated; primary infection more severe than recurrences
    - Vesicles can form on digits or skin if mouth contacts those areas (herpetic whitlow)
  - HSV-2: primarily genital tract but can show painful lesions in the perianal, buttocks and upper thighs; can cause dysuria, cervicitis and urinary retention in women; similar vesicles to HSV-1
  - HSV can cause ocular disease if introduced to the eyes

### **Objective:**

- Physical Exam:
  - HEENT exam or urogenital exam depending on presenting complaint
  - Look for characteristic tender vesicular lesion(s) with erythematous base
    - May be in varying states of resolution
  - Reactive lymphadenopathy
- Tools: viral culture of vesicles if feasible

### **Assessment:**

- Differential:
  - Contact dermatitis: allergies to lubricants, latex
  - Folliculitis: infection in hair follicles from shaving
  - Aphthous ulcer: different appearance of lesions

### **Plan:**

- Medications:
  - Acyclovir: least costly, poor patient compliance due to frequency of dosing
  - Valacyclovir: easier treatment regimen

### **Patient Education:**

- For HSV-1: no oral sex or kissing until the lesion(s) completely resolve; do not let the lesion touch any skin or the virus can be transmitted
- For HSV-2: abstain from intercourse completely while having an outbreak and use condoms in between; consider antiviral suppressive therapy for frequent outbreaks
  - Disclosure to partners is associated with a 50% reduction in transmission

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **VARICELLA**

### **Introduction:**

- Varicella zoster virus (VZV) manifests as chickenpox (varicella) and shingles (herpes zoster)
  - After primary infection with VZV, the virus remains dormant in nerves and then later reactivates as herpes zoster in about 10-30% of people
- Chickenpox generally presents during childhood
- Shingles usually presents in patients > age 60
- There are vaccines for both VZV and herpes zoster

### **Subjective:**

- Signs and Symptoms:
  - Chickenpox:
    - Pruritic, changing rash
    - Fever and malaise are mild in children but more marked in adults
  - Zoster:
    - Patients report an area of tingling, pain, and then rash
    - Pain can be severe and varies depending on patient

### **Objective:**

- Physical Exam:
  - Chickenpox:
    - Rash is pruritic, centripetal, papular, changing to vesicular
    - “Dewdrops on a rose petal”
    - Lesions become pustular and finally present with crusting (various stages of healing)
  - Zoster:
    - Eruption of vesicles in a dermatomal distribution, evolving to pustules and then crusting
    - Lesions do not usually cross mid-line

### **Assessment:**

- Differential:
  - Contact dermatitis: poison oak/ivy
  - HSV: history and viral culture
  - Smallpox: centrifugal rash; lesions all in the same stage of healing; consider biological warfare

### **Plan:**

- Medications:
  - Varicella:
    - Start acyclovir within the first 24 hours
    - Acetaminophen for pain/fever
  - Zoster:
    - Start valacyclovir within the first 72 hours
    - There is no role for corticosteroids
    - Use clinical judgment for pain control

## **VARICELLA CONTINUED**

### **Patient Education:**

- Varicella rarely takes longer than 2 weeks to resolve
- Avoid scratching lesions to prevent development of secondary bacterial infection
- Herpes zoster resolves in 2-6 weeks
- Follow-up Actions:
  - Chickenpox: follow up for further evaluation if symptoms do not subside within 2 weeks
  - Zoster: If pain continues after lesions resolve, patient should return for evaluation for post-herpetic neuralgia (PHN)

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **EPSTEIN-BARR VIRUS (EBV) / MONONUCLEOSIS**

### **Introduction:**

- Epstein-Barr Virus (EBV, or human herpes virus-4) is one of the most common human viruses, having infected >95% of the adult population worldwide
- Infectious mononucleosis is a common manifestation of EBV and may occur at any age
- Largely transmitted by saliva which can remain infectious during convalescence for 6 months or longer after symptom onset

### **Subjective:**

- Signs and Symptoms:
  - Malaise
  - Fever
  - Sore throat sometimes with exudate
  - Myalgias

### **Objective:**

- Physical Exam:
  - Palatal petechiae
  - Enlarged tonsils sometimes with exudate
  - Lymphadenopathy and possible splenomegaly
  - Occasionally maculopapular rash
  - Conjunctival hemorrhage can occur

### **Assessment:**

- Differential:
  - Strep throat: mistakenly treating mono as strep throat with amoxicillin may cause a diffuse petechial or generalized pruritic rash
  - Other viral illnesses: CMV, HIV
  - Infectious diseases: diphtheria (gray membranous exudate)

### **Plan:**

- Over 95% of patients with acute EBV-associated infectious mononucleosis recover without specific therapy
- Treatment should be symptomatic
  - Acetaminophen or NSAIDs for pain and fever
  - Salt-water gargles for throat pain
- Patients should avoid contact or collision sports for at least 4 weeks to decrease the risk of splenic rupture

## **EPSTEIN-BARR VIRUS (EBV) / MONONUCLEOSIS CONTINUED**

### **Patient Education:**

- Fever disappears in 10 days; lymphadenopathy and splenomegaly in 4 weeks
- The fatigue and debility can linger for 2-3 months
- Follow-up Actions:
  - Return for further evaluation if symptoms worsen or do not improve within 2-3 months

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **MEASLES**

### **Introduction:**

- Measles is a reportable acute systemic paramyxovirus infection transmitted by inhalation of infective droplets
- Major worldwide cause of pediatric morbidity and mortality although vaccination can prevent it
- Outbreaks are occurring more frequently in the United States due to decreased rates of vaccination

### **Subjective:**

- Signs and Symptoms:
  - Prodrome of fever, coryza, cough
  - Death can occur from secondary bacterial causes

### **Objective:**

- Physical Exam:
  - Fever can be > 104°F
  - Koplik spots on mucous membranes (small, irregular and red with whitish center on the mucous membranes)
  - Rash: brick red, irregular, maculopapular; onset 3-4 days after onset of prodrome; begins on the face and proceeds “downward and outward” affecting palms and soles last
  - Check lungs for signs of pneumonia
  - Possible pharyngeal erythema, tonsillar exudate, generalized lymphadenopathy

### **Assessment:**

- Differential:
  - Rubella: little or no prodrome
  - Contact dermatitis: poison oak/ivy
  - HSV: history and viral culture
  - Smallpox: centrifugal rash; lesions all in the same stage of healing; consider biological warfare

### **Plan:**

- Patient should be kept isolated for the week following onset of the rash and kept at bed rest until afebrile
- Treatment is symptomatic including antipyretics and fluids as needed
- Secondary bacterial infections, including pneumonia are treated with appropriate antibiotics
- Post-measles encephalitis may cause residual neurologic abnormalities
- Contact public health/CDC and prepare for evacuation of site

## **MEASLES CONTINUED**

### **Patient Education:**

- The best prevention is vaccination
- Repeated studies fail to show an association between vaccination and autism

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **MUMPS**

### **Introduction:**

- Mumps is a paramyxovirus disease spread by respiratory droplets
- Children are most affected; more serious in adults
- Up to 1/3 have subclinical infection
- Can cause orchitis and sterility in males

### **Subjective:**

- Signs and Symptoms:
  - Painful, swollen salivary glands usually parotid
  - Fever and malaise
  - Testicular swelling and tenderness (7-10 days after)
  - Can cause pancreatitis in children

### **Objective:**

- Physical Exam:
  - Parotid tenderness with overlying facial edema
  - Stensen duct may be red and swollen
  - Possible trismus from parotitis
  - Unilateral testicular swelling and tenderness
  - Check abdomen for tenderness

### **Assessment:**

- Differential:
  - Parotid gland calculi
  - Parotitis: erythema, fever, likely unilateral
  - Sjögren's syndrome: excessive eye and mouth dryness
  - EBV infection

### **Plan:**

- The patient should be isolated until swelling subsides (about 9 days from onset) and kept on bed rest while febrile
- Treatment is symptomatic
  - Topical compresses to relieve parotid discomfort
- Monitor for complications: aseptic meningitis, epididymo-orchitis and pancreatitis

### **Patient Education:**

- The entire course of mumps rarely exceeds 2 weeks
- Use over the counter NSAIDs or Tylenol for pain
- Topical compresses as needed for comfort
- Follow-up Actions:
  - Follow up for abdominal pain, worsening scrotal pain or headache

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **POLIOMYELITIS**

### **Introduction:**

- Poliomyelitis virus, an enterovirus is present in throat washings and stools
- It is highly contagious through fecal-oral route
- Wild Polio Virus types 1 and 3 were eliminated from all but 3 countries by 2012
- At least 95% of infections are asymptomatic

### **Subjective:**

- Signs and Symptoms:
  - Fever, headache, vomiting, diarrhea, sore throat lasting 2-3 days
  - Meningeal irritation and muscle spasm in the absence of frank paralysis
  - Tremors, muscle weakness, constipation and ileus may appear

### **Objective:**

- Physical Exam:
  - Possible paralysis of the shoulder girdle precedes intercostal and diaphragmatic paralysis
    - Paralysis is flaccid, has an asymmetric distribution and affects the proximal muscles of the lower extremities
    - Sensory loss is rare
  - Diplopia, facial weakness, dysphagia, dysphonia
  - Weakness of sternocleidomastoid and trapezius muscles
  - Life threatening respiratory paralysis

### **Assessment:**

- Differential:
  - Meningitis: positive Kernig/Brudzinski
  - Guillain-Barre: ascending bilateral paralysis
  - Tick paralysis: exposure to ticks, toxin-mediated

### **Plan:**

- Treatment is supportive
- Carries a mortality rate of up to 50%
- Any suspicious cases should be referred to public health/CDC
- Prepare to EVAC or transfer

### **Patient Education:**

- Keep immunizations up to date

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **RUBELLA**

### **Introduction:**

- Rubella is a systemic disease caused by a togavirus transmitted by inhalation of infective droplets
- Difficult to distinguish from other viral illness except that arthritis is more prominent in rubella
- Well controlled world-wide with vaccine, periodic cases in Africa

### **Subjective:**

- Signs and Symptoms:
  - Innocuous and asymptomatic in up to 50% of cases
  - Fever, malaise, coryza, very mild
  - Polyarticular arthritis fingers, wrists, knees
  - Rash

### **Objective:**

- Physical Exam:
  - Tender suboccipital adenitis
  - Posterior cervical, postauricular lymphadenopathy
  - Erythema of the palate and throat, sometimes patchy
  - Fine, pink maculopapular rash appears on the face, trunk and extremities in rapid progression and fades quickly, lasting a day in each area

### **Assessment:**

- Differential:
  - Measles: cough, coryza, conjunctivitis, Koplik spots
  - Contact dermatitis: poison oak/ivy
  - HSV: history and viral culture
  - Smallpox: centrifugal rash; lesions all in the same stage of healing; consider biological warfare

### **Plan:**

- Acetaminophen for symptomatic relief
- Pregnant female:
  - Fetal infection in the first trimester leads to congenital rubella in at least 80% of fetuses
  - Immunity should be documented as part of initial prenatal care

## **RUBELLA CONTINUED**

### **Patient Education:**

- Rubella is a mild illness and rarely lasts more than 3-4 days
- Congenital rubella has a high mortality rate and the associated congenital defects are largely permanent
- Keep immunizations up to date
- Follow-up Actions:
  - Return for further evaluation if symptoms worsen or if no improvement within 1 week

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**



## **RABIES**

### **Introduction:**

- Rabies is a viral (rhabdovirus) encephalitis transmitted by infected saliva that gains entry into the body by an animal bite or open wound
- 17.4 million cases are reported every year with an estimated 26,000-61,000 deaths
  - Most cases are in rural Africa, Asia and India
  - 90% of cases from dog bites
- In the US, 25 cases reported over the past decade (2009-2018) per the CDC.

### **Subjective:**

- Signs and Symptoms:
  - Pain at the site of the bite
  - Fever, malaise, headache, nausea and vomiting
  - Aerophobia (do not like air touching skin)
  - Hydrophobia (patient will not be able to drink water)
  - CNS stages start about 10 days after prodrome
    - Delirium alternating with periods of calm
    - Painful pharyngeal spasms on attempting to drink
    - Hypersalivation
    - Seizures
    - Coma and death

### **Objective:**

- Physical Exam:
  - Use Glasgow coma scale to track progression of mental status changes and help gauge need for medical evacuation
  - Fever, rapid, shallow respirations, occasionally irregular RR and HR in later stages
  - Look for evidence of bite, some people may not know if they were bitten by bats

### **Assessment:**

- Differential:
  - Polio: asymmetric ascending paralysis
  - Viral encephalitis: respiratory symptoms not as prevalent
  - Meningitis: high fever, altered mental status, no obvious portal of infection (bite)

### **Plan:**

- Following credible rabies exposure
  - Immediately scrub wound or broken mucous membrane with soap and water, debride and irrigate with saline
  - Medications:
    - Human rabies immune globulin (HRIG) under preceptor guidance
      - Attempt to infiltrate the full dose into and around the wound
      - Inject the remainder into the gluteal region IM with a clean needle
    - Human diploid cell vaccine (HDCV) or rabies vaccine adsorbed (RVA)
  - If signs and symptoms of rabies then EVAC or transfer

## **RABIES CONTINUED**

### **Patient Education:**

- Keep body fluids isolated from others
- Rest and return for any progression of neurological signs
- Bats and medium to large mammals are primary vector
- Skunks, foxes, etc.
- Follow-up Actions:
  - Monitor patient for signs and symptoms of rabies

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HEMORRHAGIC FEVERS**

### **Introduction:**

- This diverse group of illnesses results from infection with one of several single-stranded RNA viruses
- They have multiple transmission modes and vectors
- Hemorrhagic fevers include but are not limited to:
  - Ebola virus
  - Hanta virus
  - Dengue

### **Subjective:**

- Signs and Symptoms:
  - Early symptoms resemble flu-like illness or gastroenteritis; hepatitis is common
  - Late phase is characterized by organ failure, altered mental status and hemorrhage
  - Exanthemas and mucosal lesions can occur
  - Hemoptysis

### **Objective:**

- Physical Exam:
  - Exanthemas, mucosal lesions, retinal hemorrhages
  - Bilateral alveolar hemorrhages may cause adventitious breath sounds
  - Hepatomegaly
  - Signs of cardiac failure

### **Assessment:**

- Differential:
  - Meningococcemia
  - Rocky Mountain Spotted fever
  - Dengue
  - Malaria

### **Plan:**

- Patients should be placed in private rooms with contact and droplet precautions
- Certain viruses respond to IV ribavirin if started promptly
- Isolation is particularly important as some of these agents, such as Ebola, are highly transmissible and carry a mortality rate of 50-90%
- Contact Public Health/CDC
- Prepare for EVAC or transfer

## **HEMORRHAGIC FEVERS CONTINUED**

### **Patient Education:**

- Keep body fluids isolated from others
- Do not manipulate bodies of the dead
- Follow-up Actions:
  - EVAC and place on isolation precautions

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **DENGUE**

### **Introduction:**

- Dengue and malaria are the two most common and important vector-borne diseases of humans
- Dengue is due to a flavivirus transmitted by the bite of the Aedes mosquito
- An estimated 70-500 million cases of dengue fever occur each year with numbers growing in both dengue fever and dengue hemorrhagic fever
- Since the 1980s, cases have been reported from Guam, Puerto Rico, Samoa, the US Virgin Islands, the TX-Mexico border and in Key West, FL

### **Subjective:**

- Signs and Symptoms:
  - Sudden onset of high fever, chills, severe myalgias and arthralgias (“breakbone fever”), headache, sore throat and depression
  - Biphasic fever curve: initially 3-7 days; remission, few hours to 2 days; second phase 1-2 days
  - Rash
  - Hemorrhagic form has abdominal pain, epistaxis, ecchymosis

### **Objective:**

- Physical Exam:
  - Biphasic rash: evanescent, then maculopapular, scarlatiniform, morbiliform, or petechial changes from extremities to torso
  - Marked weakness, facial pallor, diaphoresis, circumoral cyanosis
  - Ominous exam findings:
    - Petechiae, purpura, confusion and mental status changes
    - Narrow pulse pressure, hypotension

### **Assessment:**

- Differential:
  - Dengue Hemorrhagic Fever: petechiae, purpura, confusion and mental status changes are signs
  - Dengue Shock Syndrome: narrow pulse pressure, hypotension
  - Measles: coryza, respiratory symptoms more prominent, discrete rash

### **Plan:**

- Intense supportive care
- Use acetaminophen rather than NSAIDs for analgesia and fever
- Fatalities are rare
- Convalescence is slow
- Prepare for ACLS intervention

## **DENGUE CONTINUED**

### **Patient Education:**

- Seek medical care if you develop a sudden fever
- Control mosquito population with screens and insect repellent
- A vaccine is in development
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HANTAVIRUS**

### **Introduction:**

- Hantaviruses are enveloped RNA bunyaviruses naturally hosted in rodents, moles, and shrews
- There are over 21 hantavirus strains with two major clinical syndromes
  - Hemorrhagic fever with renal syndrome (HFRS)
  - Hantavirus pulmonary syndrome (HPS)
- 150,000 cases occur globally with HPS being far less common
- Sin Nombre virus is the most common hantavirus in the US and the main virus responsible for HPS
- Transmission by aerosolized rodent excrement

### **Subjective:**

- Signs and Symptoms:
  - Acute (days 1-4): high fever, chills, myalgias, headache
  - Subacute (days 5-14): low grade fever, apprehension
    - HFRS: low urine output, back pain, diuresis
    - HPS: dizziness, abdominal pain, diarrhea, dyspnea, non-productive cough and shock
  - Vascular leakage is the hallmark of the disease for both syndromes with lungs being the target of HPS and the kidneys with HFRS

### **Objective:**

- Physical Exam:
  - Vital Signs:
    - Fever up to 104°F, tachypnea, hypotension, tachycardia, hypoxia
  - Toxic appearance
  - Conjunctival injection
  - Oliguria
  - Crackles to auscultation
- Tools:
  - CXR may be normal or show whiteout, effusion or increased vascular markings

### **Assessment:**

- Differential:
  - Leptospirosis: pulmonary hemorrhage presentation of leptospirosis but presents similarly to HPS
  - Hemorrhagic fever: more prominent bleeding and rash
  - Dengue: vector will be different

### **Plan:**

- Supportive care
- Prepare for ACLS intervention
- Prepare for EVAC or transfer
- Contact Public Health/CDC

## **HANTAVIRUS CONTINUED**

### **Patient Education:**

- This infection has a high mortality
- Bedrest and careful monitoring is necessary
- Minimize human-rodent contact
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **YELLOW FEVER**

### **Introduction:**

- Yellow fever is a zoonotic flavivirus transmitted by Aedes and jungle mosquitos
- Can cause life-threatening viral hemorrhagic fever with liver, renal, cardiac and blood clotting dysfunction
- Mild form - about 80-90% of patients recover completely
- Severe form – 10-20% of patients will develop jaundice and hemorrhagic disease with up to 50% mortality rate
- 90% of cases in jungles of Africa, Central and South America

### **Subjective:**

- Signs and Symptoms:
  - Malaise, headache, fever, retroorbital pain, nausea, vomiting, and photophobia
  - Severe illness sees a brief fever remission followed by a “period of intoxication” manifested by fever and relative bradycardia
  - Coffee ground hematemesis and disorientation

### **Objective:**

- Physical Exam:
  - Fever up to 104°F, hypotension and relative bradycardia
  - Facial flushing with conjunctival injection, strawberry tongue
  - In advanced disease there may be epistaxis, melena, jaundice
  - Epigastric or RUQ tenderness
- Tools:
  - Proteinuria on UA

### **Assessment:**

- Differential:
  - Rickettsial fevers: maculopapular rash that begins at the wrists and ankles and spreads to trunk
  - Leptospirosis: conjunctival suffusion (permeated with blood), non-productive cough
  - Snake bite: history of snake bite may have similar coagulopathy but without jaundice and proteinuria
  - Viral hepatitis: RUQ pain predominates without signs of bleeding

### **Plan:**

- Supportive care
- Prepare for ACLS intervention
- Prepare for EVAC or transfer
- Contact Public Health/CDC

## **YELLOW FEVER CONTINUED**

### **Patient Education:**

- Use universal precautions with all patients with suspected hemorrhagic fever
- Prevent mosquito access to patient
- NPO if hemorrhagic until stable
- Avoid acetaminophen and aspirin
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **TICK-BORNE ENCEPHALITIS (TBE)**

### **Introduction:**

- Tick-borne encephalitis (TBE) is the most common arbovirus infection transmitted by ticks in Europe
- 10,000-12,000 cases annually in parts of Eurasia, Japan and China
- Exposure to infected ticks or unpasteurized milk from viremic livestock
- Two variants of clinical presentation:
  - Western subtype occurs mainly in the fall
  - Eastern subtype year-round

### **Subjective:**

- Signs and Symptoms:
  - Biphasic 2-10 days of fever usually with malaise
  - Headache and myalgias followed by a 1-21 day symptom-free interval
  - Second phase has resumed fevers and neurologic symptoms
  - Neurologic manifestations

### **Objective:**

- Physical Exam:
  - Neurologic exam may demonstrate:
    - Transient weakness, sensory disturbances, limb paralysis
    - Abnormal DTRs, tremors, cranial nerve abnormalities, nuchal rigidity
  - Evaluate for respiratory insufficiency

### **Assessment:**

- Differential:
  - Herpes simplex encephalitis: focal, non-motor changes
  - Rabies: hydrophobia, aerophobia, history of animal bite
  - Subdural hematoma or trauma: no fever

### **Plan:**

- Supportive care
- Prepare for ACLS intervention
- Prepare for EVAC or transfer
- Contact Public Health/CDC

### **Patient Education:**

- This condition is not contagious
- Rest in bed until afebrile
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **INFLUENZA**

### **Introduction:**

- Influenza is a highly contagious disease transmitted by the respiratory route in humans primarily by droplet
- 30,000-50,000 people die annually in the U.S. from flu
- Especially dangerous to the immunosuppressed, chronically ill, very young, very old and pregnant women

### **Subjective:**

- Signs and Symptoms:
  - Fever, chills, malaise, myalgias especially of the back, legs and arms, substernal soreness, headache, nasal stuffiness and occasionally nausea
  - Coryza, non-productive cough and sore throat are usually present

### **Objective:**

- Physical Exam:
  - Fever over 101°F and cough during flu season is highly predictive of influenza in patients >4 y/o
  - Moderately enlarged lymph nodes
  - Mild pharyngeal injection
  - Conjunctival redness
  - Flushed face
  - Patients with asthma may wheeze

### **Assessment:**

- Differential:
  - Common cold: usually no fever or myalgias
  - Atypical pneumonia: more severe respiratory symptoms
  - Mononucleosis: less acute onset, sore throat

### **Plan:**

- The use of antiviral medications will be outlined at the beginning of influenza season and is generally reserved for patients that are at high risk for developing complications
- Most patients will recover with bed rest, analgesics and symptomatic treatment
- The patient should be kept separate from healthy individuals to prevent spread of illness

### **Patient Education:**

- The usual course of illness is 3-7 days and rest is important to speed recovery
- Infection is spread by contact and airborne droplets; take precautions to prevent the spread of infection
- Follow-up Actions:
  - Return immediately if difficulty breathing or continued fever longer than 7 days

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **RICKETTSIAL INFECTIONS**

### **Introduction:**

- Rickettsia are obligate intracellular bacteria transmitted to humans by arthropod vectors, often from animal reservoirs
- Generally grouped as Typhus Fevers or Spotted Fever Group organisms (SFG)
- Severe illness that can cause mortality if not treated promptly

### **Subjective:**

- Signs and Symptoms:
  - Prodromal malaise, cough, headache, backache, arthralgias and chest pain
  - Abrupt onset of chills, high fever and prostration with flu-like symptoms progressing to delirium and stupor
  - The headache is severe and the fever is prolonged
  - Rash

### **Objective:**

- Physical Exam:
  - Conjunctivitis, inflammation of the vitreous body, retinal lesions, optic neuritis
  - Hearing loss from neuropathy of CN VIII
  - Rales at lung bases
  - Splenomegaly
  - Rash varies with type of illness but usually is notable if present
  - Possible mental status changes

### **Assessment:**

- Differential:
  - Rickettsialpox: maculopapular rash with vesicles that crust
  - Scrub typhus: tache noir in first 3 days, spreading dull red maculopapular rash on trunk after
  - Typhus: small macules in axilla/trunk spreading over body; can turn hemorrhagic
  - RMSF: maculopapular rash that starts on extremities includes palms/soles/face, petechiae and hemorrhagic lesions

### **Plan:**

- Medications: doxycycline as soon as possible
- Supportive and symptomatic care
- Prevention is always the best form of treatment

### **Patient Education:**

- Do not take doxycycline with iron, milk or dairy products, multivitamins and avoid sun
- Prevention consists of arthropod control with insecticides
  - Treat clothing with chemicals or with heat
  - Bathe frequently
- Follow-up Actions: return to clinic in 48 hours if no improvement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **LYME DISEASE**

### **Introduction:**

- Most common tick-borne disease in the US and Europe
- Caused by spirochete *B. burgdorferi*
- Incidence of disease is significantly higher if tick attachment is longer than 36-48 hours

### **Subjective:**

- Signs and Symptoms:
  - Illness has three stages:
    - Stage 1: flu-like symptoms with typical skin rash (erythema migrans)
    - Stage 2: weeks to months later patients develop malaise, fatigue, fever, headache, neck pain, achiness; may develop cardiac or neurologic manifestations
    - Stage 3: months to years later the illness can manifest itself as musculoskeletal, neurologic and skin disease unless it is treated early

### **Objective:**

- Physical Exam:
  - Erythema migrans (“bull’s-eye rash”)
    - Circular, erythematous rash at the site of the bite in 75% of patients with multiple lesions in 50%
  - Fever, Bell’s palsy, cardiac exam may show dropped beats or pericarditis
  - Later stages can show joint swelling and pain, cerebellar ataxia and neurological changes

### **Assessment:**

- Differential:
  - Cellulitis: localized infection without neurological manifestations
  - Arthropod bite: RMSF
  - Pityriasis rosea: presence of a “herald patch”
  - Rheumatoid arthritis: no exposure to ticks, no rash

### **Plan:**

- Medications:
  - Doxycycline or amoxicillin
- The diagnosis of early Lyme disease is clinical
- Early treatment is important to prevent late sequelae

### **Patient Education:**

- Prevention of tick bites is important, treat clothes and skin
- Follow-up Actions:
  - Return to clinic in 48 hours if no improvement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **LEISHMANIASIS**

### **Introduction:**

- Transmitted by a bite from an infected sandfly
- Can result in cutaneous, mucocutaneous or visceral disease
- Incubation can be up to 6 months
- The visceral form, found in most tropical areas worldwide, is often fatal

### **Subjective:**

- Signs and Symptoms:
  - Cutaneous: non-healing skin lesion which usually ulcerates
  - Visceral: fever often > 104°F with chills, wasting, night sweats, fatigue and non-productive cough

### **Objective:**

- Physical Exam:
  - Cutaneous: skin papule that enlarges and ulcerates, occasional infection at a site distant to bite
  - Visceral: lymphadenopathy, skin changes, hepatosplenomegaly; late peripheral edema, jaundice, petechiae

### **Assessment:**

- Differential:
  - Syphilis: STI
  - Malaria: exposure to mosquitos
  - Typhoid: poor water source

### **Plan:**

- Walter Reed National Military Medical Center is the DoD site with comprehensive diagnostic capability for the military
- If there is suspicion of leishmaniasis then EVAC or transfer

### **Patient Education:**

- Personal protection measures for avoidance of sandfly bites include use of insect repellents, fine-mesh insect netting, long sleeves and pants and avoidance of warm shaded areas where flies are common
- Limit contact with dogs and other domesticated animals
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## MALARIA

### Introduction:

- Malaria is the most important parasitic disease of humans, causing hundreds of millions of illnesses and nearly a million deaths each year; endemic in most of the tropics, South and Central America, Africa, the Middle East, Indian subcontinent, SE Asia and Oceania
- Four species of the genus *Plasmodium* cause human malaria
  - *P. falciparum* is responsible for nearly all severe disease; predominant species in Africa
  - *P. vivax* is as common as *falciparum* except in Africa; uncommonly causes severe disease
  - *P. ovale* and *P. malariae* are less common and do not cause severe illness
- \*\*\*Fever + Travel = Malaria until proven otherwise\*\*\*

### Subjective:

- Signs and Symptoms:
  - Cyclical fever
  - Headache, intermittent attacks of chills, fever and sweating
  - Myalgias, abdominal pain, diarrhea and vomiting
  - Patients may appear to be remarkably well between febrile episodes

### Objective:

- Physical Exam:
  - Fever often > 100.4°F which cycles every other day
  - Hepatosplenomegaly and jaundice
  - May witness sweats and rigors
- Tools:
  - Peripheral blood smear shows intraerythrocytic parasites
  - New dipstick malaria rapid diagnostic assay now available

### Assessment:

- Differential:
  - Rickettsial fevers: maculopapular rash that begins at the wrists and ankles and spreads to trunk
  - Leptospirosis: conjunctival suffusion (permeated with blood), non-productive cough
  - Yellow fever: exposure to mosquitos, unvaccinated
  - Viral hepatitis: RUQ pain predominates without signs of bleeding

### Plan:

- Supportive care
- Prepare for ACLS intervention if *falciparum* is suspected
- Prepare for EVAC or transfer
- Contact Public Health/CDC
- Treatment will be dependent on local resistance to chloroquine.



## **MALARIA CONTINUED**

### **Patient Education:**

- When treated appropriately, uncomplicated malaria generally responds well, with resolution of fevers within 1-2 days
- Mosquito protection and prophylactic malaria medications are the best treatment
  - DoD service members who do not take daily malaria prophylaxis when prescribed may be subject to UCMJ action
- Follow-up Actions:
  - Likely to be performed by hospital

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **AMEBIASIS**

### **Introduction:**

- Third leading parasitic cause of death in developing nations
- Caused by *Entamoeba histolytica*
- Transmitted through contaminated food or water, using human waste as fertilizer

### **Subjective:**

- Signs and Symptoms:
  - Gradual onset of bloody diarrhea with abdominal pain and tenderness
  - Fever

### **Objective:**

- Physical Exam:
  - Fever often > 101°F
  - Hepatic abscess, hepatomegaly and abdominal pain
  - Bloody, loose, mucous-containing stools
- Tools:
  - Heme positive stool (guaiac test)
  - O&P shows amebic trophozoites or cysts

### **Assessment:**

- Differential:
  - Giardiasis: diffuse watery stools
  - Bacterial gastroenteritis: fever, more severe, possibly bloody diarrhea
  - Viral gastroenteritis: non-bloody diarrhea

### **Plan:**

- Medications:
  - Metronidazole
  - Paromomycin
- Oral hydration
- Supportive care

### **Patient Education:**

- Drink plenty of fluids to avoid dehydration
- Do not drink alcoholic beverages with metronidazole
- Prevention of Amebiasis includes safe water supplies, sanitary disposal of human feces, proper cooking and food preparation and handwashing
- Follow-up Actions:
  - Return if no improvement within 48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **GIARDIASIS**

### **Introduction:**

- Giardiasis is a protozoal infection of the upper small intestine
- Occurs worldwide, most abundantly in areas with poor sanitation
- In US and Europe, it is the most common intestinal protozoal pathogen
- Humans are a reservoir for the pathogen; under suitable conditions, cysts can survive in the environment or on surfaces for months
- Transmission is fecal contamination of water, food, or person-to-person contact

### **Subjective:**

- Signs and Symptoms:
  - Profuse, watery diarrhea that can cause dehydration, sulfuric burping
  - Abdominal cramps, bloating, flatulence, nausea, malaise, anorexia
  - Chronic diarrhea develops that is greasy or frothy and foul-smelling without blood, pus or mucus
  - Weight loss with malabsorption is common

### **Objective:**

- Physical Exam:
  - Benign physical exam
- Tools:
  - O&P shows trophozoites or cysts
  - Repeat at least 3 times before considering negative

### **Assessment:**

- Differential:
  - Salmonella: fever, bloody diarrhea
  - Bacterial gastroenteritis: fever, possibly bloody diarrhea
  - Viral gastroenteritis: non-bloody diarrhea

### **Plan:**

- Medications:
  - Metronidazole
- Oral hydration
- Supportive care

### **Patient Education:**

- Maintain oral fluids to avoid volume depletion
- Use good hand hygiene and avoid fecal-oral contamination
- Follow-up Actions:
  - Return to clinic in 48 hours if no improvement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **INTESTINAL NEMATODES**

### **Introduction:**

- *Ascaris lumbricoides* (roundworm) is the most common of the intestinal helminths infecting about a quarter of the world's population
- *Ancylostoma duodenale* and *Necator americanus* (hookworm) are very common
- *Strongyloides stercoralis* is not as prevalent but still troublesome
- *Enterobiasis* (pinworm) is a common cause of intestinal infection in school-age children world-wide

### **Subjective:**

- Signs and Symptoms:
  - Non-specific abdominal symptoms
  - Cough
  - Urticaria or rash
  - Diarrhea
  - Patients may report seeing eggs or a worm in their feces
  - Pinworms: nocturnal anal pruritus

### **Objective:**

- Physical Exam:
  - Complete abdominal exam may reveal abdominal tenderness, occasionally hepatomegaly
- Tools:
  - Stool O&P
  - CBC for anemia
  - Pinworm test – apply clear cellophane tape to the perianal skin in the early morning to collect eggs for three mornings

### **Assessment:**

- Differential:
  - Ascariasis: abdominal discomfort, vomiting worms, cough, urticaria, worms in stool
  - Trichuriasis: bloody diarrhea, rectal prolapse
  - Hookworm: transient pruritic skin rash and pulmonary symptoms, iron deficiency anemia
  - Strongyloidiasis: pruritic skin rash, pulmonary symptoms, diarrhea, abdominal discomfort
  - Pinworm: nocturnal perianal pruritus

### **Plan:**

- Medications:
  - Albendazole for most infections
  - Strongyloidiasis is treated preferably with ivermectin
- Practice good hand hygiene

## **INTESTINAL NEMATODES CONTINUED**

### **Patient Education:**

- Take medication exactly as prescribed
- Hand hygiene is extremely important as transmission is primarily through fecal-oral route
- Follow-up Actions:
  - Return if no improvement within 48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HISTOPLASMOSIS**

### **Introduction:**

- *Histoplasma capsulatum* is a fungus that has been isolated from soil contaminated with bird or bat droppings in endemic areas
  - Central and eastern US, eastern Canada, Mexico, Central and South America, Africa and SE Asia
  - Infection presumably takes place by inhalation of conidia (spores)
- The organism proliferates and undergoes lymphohematogenous spread to other organs

### **Subjective:**

- Signs and Symptoms:
  - Malaise, fever, chills, anorexia, myalgias, cough, pleuritic chest pain
  - Cough can continue for months
- Focused History:
  - Recent travel to Midwest US
  - Exposure to caves or bird droppings

### **Objective:**

- Physical Exam:
  - Inspection may show fever, weight loss, hypotension and shock if the patient is immunocompromised
  - Auscultation will show coarse breath sounds, pleural friction rub
  - Palpation may reveal hepatomegaly and/or splenomegaly in disseminated infection
- Tools:
  - CXR shows hilar or mediastinal lymphadenopathy with or without patchy infiltrates

### **Assessment:**

- Differential:
  - Acute pulmonary infection: respiratory signs or symptoms
  - Chronic pulmonary infection: history of smoking, lung disease or chronic pulmonary infections

### **Plan:**

- Medication:
  - Itraconazole
- Evacuate all chronic and disseminated cases for specialty care

### **Patient Education:**

- Most acute pulmonary infections resolve spontaneously in 3-4 weeks
- Follow-up Actions:
  - Return if no improvement within 48 hours

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **COCCIDIOIDOMYCOSIS**

### **Introduction:**

- *Coccidioidomycosis* should be considered in the diagnosis of any obscure illness in a patient who has lived in or visited an endemic area
- Caused by molds that grow in soil in certain arid regions of the southwestern US, in Mexico and in Central and South America

### **Subjective:**

- Signs and Symptoms:
  - Influenza-like illness with malaise, fever, backache, headache and dry cough
  - Arthralgia accompanied by periarticular swelling, often of the knees and ankles, is common
  - Erythema nodosum may appear 2-20 days after onset of symptoms
- Focused History:
  - Travel History

### **Objective:**

- Physical Exam:
  - Fever and tachypnea
  - Various rashes: diffuse, faint erythematous rash lasting less than one week
    - Erythema multiforme
    - Erythema nodosum (painful red nodules usually occurring on the shins)
  - Diffuse auscultatory findings on lung exam
  - Patients with meningitis may have papilledema on fundoscopy or neurologic manifestations

### **Assessment:**

- Differential:
  - Influenza: URI type symptoms, myalgias
  - Pneumonia: adventitious lung sounds
  - Histoplasmosis: hepatosplenomegaly

### **Plan:**

- Medications: itraconazole (for severe cases)
- General symptomatic therapy is given as needed for disease limited to the chest with no evidence of progression
- Evacuate severe cases and refer all patients to a specialist for care and evaluation

### **Patient Education:**

- Acute pulmonary disease will likely resolve untreated in 6-8 weeks
- Meningeal disease requires lifelong therapy
- Follow-up Actions: return frequently for re-evaluation of improvement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HIV INFECTION and AIDS**

### **Introduction:**

- The CDC AIDS case definition includes opportunistic infections and malignancies that rarely occur in the absence of severe immunodeficiency
- It also classifies persons as having AIDS if they have +HIV serology and certain infections and malignancies that can occur in immunocompetent hosts but that are more common among persons infected with HIV
- Finally, persons with +HIV serology who have ever had a CD4 count <200 are considered to have AIDS
- The prognosis of persons with HIV/AIDS has dramatically improved due to the introduction of highly active antiretroviral therapy (HAART)

### **Subjective:**

- Signs and Symptoms:
  - Initial presentation may consist of flu-like symptoms
  - Patients can remain asymptomatic for years
  - Prominent systemic complaints such as sweats, diarrhea, weight loss and wasting
  - Opportunistic infections due to diminished cellular immunity – often life threatening
  - Neurological manifestations, including dementia, aseptic meningitis, and neuropathy

### **Objective:**

- Physical Exam:
  - May be entirely normal or non-specific
  - Abnormal findings range can be highly specific for HIV infection
    - Hairy leukoplakia of the tongue
    - Disseminated Kaposi sarcoma
    - Cutaneous bacillary angiomatosis
    - Generalized lymphadenopathy is common early
- Tools:
  - HIV antibody and antigen

### **Assessment:**

- Differential:
  - HIV may mimic a variety of other medical illnesses
  - Specific differential diagnosis depends on the mode of presentation
    - Cancer
    - Chronic infections
    - Chronic lung infections



## **HIV INFECTION and AIDS CONTINUED**

### **Plan:**

- EVAC or transfer
- Contact Public Health
- Treatment for HIV infection can be broadly divided into the following categories
  - Prophylaxis for opportunistic infections, malignancies and other complications of HIV infection
  - Treatment of opportunistic infections, malignancies and other complications of HIV infection
  - Treatment of the HIV infection itself with combination active antiretroviral therapy (ART)

### **Patient Education:**

- Worldwide there are an estimated 33 million persons infected with HIV, with heterosexual spread being the most common mode of transmission
- The mean time between HIV infection and the development of AIDS is 10 years even without ART
- Follow-up Actions:
  - Recommend compliance with Infectious Disease treatment plan

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## Chapter 14

### EMERGENCY/ENVIRONMENTAL MEDICINE PROTOCOLS

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#### EMERGENT PATIENT CARE

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- Emergency and cardiac medications can be administered per ACLS/EMS/TCCC protocols; contact preceptor after patient has been stabilized
- Do not wait for a preceptor consultation to treat your patient in an emergent situation

### ANAPHYLAXIS

#### Introduction:

- Acute, life-threatening IgE-mediated allergic reaction
- Occurs in previously sensitized people when they are re-exposed to the sensitizing antigen
- Typical triggers:
  - Drugs (beta-lactam antibiotics, insulin)
  - Foods (nuts, eggs, seafood)
  - Proteins (tetanus antitoxin, blood transfusions)
  - Animal venoms
  - Latex
- Symptoms can develop within minutes and lead to shock and death

#### Subjective:

- Signs and Symptoms:
  - Skin: pruritus, hives
  - CNS: dizziness
  - ENT: rhinorrhea
  - Cardiac: palpitations
  - Respiratory: dyspnea, cough, sense of choking
  - GI: abdominal cramps, diarrhea, nausea
- Focused History:
  - Triggers

#### Objective:

- Physical Exam:
  - Vital signs: may demonstrate hypotension, tachycardia, shock
  - Skin: urticaria, cyanosis, angioedema
  - CNS: seizures
  - Respiratory: stridor, wheezing

## **ANAPHYLAXIS CONTINUED**

### **Assessment:**

- Differential:
  - Allergic rhinitis: less severe ENT and respiratory symptoms
  - Food allergy: usually presents with skin symptoms and respiratory symptoms are less severe
  - Latex sensitivity: less severe reaction likely to be limited to dermatitis
  - Mastocytosis: mast cell infiltration of skin and other organs; symptoms include pruritus and dyspepsia
  - Consider all other causes of shock and hypotension (i.e., sepsis)

### **Plan:**

- EVAC or transfer
- Prepare for ACLS intervention
  - Oxygen
  - Possible intubation
  - Isotonic IV fluids
- Medications
  - Epinephrine IM (preferred)/IV: cornerstone of treatment
    - IM (1:1,000 solution)
    - IV (1:10,000 solution)
  - Antihistamines (IV)
    - H<sub>1</sub> blockers (diphenhydramine) plus H<sub>2</sub> blockers (ranitidine)
  - Inhaled beta-agonists (albuterol)
  - Corticosteroids (IV)

### **Patient Education:**

- Primary prevention is avoidance of known triggers
- Desensitization is used for allergen triggers that cannot reliably be avoided (i.e., insect stings)
- Patients with known anaphylactic reactions should wear an alert bracelet and carry a pre-filled epinephrine syringe
- Follow-Up Actions:
  - Encourage compliance with all medical care
  - Follow up for any new possible allergic reactions or triggers
  - Pre-filled epinephrine syringes should be prescribed yearly

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HYPOTHERMIA**

### **Introduction:**

- Classically, hypothermia is defined as a core temperature below 95 degrees Fahrenheit

### **Subjective:**

- Signs and Symptoms:
  - Shivering, impaired memory and judgment, decreased consciousness, difficulty breathing, increased urination

### **Objective:**

- Physical Exam:
  - Changes in cognition, tachycardia, late bradycardia, temperature below 95°F
  - Arrhythmias, pulmonary edema

### **Assessment:**

- Evaluate for other potential injuries or conditions as some diagnoses increase the risk of hypothermia and should also be considered in hypothermic patients that do not respond to re-warming
- Differential:
  - Head trauma: differentiated by history and clinical exam
  - Hypoglycemia: history of diabetes may be present especially with insulin therapy
  - Exposure to toxins, drugs or alcohol
  - Adrenal insufficiency: suspect in patient who is ill or injured who previously has been treated for an extended period with steroids

### **Plan:**

- Get patient warm, keep horizontal and do not allow exertion
- Treat with heated IV saline if feasible, heated humidified oxygen, warm water bottles in groin and axillae, wrap in warm clothes, bedding or emergency blanket
- Prepare for ACLS intervention

### **Patient Education:**

- Follow preventative measures, including proper use of cold weather clothing, staying dry, getting out of the wind, and monitoring buddies
- Eat a high calorie, high fat diet to increase heat production and improve performance in the cold

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **FROSTBITE**

### **Introduction:**

- A true freezing injury where ice crystals tend to form in deep or superficial tissues depending on the severity

### **Subjective:**

- Signs and Symptoms:
  - 75% complain of numbness of the injured part, patient may complain of clumsiness due to ischemia of the body part

### **Objective:**

- Physical Exam:
  - Coldness of the injured part, yellowish-white or mottled blue appearance of the skin

### **Assessment:**

- Differential:
  - Gangrene, ischemia, burns, and severe infection – may present similarly but the history of cold exposure should clarify the diagnosis

### **Plan:**

- Remove from the cold environment, remove wet clothing, do not apply direct dry heat but extremity can be warmed by placing in companion's groin or axilla for maximum of 10 minutes. Best if the extremity can be rewarmed by totally immersing the affected area in water that is 40-42° C (104-107.6° F). Thawing will be painful.
- Do not thaw if there is any threat of re-freezing during evacuation or if the individual must walk to safety (this could worsen the damage to the tissue).
- Apply a loose, dry dressing and splint prior to transport

### **Patient Education:**

- Follow preventative measures, including proper use of cold weather clothing, staying dry, getting out of the wind, and monitoring buddies
- Eat a high calorie, high fat diet to increase heat production and improve performance in the cold

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **TRENCHFOOT and IMMERSION FOOT**

### **Introduction:**

- Occurs when wearing wet boots and socks for a prolonged period of time
- Immersion foot and immersion syndrome come from prolonged immersion of the lower extremities in water or mud
- Both occur when ambient temperatures are above freezing
- Nerve damage occurs when environment causes skin breakdown and tight footwear combined with immobility causes vasoconstriction

### **Subjective:**

- Signs and Symptoms:
  - Complete absence of sensation, leading to “walking on air” feeling
  - After re-warming, extremity becomes hot, very painful, swollen

### **Objective:**

- Physical Exam:
  - Skin is white, yellow or mottled, edema is present
  - After re-warming extremity is hot and red
  - Vibratory sense usually absent, proprioception usually present
  - Several days after re-warming vesicles/bullae, hemorrhagic blisters and skin sloughing develop; may develop gangrene

### **Assessment:**

- Differential:
  - Diagnosis is generally made on clinical grounds, based on the context of the injury, signs, and symptoms

### **Plan:**

- Dry patient and keep core temperature warm (treat co-existent hypothermia) while keeping extremities cool; avoid massaging or rewetting
- Recommended method is keeping extremities elevated and exposed to a cool fan; this treatment should be continued until pain and swelling has resolved (may take days)

### **Patient Education:**

- Ensure proper fitting boots prior to deployment
- Change socks 2-3 times per day in sweaty or wet environments
- Recommend boots be removed completely for a minimum of 8 hours out of every 24; feet should be completely dry and warm and preferably exposed to air during those periods

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HEAT CRAMPS**

### **Introduction:**

- Caused by sodium depletion during intense activity rather than heat

### **Subjective:**

- Signs and Symptoms:
  - Brief, painful skeletal muscle spasms following activity

### **Objective:**

- Physical Exam:
  - Muscle cramping with possible fasciculations, rapid resolution after oral or IV salt solution

### **Assessment:**

- Differential:
  - Tetanus: history of wound in individual with inadequate immunization
  - Hypocalcemia: carpal spasm when BP cuff is inflated above systolic BP for 3 minutes
  - Black widow spider envenomation: history of bite

### **Plan:**

- Rest, replace electrolytes, avoid salt tablets

### **Patient Education:**

- Eat entire MRE and add salt to tray pack meals to help replenish salt stores over several days
- Allow 2-3 days to replenish salt and water deficits before resuming work in heat

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HEAT RASH**

### **Introduction:**

- Common, transient skin disorder caused by blocked eccrine sweat glands

### **Subjective:**

- Signs and Symptoms:
  - Irritating rash most commonly on the neck, axilla and trunk

### **Objective:**

- Physical Exam:
  - Clusters of tiny bubble-like pustules

### **Assessment:**

- Differential:
  - Insect bites: exposed areas versus moist areas
  - Herpes simplex: larger vesicles on erythematous base
  - Bacterial infection: pustular lesions
  - Fungal infections: not generally pustular

### **Plan:**

- Keep the skin cool and dry, a mild topical steroid can help with discomfort

### **Patient Education:**

- Keep the skin cool and dry, a mild topical steroid can help with discomfort
- Wear breathable clothing, such as cotton that does not occlude the skin

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**



## **HEAT EXHAUSTION**

### **Introduction:**

- Mild to moderate form of heat illness with temperatures 101.3 – 104°F

### **Subjective:**

- Signs and Symptoms:
  - Profound fatigue, dizziness, headache, nausea, vomiting, malaise

### **Objective:**

- Physical Exam:
  - Hypotension and tachycardia, fever, muscle spasms

### **Assessment:**

- Differential:
  - Heat stroke: altered mental status
  - Simple dehydration: milder symptoms
  - Febrile illness: underlying illness

### **Plan:**

- Reduce the load on the heart with rest and cooling, remove heavy clothing and apply cool water on the skin
- Correct water and electrolyte depletion
  - Give oral and IV fluids
    - Patients with resting tachycardia or orthostatic hypotension should initially receive 200-250 cc boluses of normal saline (NS) repeatedly until these vital signs are corrected
    - No more than 2L of NS should be administered without laboratory surveillance

### **Patient Education:**

- Maintain adequate fluid and water intake and work/rest cycles in heat
- Avoid direct sunlight and other risk factors

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HEAT STROKE**

### **Introduction:**

- Life threatening condition with temperature above 104°F

### **Subjective:**

- Signs and Symptoms:
  - Dizziness, exhaustion, weakness, vomiting, diarrhea, involuntary urination and defecation

### **Objective:**

- Physical Exam:
  - Profound CNS abnormalities, aggressiveness, difficulty speaking, tachycardia, tachypnea, hypotension

### **Assessment:**

- Differential:
  - Infection: most commonly community acquired pneumonia but consider meningococcemia
  - Pontine or hypothalamic hemorrhage: usually with facial palsy, deafness, dysarthria and leads to coma
  - Drug intoxication, alcohol or sedative withdrawal: look for history of ingestion
  - Severe hypertonic dehydration: may be indistinguishable but will respond to therapy

### **Plan:**

- Reduce body temperature rapidly by any means available
  - Ice packs, misting and continuous fanning
  - Cold or ice water immersion
    - Requires ability to obtain and monitor rectal temperatures
    - Remove patient from water once core temperature decreases below 102°F
  - Constantly monitor patient's core body temperature until stable
  - Hydrate with 1-2L of NS or LR over the first hour
    - Titrate IV fluid administration thereafter to hydration status
    - Over-hydration can increase the likelihood of complications

### **Patient Education:**

- Avoid heat exposure until clinical recovery and a thorough medical evaluation are complete
- There is an increased risk for future heat stroke

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **SUNBURN**

### **Introduction:**

- An acute, delayed, and transient inflammatory response of the skin to excessive exposure to UV radiation from natural sunlight or artificial sources

### **Subjective:**

- Signs and Symptoms:
  - Pain, erythema of exposed skin with possible edema and blistering

### **Objective:**

- Physical Exam:
  - Increased skin sensitivity to heat and mechanical pressure with erythema

### **Assessment:**

- Differential:
  - Drug-induced phototoxic reactions: certain drugs reduce the threshold for UVR-induced erythema and can produce symptoms within minutes
  - Solar urticaria: wheals or erythema minutes after exposure to sunlight (resolves within hours)

### **Plan:**

- Further sun exposure should be avoided until sunburn has completely subsided
- Cold water compresses
- NSAIDs for pain
- Topical aloe vera
- Blistered areas should be treated similarly to partial thickness burns (sterile dressings, topical mupirocin or silver sulfadiazine)

### **Patient Education:**

- Wear protective clothing; liberal use of broad-spectrum sunscreen

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ACUTE CEREBRAL HYPOXIA**

### **Introduction:**

- Occurs when ascent to a high altitude is too rapid

### **Subjective:**

- Signs and Symptoms:
  - Vertigo, sleepiness, dizziness, hallucinations, buzzing in the ears

### **Objective:**

- Physical Exam:
  - Lack of fine motor control, personality changes, inattentiveness or absence periods; respiratory rate and pulse may increase; seizure is possible

### **Assessment:**

- Differential:
  - Substance abuse: rule out if no history or other evidence/suspicion of taking drugs, medications, alcohol or “nutritional supplements”
  - Atypical seizure activity: consider if positive history of seizure disorder or history of head trauma in the last 10 years

### **Plan:**

- Immediate administration of oxygen or rapid descent

### **Patient Education:**

- Early recognition of the symptoms of hypoxia allows for early intervention and avoids performance decrement

### **Preceptor Directive:**

- **Blue Directive: Contact Preceptor Immediately**

## **HIGH-ALTITUDE HEADACHE**

### **Introduction:**

- Usually the first unpleasant symptom resulting from altitude exposure

### **Subjective:**

- Signs and Symptoms:
  - Headache often associated with anorexia, nausea and insomnia

### **Objective:**

- Physical Exam:
  - Full neurologic exam: usually normal

### **Assessment:**

- Differential:
  - Migraine: usually unilateral and not associated with altitude
  - Precursor to Acute Mountain Sickness

### **Plan:**

- Prevention with NSAIDs, Tylenol, acetazolamide or dexamethasone
- Treat with oxygen immediately in addition to preventative medication

### **Patient Education:**

- Early recognition of the symptoms of hypoxia allows for early intervention and avoids performance decrement

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103**

## **ACUTE MOUNTAIN SICKNESS**

### **Introduction:**

- Severity depends on rate of ascent and altitude attained

### **Subjective:**

- Signs and Symptoms:
  - Cardinal symptom is headache followed by fatigue, dizziness and anorexia

### **Objective:**

- Physical Exam:
  - Patient appears sick, mild swelling in the hands, feet and face around the eyes

### **Assessment:**

- Differential:
  - Early HACE: significant ataxia (can't do heel-to-toe walk), swelling of the optic nerve
  - Intoxication: history of ingesting medications, drugs or alcohol
  - Carbon monoxide poisoning: history of exposure to toxic fumes, cherry-red skin color
  - Hypothermia: lack of headache and nausea, decreased body temperature

### **Plan:**

- Stop ascent, descend to lower altitude or acclimate at same altitude until symptoms resolve
- Low flow oxygen
- Acetaminophen, NSAIDs, Zofran as needed for mild symptoms
- Acetazolamide and dexamethasone for severe symptoms
- Descent is the best treatment for all altitude illnesses

### **Patient Education:**

- Early recognition of the symptoms of hypoxia allows for early intervention and avoids performance decrement

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HIGH ALTITUDE CEREBRAL EDEMA (HACE)**

### **Introduction:**

- Uncommon, but potentially fatal accumulation of fluid in brain

### **Subjective:**

- Signs and Symptoms:
  - Severe headache, nausea with vomiting, decreased appetite and fatigue
  - Progressive weakness, clumsiness, confusion and vivid hallucinations

### **Objective:**

- Physical Exam:
  - Behavioral changes: agitation or withdrawal, disorientation and confusion
  - Ataxia, abnormal DTRs, decreased consciousness
  - Can have rales, cough and frothy pink or bloody sputum if coexisting HAPE

### **Assessment:**

- Differential:
  - Head trauma: check for lacerations, bruising, depressed skull
  - Intoxication: history of ingesting medications, drugs or alcohol
  - Carbon monoxide poisoning: history of exposure to toxic fumes, cherry-red skin color
  - Hypothermia: lack of headache and nausea, decreased body temperature

### **Plan:**

- Evacuate to lower altitude immediately
- Oxygen at 6L/minute by face mask; insert ET tube if comatose
- Dexamethasone
- EVAC or transfer

### **Patient Education:**

- Early recognition of the symptoms of hypoxia allows for early intervention and avoids performance decrement

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **HIGH ALTITUDE PULMONARY EDEMA (HAPE)**

### **Introduction:**

- Potentially fatal accumulation of fluid in the lungs
- Most common cause of death related to high altitude
- Completely and easily reversed if recognized early and treated properly

### **Subjective:**

- Signs and Symptoms:
  - Dry cough progressing to coughing spasms and shortness of breath
  - Pink, frothy sputum

### **Objective:**

- Physical Exam:
  - Tachypnea and tachycardia with lowered blood oxygen levels
  - Rales, cyanosis of the lips and nail beds

### **Assessment:**

- Differential:
  - Pneumonia: fever above 101°F with purulent sputum
  - Pulmonary embolus: chest pain with breathing, blood clot in leg veins
  - High-altitude cough: chronic, dry cough that can occur at very high altitude, not associated with rales, sputum production or other symptoms
  - Asthma: history of asthma with wheezing

### **Plan:**

- Evacuate to lower altitude immediately by litter – walking will worsen symptoms
- Oxygen at 6L/minute by face mask; insert ET tube if comatose
- EVAC or transfer
- Nifedipine can also be used to lower pulmonary artery pressure. Contact preceptor BEFORE attempting.

### **Patient Education:**

- Early recognition of the symptoms of hypoxia allows for early intervention and avoids performance decrement

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **BAROTRAUMA AND PRESSURE INJURIES**

### **Introduction:**

- Gas pressure in air-filled spaces of the body are normally in equilibrium with the external environment
- Obstruction of these spaces may cause disequilibrium as external pressure changes
- Damage from these pressure changes are known as barotraumas

### **Subjective:**

- Signs and Symptoms:
  - Sinuses: maxillary tooth pain, numbness/tingling in cheek/upper lip
  - Middle ear: sensation of fullness, reduced hearing, tinnitus
  - Gastrointestinal: abdominal fullness, belching, flatulence
  - Pulmonary: very serious – pneumomediastinum, pneumothorax, tension pneumothorax

### **Objective:**

- Physical Exam:
  - Varies for each presentation

### **Assessment:**

- Differential:
  - Sinusitis
  - Otitis Media

### **Plan:**

- Decongestants, self-elimination of air from gastrointestinal system

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for pulmonary involvement
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103** for minor issues

## **ARTERIAL GAS EMBOLISM**

### **Introduction:**

- Air bubbles enter pulmonary venous circulation from ruptured alveoli
- Bubbles pass into systemic circulation lodging in small to medium sized arteries resulting in distal occlusion
- Bubbles in the coronary arteries can produce arrhythmias and myocardial dysfunction

### **Subjective:**

- Signs and Symptoms:
  - Sudden-onset respiratory distress and/or neurological event in the setting of a known risk factor
  - Substernal chest pain

### **Objective:**

- Physical Exam:
  - Tachycardia, bradycardia, tachypnea, wheezing
  - ECG changes

### **Assessment:**

- Differential:
  - Acute pulmonary decompensation: PE, bronchospasm, pulmonary edema
  - Acute cardiovascular decompensation: hypovolemia, cardiogenic shock, MI, septic shock, fat embolism
  - Acute neurological decompensation: cerebral hypoperfusion, stroke, subarachnoid hemorrhage, head trauma and metabolic disorders

### **Plan:**

- 100% oxygen
- Hyperbaric therapy

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **VENOMOUS SNAKE BITES**

### **Introduction:**

- Vipers (including venomous vipers, cottonmouths, copperheads, and rattlesnakes)
- These snakes are found worldwide in warm and temperate areas

### **Subjective:**

- Signs and Symptoms:
  - Erythema, edema, warmth, and ecchymosis at the bite site and adjacent tissues within 60 minutes
  - Systemic symptoms include nausea/vomiting, diaphoresis, chills, oral paresthesias, unusual taste in mouth, and fasciculations
  - Late systemic effects include bleeding, rhabdomyolysis (severe muscle cramping and pain)

### **Objective:**

- Physical Exam:
  - Fang marks
  - Swelling at site
  - Weakness, pain, sweating/chills, numbness/tingling; eventually kidney failure, tachycardia, tachypnea, shock, altered mental status, seizures, and death

### **Assessment:**

- Differential:
  - Non-venomous snake bite
  - Venomous bite from animal other than a snake

### **Plan:**

- EVAC or transfer: rapid transport to hospital-level care to delay progress of envenomation and alleviate early symptoms
- Ensure airway is patent and adequate
- Start an IV in an unbitten extremity to prepare for shock
- Monitor for anaphylaxis

### **Patient Education:**

- Do not handle snakes
- Limit activity after bitten

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **CORAL SNAKES, SEA SNAKES, BOOMSLANGS, BIRD SNAKES, AUSTRALIAN DEATH ADDERS and TAIPANS**

### **Introduction:**

- These snakes are found worldwide in a variety of habitats. Their venom is primarily neurotoxic.

### **Subjective:**

- Signs and Symptoms:
  - Mild to moderate pain and swelling with weakness of the bitten extremity occurring within hours
  - Double-vision, difficulty swallowing, abdominal pain
  - Dizziness, nausea/vomiting, weakness, drowsiness

### **Objective:**

- Physical Exam:
  - Minimal local tissue damage
  - Cranial nerve palsies/deficits, sagging eyelids, hyper-salivation
  - Respiratory distress leading to respiratory failure

### **Assessment:**

- Differential:
  - Non-venomous snake bite
  - Venomous bite from animal other than a snake

### **Plan:**

- Prepare for immediate EVAC or transfer for antivenom
- Keep patient calm and immobile and apply direct pressure to wound
- Immobilize injured area
- Provide life support if needed: airway, breathing, O2, circulation
- Obtain IV access early in unaffected limb
- If patient is hypotensive give crystalloid such as Lactated Ringer's or Normal Saline 1-3 liters bolus then maintenance at 125 cc/hour
- Monitor airway for anaphylaxis
- Perform neurologic assessments of cranial nerves and strength every 15-30 minutes to monitor progressive neurotoxicity

### **Patient Education:**

- Do not handle snakes
- Limit activity after bitten

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **GILA MONSTER AND BEADED LIZARD BITES**

### **Introduction:**

- Bites usually occur from attempting to interact with the lizard; lizard clamps down with strong jaws and is difficult to remove
- Chewing action instills poison in the wound

### **Subjective:**

- Signs and Symptoms:
  - Severe pain, burning and progressive edema from the bite
  - Nausea/vomiting, sweating, dizziness, tingling/numbness
  - Shortness of breath

### **Objective:**

- Physical Exam:
  - Lizard may still be attached – remove by submerging in running hot water
  - Diaphoresis, tachycardia, hypotension
  - Significant local tissue trauma
  - Cyanosis/ecchymosis at bite site

### **Assessment:**

- Differential:
  - Non-venomous lizard bite
  - Venomous bite from animal other than a lizard

### **Plan:**

- Prepare for immediate EVAC or transfer for antitoxin
- Keep patient calm and immobile and apply direct pressure to wound
- Immobilize injured area
- Provide life support if needed: airway, breathing, O2, circulation
- Obtain IV access early in unaffected limb
- If patient is hypotensive give crystalloid such as Lactated Ringer's 1-3 liters bolus then maintenance at 125 cc/hour
- Monitor airway for anaphylaxis

### **Patient Education:**

- Know toxic reptiles in your area, availability of antitoxin and creature specific treatments prior to deployment
- Wear long pants and boots when hiking or working outdoors

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **STINGS**

### **Introduction:**

- Hymenoptera stings are a nuisance unless the victim has a generalized reaction
- Fire ants have a venom that is less potent but can elicit a generalized reaction similar to hymenoptera

### **Subjective:**

- Signs and Symptoms:
  - Instantaneous stinging pain, warmth and pruritus at the site
  - Urticaria, shortness of breath, wheezing, weakness, syncope, anxiety

### **Objective:**

- Physical Exam:
  - Inspection of the skin for stinging apparatus; confluent red rash or edema
  - Tachypnea, tachycardia, hypotension

### **Assessment:**

- Differential:
  - Diagnosis is based on history of exposure and/or captured specimens

### **Plan:**

- For anaphylactic or generalized reaction:
  - Epinephrine and support airway
- Simple sting:
  - Apply ice or cold water to control swelling
  - Hydrocortisone cream for relief
  - Ibuprofen for inflammation/pain as needed
  - May use diphenhydramine for pruritus if needed

### **Patient Education:**

- Restrict movement of affected area
- Individuals with a generalized reaction should be referred for allergy testing and carry an EpiPen

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for generalized reactions
- **Green Directive: Routine Review by Preceptor IAW AFI 44-103** for simple stings

## **BLACK WIDOW SPIDER BITE**

### **Introduction:**

- Black widows are found throughout the US and around the world, especially around human habitation near wooded areas
- Bites most commonly occur when an unsuspecting human disturbs a female's nest and threatens her egg sac
- The spiders grow up to 1.5 inches long, are glossy black or dark brown, with bright red or orange "hourglass" on the underside of the abdomen

### **Subjective:**

- Signs and Symptoms:
  - Immediate sharp, stinging pain at bite site; wound is a blanched circular patch with central puncture wound or pair of wounds and blanched region has ring of surrounding erythema
  - In approximately an hour of bite, affected limb develops unilateral diaphoresis with muscle pain and cramping

### **Objective:**

- Physical Exam:
  - Diaphoresis, restlessness, anxiety, vomiting
  - Peripheral vasodilation
  - Muscular rigidity involving the major muscle groups of the abdomen
  - May develop respiratory distress/tachypnea, salivation and hypertension

### **Assessment:**

- Differential:
  - Myocardial ischemia or infarction: serial ECG can differentiate the chest pain
  - Surgical abdomen: abdominal muscle spasms and pain may be mistaken for surgical abdomen
  - Rabies: very similar but rabies has a characteristic hydrophobia and patients can usually report a definite bite or contact with an animal

### **Plan:**

- Provide BLS/ACLS if needed
- Obtain IV access with normal saline
- Clean bite site with soap and water
- Treat for anaphylaxis if needed
- If bronchospasm is present give albuterol 2 puffs inhaled orally with spacer every 4 hours
- Give IV diazepam for severe muscle contractions

## **BLACK WIDOW SPIDER BITE CONTINUED**

### **Patient Education:**

- Avoid areas that harbor potentially hazardous spiders including wood piles, garages, and other dark, undisturbed areas
- Learn to identify harmful spiders

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**



## **BROWN RECLUSE SPIDER BITE**

### **Introduction:**

- Also known as the “fiddleback” due to its distinctive brown violin shape on its cephalothorax
- Live primarily in homes in dark quiet areas such as attics, cupboards, behind bookshelves, and in basements

### **Subjective:**

- Signs and Symptoms:
  - Initially painless bite that increases over the next several hours
  - Systemic reactions are rare but may include nausea, vomiting, fevers and myalgias (indistinguishable from sepsis)

### **Objective:**

- Physical Exam:
  - Bite site begins to swell with local erythema, small puncture wounds may be visible
  - Within a few hours of bite, lesion develops “Bull’s Eye” appearance with central pallor and surrounding erythema and ecchymosis
  - Lesion may resolve over several days or become dusky and insensate, rupture, and leave a central ulceration; these lesions can develop significant tissue necrosis

### **Assessment:**

- Differential:
  - Methicillin-resistant *Staphylococcus aureus*: skin infections often mistaken for a spider bite and begin with singular papules or pustules that may evolve to necrotic lesions
  - Pyoderma gangrenosum: dark, blue-red papules progressing to necrotic ulcerating lesions
  - Vascular disease: foot and ankle ulcers can be seen in patients with chronic venous insufficiency or diabetes

### **Plan:**

- IV access on unaffected limb with normal saline at maintenance rate if changes in sensation, systemic symptoms, severe pain or any signs of anaphylaxis
- Ice the bite site taking care to protect the tissue
- Immobilize the extremity and elevate (possibly for several days until lesion starts to resolve or until necrosis starts)
- Immediate EVAC or transfer for any patient with severe symptoms, signs of necrosis or unconfirmed diagnosis

## **BROWN RECLUSE SPIDER BITE CONTINUED**

### **Patient Education:**

- Avoid areas that harbor potentially hazardous spiders including wood piles, garages, and other dark, undisturbed areas
- Learn to identify harmful spiders

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP**

## **CENTIPEDES, MILLIPEDES, AND CATERPILLARS**

### **Introduction:**

- Rarely deadly but can cause substantial irritation

### **Subjective:**

- Signs and Symptoms:
  - Pain at the bite site
  - Local tissue redness with swelling at the bite site, often with pruritus
  - Millipede wounds can start as brown-stained skin that progress to blisters

### **Objective:**

- Physical Exam:
  - Swollen, tender lymph nodes
  - Can lead to anaphylaxis rarely

### **Assessment:**

- Differential:
  - Diagnosis is based on history of exposure and/or captured specimens

### **Plan:**

- For caterpillars and millipedes: copiously irrigate the area with sterile water and dry without touching the skin (use fan or hairdryer)
- Retained caterpillar hairs can be removed by applying scotch tape or duct tape and pulling away. If this is ineffective, use fingernail polish or rubber cement, allow it to dry, and peel away.
- Cold compresses are the historical mainstay of therapy, but recent evidence suggests that hot water immersion may actually be more soothing for centipede bites
- Monitor for anaphylaxis

### **Patient Education:**

- Know the toxic arthropods in your area
- Wear proper clothing, gloves and footwear when working outdoors

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103** for simple reactions
- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for anaphylaxis

## **SCORPIONS**

### **Introduction:**

- Scorpion envenomation is a significant problem in the southwestern United States and throughout Mexico
- In the United States, *Centruroides exilicauda* (sculpturatus) stings are associated with major neurologic toxicity, especially in young children
- In Mexico, multiple toxic species exist, and annual mortality due to scorpion envenomation is ten times higher than that due to snakebite

### **Subjective:**

- Signs and Symptoms:
  - Immediate pain at the sting site, but unlike hymenoptera stings erythema and immediate edema ("wheal and flare") do not occur

### **Objective:**

- Physical Exam:
  - Cranial nerve dysfunction includes hyper-salivation, involuntary conjugate roving eye movements or sharp chaotic nystagmus
  - Skeletal muscle dysfunction includes restlessness, twitching, jerking movements, and writhing movements of the trunk that may resemble seizure - however, unlike seizure patient remains alert during movements
  - Systemic symptoms include tachycardia, vomiting, hyperthermia to 104°F, diaphoresis, hypertension, dyspnea, priapism, pancreatitis, delirium, shock, and death

### **Assessment:**

- Differential:
  - Spider bite: black widow envenomation may produce hypertension, tachycardia, sweating, and other signs of adrenergic excess. However, it does not produce the abnormal eye movements, fasciculations, or paresthesias.
  - Botulism: botulism is a rare but potentially life-threatening neuromuscular syndrome resulting from the action of a neurotoxin elaborated by the microorganism *Clostridium botulinum*. Botulism is classically described as the acute onset of bilateral cranial neuropathies associated with symmetric descending weakness.
  - Toxic exposure: several poisons have physical findings similar to those of scorpion envenomation

### **Plan:**

- Prepare for EVAC or transfer
- Keep patient calm and immobile and apply direct pressure to wound
- Immobilize injured area
- Provide life support if needed: airway, breathing, O2, circulation
- If bronchospasm is present give albuterol (Ventolin®) 2 puffs inhaled orally with spacer every 4 hours
- Obtain IV access early in unaffected limb

## **SCORPIONS CONTINUED**

### **Plan Continued:**

- If patient is hypotensive give crystalloid such as Lactated Ringer's 1-3 liters bolus then maintenance at 125 cc/hour
- Monitor airway for anaphylaxis
- Perform neurologic assessments of cranial nerves and strength every 15-30 minutes to monitor progressive neurotoxicity

### **Patient Education:**

- Know the toxic arthropods in your area
- Wear proper clothing, gloves and footwear when working outdoors
- Examine all clothes and shoes prior to putting them on
- Shake out all camping gear and equipment prior to use

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103** for simple reactions
- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for severe reactions

## **COELENTERATES/CNIDARIA**

### **Introduction:**

- These include jellyfish, box jellyfish, Man o' War, soft corals, and anemones
- Common in both warm and cold brackish salt water, with about a million envenomations occurring around the Chesapeake Bay and Florida Gulf Coast annually. Australian box jellyfish and the Portuguese Man o' War are especially fatal.
- Suspect possible Cnideria envenomation in any unresponsive patient found in surf/seawater

### **Subjective:**

- Signs and Symptoms:
  - Immediate burning, itching, throbbing pain at the site of the sting
  - Nausea, headache, muscle pain

### **Objective:**

- Physical Exam:
  - "Tentacle prints" – linear papular eruptions that develop into raised lines, surrounded by red, inflamed dermis
  - Muscle weakness and spasms
  - Increased lacrimation and nasal discharge, increased perspiration, changes in pulse rate

### **Assessment:**

- Differential:
  - Swimmer's itch: more pruritic than stinging
  - Envenomation by other corals, sea urchins or fish: more likely to have puncture wounds

### **Plan:**

- Provide life support: airway, breathing, O<sub>2</sub>, circulation
- The respiratory system is often the most severely affected; death can sometimes be prevented by basic respiratory support
- If bronchospasm is present give albuterol (Ventolin®) 2 puffs inhaled orally with spacer every 4 hours
- Remove unfired nematocysts and rinse with salt water
- After all tentacles have been removed, rinse or soak wound in acetic acid (vinegar)
- Obtain IV access early in unaffected limb, even if it seems unnecessary at the time; give normal saline at maintenance rate unless hypotensive
- If patient is hypotensive give crystalloid such as Lactated Ringer's solution 1-3 liters then maintenance at 125 cc/hour
- Limit patient's movements and carry them when possible; envenomations are hastened by muscular effort pushing more of the poison towards the central circulation
- Monitor airway for anaphylaxis

## **COELENTERATES/CNIDARIA CONTINUED**

### **Patient Education:**

- Patients often experience fever, fatigue, malaise, joint pain, and swelling intermittently for 1-2 months after Cnidarian sting. This is termed “delayed reaction.”
- Know the toxic marine life in your area, monitor local warnings regarding movements/migrations of sea creatures
- Wear thick-soled shoes while swimming or wading

### **Preceptor Directive:**

- **Green Directive: Routine Review by Preceptor IAW AFI 44-103** for simple reactions
- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for severe reactions

## **SEA URCHINS, CORALS, AND STINGRAYS**

### **Introduction:**

- Although not commonly fatal, sea urchins, corals, and stingray wounds cause extensive local damage and are prone to infection

### **Subjective:**

- Signs and Symptoms:
  - Pain, bleeding, burning, stinging, swelling, and itching at the injury site
  - May have urticaria, vesicles, and fever develop within a few hours after injury- these are reactions to the poison and not evidence of infection
  - Systemic symptoms are less common but include nausea, vomiting, muscle cramping and malaise

### **Objective:**

- Physical Exam:
  - Death from corals and sea urchins is rare, but stingray envenomations can progress to hypotension, respiratory failure, seizures, and death

### **Assessment:**

- Differential:
  - Jellyfish and sea anemone stings: patients with jellyfish or sea anemone stings do not have puncture wounds. After a jellyfish sting, linear red, urticarial lesions typically develop a few minutes later, although sometimes these lesions do not appear for several hours.
  - Sea snake envenomation: the bite of a sea snake is often painless with limited local tissue toxicity

### **Plan:**

- Provide life support: airway, breathing, O<sub>2</sub>, circulation
- The respiratory system is often the most severely affected; death can sometimes be prevented by basic respiratory support
- If bronchospasm is present give albuterol (Ventolin®) 2 puffs inhaled orally with spacer every 4 hours
- Immerse affected limb in hot water
- After all tentacles have been removed, rinse or soak wound in acetic acid (vinegar)
- Obtain IV access early in unaffected limb, even if it seems unnecessary at the time; give normal saline at maintenance rate unless hypotensive
- If patient is hypotensive give crystalloid such as Lactated Ringer's solution 1-3 liters then maintenance at 125 cc/hour
- Limit patient's movements and carry them when possible; envenomations are hastened by muscular effort pushing more of the poison towards the central circulation
- Monitor airway for anaphylaxis



## **SEA URCHINS, CORALS, AND STINGRAYS CONTINUED**

### **Patient Education:**

- Know the toxic marine life in your area, monitor local warnings regarding movements/migrations of sea creatures
- Wear thick-soled shoes while swimming or wading
- Wear wet suits and gloves when swimming or diving around reefs

### **Preceptor Directive:**

- **Red Directive: Immediate Evacuation; Contact Preceptor ASAP** for systemic reactions
- **Blue Directive: Contact Preceptor Immediately** for minor reactions and tissue damage

## Attachment 1

### **GLOSSARY of REFERENCES and SUPPORTING INFORMATION**

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Auerbach, Paul S. 2012. *Wilderness Medicine*. Philadelphia: Elsevier Mosby .

Bickley, Lynn S. 2013. *BATES' Guide to Physical Examination and History Taking*. Philadelphia: Wolters Kluwer Health/Lippincott Williams and Wilkins.

Dubin, Dale. 2000. *Rapid Interpretation of EKG's*. Fort Myers: Clover Inc.

Papadakis, Maxine A., and Stephen J. McPhee. 2016. *CURRENT Medical Diagnosis and Treatment*. United States of America: McGraw-Hill Education.

Porter, Robert S. 2011. *The MERCK Manual*. Whiteshouse Station: Merck Sharp and Dohme Corp.

## Attachment 2

### IDMT AFI and FORM REFERENCE LIST

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#### AFIs

**AFI 44-103, *The Air Force Independent Duty Medical Technician Program***

**AFI 41-209, *Medical Logistics Support*** (Detached/remote IDMTs obtain medical materiel from the HMTF Medical Logistics activity as well as receive support for medical equipment and medical maintenance IAW the procedures outlined in this publication)

**AFMAN 33-363, *Management of Records*** (Ensure records are maintained appropriately and comply with Files Maintenance Procedures)

**AFI 41-210, *Patient Administration Functions*** (Guidance for maintaining Military Health Records)

**AFI 44-102, *Medical Care Management*** (Use of AF Form 579, *Controlled Substances Register* and many other Medical Care Functions)

**AFI 48-105 *Surveillance, Prevention and Control of Diseases and Conditions of Public Health or Military Significance*** (Includes Information on Animal Bites and Rabies Prevention Program)

**AFPD 47-1, *Dental Services*** (Guidance for Dental Readiness Classes)

**AFI 47-101, *Managing Air Force Dental Services*** (Guidance for managing Dental Services)

**AFI 41-210, *Tricare Operations and Patient Administration Functions*** (Beneficiary Counseling and Assistance Coordinator (BCAC) activities)

**AFI 36-2910 *Line of Duty (Misconduct) Determination*** (Legal finding made after an investigation into the circumstances of a member's illness, injury, disease, or death)

**AFI 41-210, *Tricare Operations and Patient Administration Functions*** (Prepare deceased Patient Kit IAW this publication)

**AFI 48-116, *Food Safety Program*** (Food Inspections)

**AFMAN 48-147IP, *Tri-Service Food Code*** (Food Inspections)

**AFI 48-117, *Public Facility Sanitation*** (Facility Inspections)

**AFI 48-144, *Drinking Water Surveillance Program*** (Water Monitoring)

**AFI 48-145, *Occupational and Environmental Health Program*** (Frequency of shop visits)

**AFI 48-137, *Respiratory Protection Program***

**AFOSHSTD 48-20, *Occupational Noise and Hearing Conservation Program***

**AFI 44-102, *Patient Care and Management of Clinical Services*** (Requires reporting of homicides, suicides, attempted suicide, robbery, aggravated assault, other sex offenses (not sexual assault), intentional drug overdose, and narcotic drug overdose to the appropriate law enforcement and/or command authorities)

**DoDI 6495.02, *The Sexual Assault Prevention and Response (SAPR) Program*** (Healthcare providers will report sexual assaults of all active duty and military dependents 18 years of age and older to the sexual assault response coordinator)

**DoDD 6400.1, *Family Advocacy Program (FAP)*** (Healthcare providers will report child neglect/abuse, spouse abuse, and sexual assault victims who are under the age of 18 to the FAP)

**DoDI 6490.11, *DoD Policy Guidance for Management of Mild Traumatic Brain Injury/Concussion in the Deployed Setting*** (Follow guidance from this publication as well as combatant command (COCOM) guidance for the management of mild TBI in a deployed environment)

## **FORMS**

**AF IMT 4336, *IDMT Patient Encounter Form*** (Document all patient encounters)

**AF IMT 623a, *On-The-Job Training Record Continuation Sheet*** (Used to document competency verification)

**AF IMT 1098, *Special Task Certification and Recurring Training*** (Used to document QTPs and functional area training (Bio, Public Health, Dental, etc.)

**AF Form 579, *Controlled Substance Register*** (Controlled items are accounted for and inventoried utilizing this form)

**AF Form 348, *Line of Duty Determination*** (Informal and Formal Line of Duty Determinations)

**AF Form 614 or 614A, *Charge Out Record*** (Used in place of a record or folder removed from physical files to show that the record is charged out)

**2I00A, *Health Record-Outpatient*** (Hard copy/non-electronic military medical record)

**2I00B, *Health Record-Dental*** (Hard copy/non-electronic military dental record)

**SF 600, *Chronological Record of Medical Care*** (Used to record all medical treatment)

**SF 603, *Health Record-Dental*** and **SF 603a, *Health Record-Dental Continuation*** (Used to record all dental treatment)

**DD Form 2766, *Adult Preventive and Chronic Care Flowsheet*** (Is the minimum deployed medical documentation required)

**AF Form 422, *Notice of Air Force Members Qualification Status*** (Classifies individuals according to physical/functional abilities and long term availability for worldwide duty)

**AF Form 469, *Duty Limiting Condition Report*** (Used to describe physical limitations, recommended duty restrictions (DR), limitations to the AF Fitness Program (FP), and Fitness Assessment Exemptions to the Commander)

**DD Form 2992, *Medical Recommendation for Flying or Special Operational Duty*** (Non-Flight Surgeon Personnel (IDMT) may ground flying personnel) (Only a Flight Surgeon may return the patient to flying status) (Replaced AF Form 1042)

**AF Form 286, *Personnel Reliability Program (PRP) Qualification/Certification Action*** (Used in the medical record to identify members on PRP)

**AF Form 745, *Sensitive Duties Program Record Identifier*** (Used in the medical record to identify members on PRP)

**AF Form 1488, *Daily Log of Patients Treated for Injuries*** (Used to determine potential Medical Affirmative Claims Cases)

**AF IMT 1122, *Personal Property and Personal Effects Inventory*** (Used to track personal property of patients, to include deceased patients)

**AF IMT 3899, *Aeromedical Evacuation Patient Record*** (This form must be utilized if the IDMT is not entering the patient's information into TRAC2ES)

**SF 522, *Medical Record Request for Administration of Anesthesia and for Performance of Operations and Other Procedures*** (Used prior to all minor procedures performed)

**Attachment 3**  
**IDMT DRUG FORMULARY**

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- Medical Preceptor “MP” denotes those items that may be prescribed/dispensed by the IDMT only with preceptor consultation
- IDMTs are cautioned to remain extremely conservative when prescribing/dispensing medication
- Emergency and cardiac medications can be administered per ACLS/EMS/TCCC protocols without initial preceptor consultation; contact preceptor after patient has been stabilized.

**EENT DRUGS**

Generic Name	Trade Name
Benzocaine	Cepacol®
Benzonatate	Tessalon Perles®
Cetirizine	Zyrtec®
Dimenhydrinate	Dramamine®
Diphenhydramine	Benadryl®
Fexofenadine	Allegra®
Guaifenesin	Mucinex®, Robitussin®
Guaifenesin/Dextromethorphan	Robitussin DM®
Guaifenesin/Pseudoephedrine	Mucinex D®
Hydroxyzine hydrochloride	Atarax®
Loratadine	Claritin®
Pseudoephedrine	Sudafed®

*\*May prescribe combination drugs of any of the above medication*

**OTIC and NASAL PREPARATIONS**

Generic Name	Trade Name
Acetic Acid Solution	Burrow's otic®
Antipyrine and Benzocaine	Auralgan®
Azelastine	Astelin®
Chlorhexidine gluconate	Peridex®
Ciprofloxacin otic “MP”	Cetraxal®
Fluticasone	Flonase®
Mometasone	Nasonex®
Oxymetazoline	Afrin®
Polymyxin B-Neomycin-Hydrocortisone otic suspension “MP”	Cortisporin®

## OPHTHALMIC DRUGS

Generic Name	Trade Name
Acetazolamide "MP"	Diamox®
Carboxymethylcellulose	Refresh Tears®
Ciprofloxacin ophthalmic "MP"	Ciloxan®
Erythromycin ophthalmic "MP"	Ilotycin®
Homatropine ophthalmic "MP"	Isopto Homatropine®
Olopatadine	Patanol®
Pheniramine/naphazoline	Naphcon A®
Polymyxin B-Bacitracin-Neomycin ophthalmic ointment "MP"	Neo-Polycin®
Polymyxin B-Neomycin-Gramicidin ophthalmic solution "MP"	Neosporin® Ophthalmic Solution
Proparacaine "MP"	Alcaine®
Scopolamine ophthalmic solution "MP"	Isopto Hyoscine®
Sodium fluorescein applicator strips	BioGlo®, Ocu-Flur 10®
Sulfacetamide "MP"	Sulamyd®
Trimethoprim/Polymyxin B "MP"	Polytrim®
Visine	Visine® AC eye drops

## SYSTEMIC ANTI-INFECTIVE AGENTS

Generic Name	Trade Name
Acyclovir "MP"	Zovirax®
Albendazole "MP"	Albenza®
Amoxicillin "MP"	Amoxil® , Moxatag®
Amoxicillin clavulanate "MP"	Augmentin®
Ampicillin "MP"	Ampicillin
Azithromycin "MP"	Zithromax®, Z-pac®
Cefaclor "MP"	Ceclor®
Cefoxitin "MP"	Mefoxin®
Ceftriaxone "MP"	Rocephin®
Cephalexin "MP"	Keflex®
Ciprofloxacin "MP"	Cipro®
Clarithromycin "MP"	Biaxin®
Clindamycin "MP"	Cleocin®
Dicloxacillin "MP"	Dicloxacillin
Doxycycline "MP"	Vibramycin ®
Erythromycin "MP"	Ery-Tab®

Fluconazole "MP"	Diflucan®
Griseofulvin "MP"	Gris-Peg®
Itraconazole "MP"	Sporanox®
Ivermectin "MP"	Stromectol®
Mebendazole "MP"	Vermox®
Metronidazole "MP"	Flagyl®
Nitrofurantoin "MP"	Macrobid®
Paromomycin "MP"	Humatin®
Penicillin G benathine "MP"	Bicillin LA®
Penicillin G procaine "MP"	Wycillin®
Penicillin V potassium "MP"	Pen VK®
Praziquantel "MP"	Biltricide®
Tetracycline "MP"	Achromycin®
Trimethoprim/Sulfamethoxazole "MP"	Bactrim® , Septra®
Valacyclovir "MP"	Valtrex®

## TOPICAL ANTI-INFECTIVE AGENTS

Generic Name	Trade Name
Bacitracin	Bacitracin® Ointment
Bismouth impregnated petroleum gauze	Xeroform gauze®
Chlorhexidine gluconate	Hibiclens®
Clindamycin gel "MP"	Cleocin T®
Clotrimazole 1% cream "MP"	Mycelex®
Clotrimazole troche "MP"	Mycelex G®, Gyne-Lotrimin®
Iodoform gauze packing strips	N/A
Ketoconazole cream, shampoo	Nizora ®
Lindane shampoo	Kwell®
Miconazole 2% cream "MP"	Miconazole®
Miconazole vaginal "MP"	Monistat® Cream/ Suppositories
Mupirocin 2% topical	Bactroban®
Permethrin 1% cream "MP"	Nix®
Polymyxin B-bacitracin-neomycin ointment	Neosporin®
Pramoxine with Hydrocortisone foam	Proctofoam®
Silver Sulfadiazine	Silvadene®
Terbenifne cream	Lamisil® cream
Tolnaftate	Tinactin®



## ANTI-INFLAMMATORY DRUGS

Generic Name	Trade Name
Aspirin	Bayer®
Ibuprofen	Motrin® IDMT MAX 2400 MG/DAY
Indomethacin	Indocin®
Ketorolac "MP"	Toradol®
Meloxicam	Mobic®
Naproxen	Naprosyn®, Aleve®

## MUSCLE RELAXANTS

Generic Name	Trade Name
Cyclobenzaprine "MP"	Flexeril®
Methocarbamol	Robaxin®

## ANALGESIC DRUGS

Generic Name	Trade Name
Acetaminophen	Tylenol® IDMT MAX 3000 MG/DAY
Acetaminophen and Codeine "MP"	Tylenol #3® MAX DISPENSE 5 TABS/DAY
Acetaminophen, Aspirin, Caffeine	Excedrin®
Benzocaine "MP"	Anacaine®
Hydrocodone and Acetaminophen "MP"	Norco®
Lidocaine anesthetic 1%, 2%	Xylocaine®
Lidocaine with epinephrine 1% "MP"	Xylocaine with Epinephrine®
Lidocaine, 2% viscous	N/A
Morphine sulfate, SC/IM/IV "MP"	Morphine®
Phenazopyridine	Pyridium®
Tramadol "MP"	Ultram®

## STEROIDS

Generic Name	Trade Name
Dexamethasone IM/IV "MP"	Decadron®, Baycadron®, DexPak®
Methylprednisolone PO/IV "MP"	Medrol Pak®, Depo-Medrol®, Solu-Medrol®
Prednisolone "MP"	Orapred®, Prelone®
Prednisone "MP"	Deltasone®

## CARDIOPULMONARY DRUGS

Generic Name	Trade Name
Adenosine IV/IO "MP"	Adenocard ®
Albuterol inhaler "MP"	Ventolin®, Proair®
Albuterol nebulizer "MP"	N/A
Amiodarone IV/IO "MP"	Corderone®, Pacerone®
Atropine IV/IO "MP"	Atropine
Calcium Gluconate "MP"	Cal-Glu®
D50 "MP"	D50®
Dopamine IV/IO "MP"	Intropin®
Dopamine IV/IO infusion"MP"	Intropin®
Epinephrine (1:10,000 solution) IV/IO "MP"	Adrenalin®
Epinephrine (1:1000 solution) IM "MP"	Adrenalin®
Furosemide PO/IM/IV "MP"	Lasix®
Levalbuterol "MP"	Xopenex®
Magnesium sulfate IV/IO "MP"	Magesium sulfate
Nitroglycerin sublingual tabs "MP"	0.3 mg Nitrostat®
Oxygen	Oxygen
Spacer for use with metered dose inhalers	Aerochamber®, Inspir-Ease®
Vasopressin IV/IO "MP"	Pitressin®

## OVERDOSE and POISON ANTIDOTES

Generic Name	Trade Name
Acetylcysteine "MP"	Acetadote®, Mucomyst®
Activated charcoal "MP"	EZ Char®
Flumazenil "MP"	Flumazenil®
Naloxone "MP"	Narcan®

## I.V. SOLUTIONS

Generic Name	Trade Name
Lactated Ringer's	LR
Normal Saline	NS

## GASTROINTESTINAL DRUGS

Generic Name	Trade Name
Aluminum-OH 200mg / Magnesium OH 200mg / Simethicone 25 mg	Maalox Plus®
Aluminum-OH 400mg / Magnesium-OH 400mg / Simethicone 40mg	Mylanta II liquid®
Bisacodyl	Dulcolax®
Bismuth subsalicylate	Pepto-Bismol®
Cimetidine	Tagamet®
Diphenoxylate "MP"	Lomotil®
Docusate sodium	Colace®
Esomeprazole	Nexium®
Hydrobromide Scopolamine	Scopace®
Kaopectate	Kaopectate®
Loperamide	Imodium®
Magnesium citrate	Mag-Citrate®
Meclizine	Dramamine, Antivert®
Metaclopramide "MP"	Reglan®
Methylcellulose	Citrucel®
Milk of Magnesia	Milk of Magnesium®
Omeprazole	Prilosec®
Ondansatron	Zofran®
Phenylephrine Topical	Preparation H®
Polyethylene glycol 3350	Miralax®
Promethazine "MP" for IV	Phenergan®
Psyllium	Metamucil®
Ranitidine	Zantac®
Scopolamine transdermal patch	Transderm-Scop®
Simethicone	Mylicon®
Sucralfate	Carafatem®
Trimethobenzamide HCl	Tigan®
Witch hazel	Preparation H®, Tucks®

## PSYCHIATRIC and NEUROLOGICAL DRUGS

Generic Name	Trade Name
Diazepam “MP”	Valium®
Ergotamine/cafeine	Cafergot®
Lorazepam “MP”	Ativan®
Rizatriptan “MP”	Maxalt®
Sumatriptan “MP”	Imitrex®
Zolpidem “MP”	Ambien® <b>MAX DISPENSE 5 TABS/PT</b>

## TOPICAL PREPARATIONS

Generic Name	Trade Name
Adapalene “MP”	Differin®
Aluminum acetate	Domeboro®
Benzoyl peroxide wash/cream/gel	Benzac®
Calamine lotion	Calamine lotion®
Chlorhexidine gluconate	Peridex®
Coal tar shampoo	T-gel® shampoo, Tarsum®
Glass ionomer restorative	Fuji 9®, IRM®, Vitrabond®
Hank’s Balanced Salt Solution	Save-A-Tooth®
Hydrocortisone 2.5% rectal cream	Anusol-HC®
Hydrocortisone, 1% cream	Cortaid®, Westcort®
Hydrogen peroxide	Hydrogen peroxide
Imiquimod “MP”	Aldara®
Isopropyl alcohol	Isopropyl alcohol
Methyl salicylate and menthol analgesic balm	BenGay®
Orabase	Orabase®
Povidone iodine	Betadine®
Salicylic acid	Mediplast®
Selenium sulfide	Head and Shoulders®, Selsun Blue®
Silver nitrate applicators	Silver nitrate applicators
Sunscreen	Sunscreen
Tretinoin 0.025% cream or gel “MP”	Retin-A®
Triamcinolone 0.1% “MP”	Kenalog®
Trichloroacetic acid	Tri-Chlor®
Urea cream	Eucerin cream®
Zinc Oxide	Desitin®
Zinc pyrithione	Theraplex Z®

## MISCELLANEOUS

Generic Name	Trade Name
Chlorhexidine gluconate rinse	Periogard®
Colchicine	Colcrys®
Condoms	Condoms
Ferrous Sulfate	Slow Fe®
Prenatal Vitamin	Prenatal Vitamin
Sodium Fluoride	Sodium Fluoride
Temporary Dental Restorative Material	IRM®, Vitrabond® etc.
Ionomer Restorative Material	Fuji 9 Glass®

COURSE 201 EXAMINATION AND STUDY OF THE HUMAN BODY  
"Head to Toe" Evaluation

Student Rank/Name:	Primary Group Instructor(s)
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**OBJECTIVE**

Perform a patient examination

**REFERENCE/MATERIAL:** Bates Guide to Physical Exams, self designed checklist and all necessary equipment provided

**INSTRUCTIONS FOR THE STUDENTS**

1. This Performance Test is to assess your ability to perform a physical examination of an adult patient.
2. You may not utilize any checklists.
3. You may use any examination equipment provided to you. Please take a minute to organize your equipment.
4. There are 150 physical exam items you must accomplish. You have 60 minutes to accomplish all items.
5. You must complete all steps for each task to pass the item; a grade of satisfactory or unsatisfactory will be given for each task.
6. More than 4 unsatisfactory tasks will require repeat performance the next duty day after remediation.
7. No instructor assistance can be provided
8. You may request 2 time checks

**INSTRUCTIONS FOR THE INSTRUCTORS**

1. The student must perform each item on this checklist and verbalize findings to the best of their ability. The preceptor will determine satisfactory or unsatisfactory performance of each checklist item.
2. The students may not utilize any checklists.
3. If the student performs an item satisfactorily, write "S" in the "S" column. If the student either misses the item or demonstrates poor technique, write "U" for unsatisfactory in the "U" column. A point should be awarded if the preceptor is satisfied that the student demonstrated good technique and understanding of the procedure.
4. Most items are coupled with a verbalization instruction. These verbal supplements help assess the students understanding of the exam item. Variations may be accepted at the preceptor's discretion.
5. The student must accomplish 146/150 items correctly. If more than 4 "U" marks, the student will receive a "U" for the PT and will require a minimum of 1 hour of outside special individualized assistance (SIA) counseling. The instructor will re-administer the Performance Test the next duty day.
6. Failure to successfully pass the retake will result in disenrollment from the course.

<b>EXAM</b>	Date:
Grading Instructor:	Length of exam: <i>(max: 60 min)</i>
	Grade: <i>(PASS or FAIL)</i>
<b>RETEST*</b>	Date:
Grading Instructor:	Length of exam: <i>(max: 60 min)</i>
	Grade: <i>(PASS or FAIL)</i>

*\*If indicated*

Exam		Behavior	Skill	Comment
<b>Introduction and General Assessment</b>				
1.	Indicate wash hands and dons PPE as indicated prior to exams	Verbalize step		
2.	Introduces self as IDMT student	<i>"Good morning, I am Sgt/Airman __, I am an IDMT student performing a physical exam for you today"</i>		
<b>Head, Face, and Scalp</b>				
3.	Inspect head/hair/scalp	<i>"normocephalic with even hair distribution; no masses or swelling"</i>		
4.	Palpate head/hair/scalp	<i>"hair texture is normal without infestations; scalp has no scaling or lesions"</i> <i>"mastoid is nontender and without discoloration"</i>		
5.	Inspect, palpate and perform ROM of TMJ (Open, close, side to side, forward, back)	<i>"TMJ not tender and without swelling; no pain, popping or locking with ROM"</i>		
6.	CN V (Clench teeth-temporalis/masseter)	<i>"CN V intact"</i>		
7.	CN VII (Raise eyebrows, frown, close eyes and attempt to open with resistance, show teeth, smile and puff out cheeks)	<i>"CN VII intact"</i>		
<b>Eyes</b>				
8.	Verbalize visual acuity	<i>"Visual acuity checked"</i>		
9.	Inspect eyes, brows, lashes and lids	<i>"no exophthalmos, ptosis, periorbital discoloration, edema, or skin lesions"</i>		
10.	Inspect conjunctiva and sclera	<i>"no injection, icterus, lesions, edema or foreign bodies"</i>		
11.	Inspect and palpate lacrimal duct	<i>"no swelling and no regurgitation"</i>		
12.	Evaluate visual fields by confrontation	<i>"visual fields are full and equal to examiner"</i>		
13.	Check extraocular movement and lid lag	<i>"EOMs equal without nystagmus, no lid lag"</i>		
14.	Assess for pupillary reaction to convergence and accommodation (near/far)	<i>"eyes converge equally and pupils constrict with near focus"</i>		
15.	Evaluate position and alignment of eyes (cover/uncover and Hirschberg)	<i>"no strabismus observed"</i>		
16.	Inspect iris and pupillary reaction to light (direct and consensual)	<i>"pupils are equal, round, and reactive to light and accommodation bilaterally"</i>		
17.	Anterior chamber depth	<i>"No crescent shadow"</i>		
18.	Inspect for red reflex	<i>"red reflex present"</i>		
19.	Inspect clarity of cornea, anterior chamber, lens, and vitreous	<i>"cornea, anterior chamber, lens, and vitreous are clear without opacities, haze or encroachments"</i>		
20.	Inspect optic disc	<i>"disc color is ____, margins are sharp, and cup-to-disc ratio is 1:2"</i>		
21.	Inspect retinal vessels	<i>"AV ratio is 2:3 without nicking or spasms"</i>		
22.	Inspect fundus	<i>"there are no hemorrhages or exudates"</i>		

23.	Inspect macula (have pt look into light)	<i>"no lesions on macula"</i>		
24.	Ophthalmoscopic exam technique			
<b>Ears</b>				
25.	Inspect auricles and tragus	<i>"no lesions or discoloration"</i>		



26.	Palpate auricles and tragus	<i>"nontender bilaterally"</i>			
27.	Inspect external auditory canals	<i>"no swelling, redness, or obstruction"</i>			
28.	Inspect general appearance of TMs	<i>"TMs are pearly gray and translucent; light reflex is ant-inf. quadrant; pars tensa, pars flaccida, umbo, handle of malleus visualized and undistorted"</i>			
29.	Inspect for fluid in middle ear	<i>"no fluid behind TM"</i>			
30.	Inspect mobility of TMs	<i>"TM's mobile"</i>			
31.	Otoscope exam technique				
32.	Whisper test	<i>"CN VIII intact"</i>			
33.	Perform Weber test	<i>"Weber is equal bilaterally"</i>			
34.	Perform Rinne test	<i>"Rinne is AC &gt; BC bilaterally"</i>			
<b>Nose and Sinuses</b>					
35.	Inspect/palpate nose	<i>"nose is midline and without lesions or tenderness"</i>			
36.	Check patency of nares	<i>"nasal passageways are patent"</i>			
37.	Discrimination of odors	<i>"CN I intact"</i>			
38.	Inspect septum, turbinates, and floor of nasal cavity	<i>"mucosa is pink and moist without lesions; septum is without perforations; unable to visualize superior turbinate, middle and inferior turbinates are without polyps, edema, exudates or discharge"</i>			
39.	Technique of nasal speculum				
40.	Palpate and percuss paranasal sinuses	<i>"no maxillary or frontal tenderness"</i>			
<b>Mouth and Throat</b>					
41.	Inspect lips, oropharyngeal mucosa, gingiva	<i>"lips are pink, mucosa moist without lesions, swelling or discoloration"</i>			
42.	Inspect tonsils and uvula	<i>"Tonsils are [grade size] and equal with midline uvula; no exudates or lesions"</i>			
43.	Inspect tongue surface	<i>"no discoloration or lesions"</i>			
44.	Inspect Stensen's and Wharton's ducts	<i>"no stones or obstructions"</i>			
45.	Perform bimanual exam (Palpate lips, tongue, gingival and buccal mucosa)	<i>"no edema, masses or lesion"</i>			
46.	CN XII	<i>"Tongue is midline, CN XII intact"</i>			
47.	Inspect and percuss teeth	<i>"teeth are in good repair and nontender"</i>			
48.	CN IX/X	<i>"Uvula rises with phonation and gag reflex is present"</i>			
<b>Neck</b>					
49.	Inspect skin of neck	<i>"no lesions, swelling, discoloration and musculature is symmetrical"</i>			
50.	Inspect for trachea position	<i>"trachea is midline"</i>			
51.	Palpate trachea for mobility	<i>"trachea is mobile"</i>			
52.	Palpate lymph nodes of neck and head (occipital, pre and postauricular, submental, submandibular, tonsillar, superficial cervical, deep cervical, posterior cervical, supra and infraclavicular)	<i>"no lymphadenopathy"</i>			
53.	Inspect and palpate thyroid gland	<i>"thyroid is normal size, shape, and consistency without nodules or tenderness"</i>			

54.	Test active ROM of neck (flexion, extension, lateral bending, rotation)	<i>"full active ROM without pain"</i>			
55.	Strength testing	<i>"CN XI intact"</i>			

	(rotation and shoulder shrug)			
<b>Lungs and Chest</b>				
56.	Inspect chest	<i>"no deformities; AP &lt; lateral diameter"</i>		
	<b>Posterior chest</b>			
57.	Inspect posterior thorax	<i>"posterior chest is symmetric without lesion or cyanosis"</i>		
58.	Palpate chest wall expansion	<i>"symmetric expansion"</i>		
59.	Palpate chest wall	<i>"no masses, crepitus, or tenderness"</i>		
60.	Palpate for tactile fremitus	<i>"tactile fremitus is equal in all fields"</i>		
61.	Percuss lung fields	<i>"resonant with no areas of dullness"</i>		
62.	Auscultate lung fields	<i>"equal breath sounds bilaterally with no adventitious sounds"</i>		
63.	Voice Sounds (All 3 of the following: egophony, bronchophony, whispered pectoriloquy)	<i>"No egophony, bronchophony or whispered pectoriloquy"</i>		
	<b>Anterior chest</b>			
64.	Inspect anterior thorax	<i>"anterior chest is symmetric without lesion or cyanosis"</i>		
65.	Palpate chest wall expansion	<i>"symmetric expansion"</i>		
66.	Palpate chest wall	<i>"no masses, crepitus, or tenderness"</i>		
67.	Palpate for tactile fremitus	<i>"equal in all fields"</i>		
68.	Percuss lung fields	<i>"resonant with no areas of dullness"</i>		
69.	Auscultate symmetric lung fields	<i>"equal breath sounds bilaterally with no adventitious sounds"</i>		
70.	Voice Sounds (All 3 of the following: egophony, bronchophony, whispered pectoriloquy)	<i>"No egophony, bronchophony or whispered pectoriloquy"</i>		
<b>Cardiovascular</b>				
	<b>Continue in seated position</b>			
71.	Auscultate with <u>diaphragm</u> at 4 valvular locations and left 3 <sup>rd</sup> ICS	<i>Verbalize areas as you proceed</i>		
72.	Auscultate with <u>bell</u> at 4 valvular locations and left 3 <sup>rd</sup> ICS	<i>Verbalize areas as you proceed</i>		
73.	Auscultate for S2 split (Diaphragm @ Erb's point)	<i>"Listening for S2 split with inspiration"</i>		
74.	Auscultate for aortic regurgitation (left sternal border, leaning forward, exhale holding breath) (Diaphragm @ Erb's point)	<i>"No murmur of aortic regurgitation"</i>		
75.	Palpate, then auscultate carotid arteries with diaphragm	<i>"no carotid bruits, carotid pulse is_"</i>		
	<b>Move patient to supine position with HOB @ 30 degrees with tangential light</b>			
76.	Inspect precordium at 4 valvular areas and locate PMI	<i>"no lifts or heaves; PMI is not displaced"</i>		
77.	Palpate precordium for thrills (4 valvular areas); PMI if unable to visualize	<i>"No vibrations/thrills"</i>		
78.	Auscultate with <u>diaphragm</u> at 4 valvular locations and left 3 <sup>rd</sup> ICS	<i>Verbalize areas as you proceed</i>		
79.	Auscultate with <u>bell</u> at 4 valvular locations and left 3 <sup>rd</sup> ICS	<i>Verbalize areas as you proceed</i>		
80.	Auscultate for gallops (Listening with bell at left lateral recumbent position)	<i>"I am listening for S3 and S4 with bell"</i>		

81.	Verbalize quality	<i>"rate and rhythm are regular without murmurs, gallops, or rubs"</i>		
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82.	Auscultate aorta, renal, iliac, femoral arteries for bruits	<i>"no aortic, renal, iliac, or femoral artery bruits"</i>			
83.	Palpate bilateral peripheral pulses (Brachial, radial, ulnar, femoral, popliteal, dorsal pedis and posterior tibialis)	<i>"pulses are _ (graded) bilaterally"</i>			
84.	Palpate inguinal lymph nodes	<i>"no inguinal lymphadenopathy"</i>			
85.	Tibia check for tibial edema and skin temperature	<i>"skin is warm, no tibial edema"</i>			
86.	Inspect nailbeds and estimate cap refill of upper and lower extremities	<i>"no peripheral cyanosis or clubbing; cap refill is &lt; 2 seconds"</i>			
<b>Abdomen</b>					
87.	Inspect abdomen	<i>"no discoloration, lesions, or scars; contour is _with visible aortic pulsations"</i>			
88.	Auscultate for bowel sounds (4 quadrants and epigastrium)	<i>"normal active bowel sounds"</i>			
89.	Percuss abdomen (four quadrants)	<i>"no discomfort or large areas of dullness with percussion"</i>			
90.	Percuss stomach and bladder	<i>"no dullness to percussion"</i>			
91.	Estimate liver size with percussion	<i>"liver size estimated at [cm] at R MCL"</i>			
92.	Light palpation of all 4 quadrants with knees flexed	<i>"no tenderness, guarding, or rigidity with light palpation"</i>			
93.	Deep palpation of all 4 quadrants with knees flexed	<i>"no tenderness, guarding, rigidity, or masses with deep palpation"</i>			
94.	Palpate for rebound tenderness in the RLQ	<i>"no rebound tenderness"</i>			
95.	Palpate liver edge	<i>"liver edge is smooth and nontender"</i>			
96.	Palpate for spleen enlargement	<i>"spleen is nontender and not enlarged"</i>			
97.	Palpate abdominal aorta	<i>"abdominal aorta is estimated at cm wide without lateral expansion of pulsation"</i>			
98.	Psoas sign (resisted R hip flexion)	<i>"Negative Psoas"</i>			
99.	Obturator sign (passive flexion/internal rotation of right hip)	<i>"Negative Obturator"</i>			
100.	Percuss for CVA tenderness	<i>"no CVA tenderness"</i>			
<b>Upper Extremities</b>					
101.	Inspect soft tissues, bones and joints of the upper extremities	<i>"shoulders, elbows, wrists, and fingers are symmetrically aligned without scaring, swelling, atrophy, deformities, fasciculations, or tremors"</i>			
102.	Palpate the soft tissues, bones, joints of shoulder (SC joint, AC joint, clavicle, scapula, humerus, bicipital groove)	<i>"no soft tissue swelling, tenderness, boney enlargements or masses"</i>			
103.	Assess active ROM of the shoulder (flexion, extension, abduction, adduction, internal rotation, external rotation)	<i>"full active range of motion without pain"</i>			

104.	Evaluate muscle strength of shoulder (flexion, extension, abduction, adduction)	Shoulder strength -/5		
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105.	Palpate the soft tissues, bones, joints of elbow (epicondyles, joint spaces, ulnar nerve, olecranon, forearm)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			
106.	Assess active ROM of the elbow (flexion, extension, supination, pronation)	<i>"full active range of motion without pain"</i>			
107.	Evaluate muscle strength of elbow (flexion, extension)	<i>Elbow strength -/5</i>			
108.	Palpate the soft tissues, bones, joints of wrist (joint spaces, radial and ulnar styloid, carpal bones, scaphoid)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			
109.	Assess active ROM of the wrist (extension, flexion, abduction, adduction)	<i>"full active range of motion without pain"</i>			
110.	Evaluate muscle strength wrist (flexion, extension)	<i>Wrist strength -/5</i>			
111.	Palpate the soft tissues, bones, joints of hands/fingers (joint spaces, tendon sheaths, MCP, PIP, DIP, metacarpals and phalanges)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			
112.	Assess active ROM of the hand (flexion of all finger joints and extension)	<i>"full active range of motion without pain"</i>			
113.	Evaluate muscle strength of hands (grip strength, thumb opposition, finger abduction)	<i>Hand strength -/5</i>			
<b>Lower Extremities</b>					
114.	Inspect the soft tissues, bones and joints of the lower extremities	<i>"hips, knees, ankles and toes are symmetrically aligned without scarring, swelling, atrophy, deformities, fasciculations, or tremors"</i>			
115.	Palpate the soft tissues, bones and joints of hips (iliac crests, greater trochanter, thigh)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			
116.	Assess <b>passive</b> ROM of hips (flexion, abduction, adduction, internal rotation, external rotation)	<i>"full passive range of motion without pain"</i>			
117.	Evaluate muscle strength of hips (flexion, extension, abduction, adduction)	<i>"Hip strength _/5"</i>			
118.	Straight leg raise (foot in dorsiflexion)	<i>"No radicular pain bilaterally"</i>			
119.	Palpate the soft tissues, bones and joints of knees (patella, joint space, popliteal space, tibial tuberosity, quadriceps, patellar and hamstring tendons)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			
120.	Assess active ROM of knees (flexion, extension)	<i>"full active range of motion without pain"</i>			
121.	Evaluate muscle strength of knees (flexion, extension)	<i>"knee strength _/5"</i>			
122.	Palpate the soft tissues, bones and joints of ankles (calf, Achilles tendon, joint spaces, medial and lateral malleolus, and ATFL)	<i>"no soft tissue swelling, tenderness, bony enlargements or masses"</i>			

123.	Assess active ROM of the ankles (dorsiflexion, plantar flexion, inversion, eversion)	<i>"full active range of motion without pain"</i>		
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124.	Evaluate muscle strength of ankles (dorsiflexion, plantar flexion)	<i>"ankle strength _/5"</i>			
125.	Palpate the soft tissues, bones and joints of feet/toes (metatarsals, MTP, DIP, PIP, plantar fascia)	<i>"no soft tissue swelling, tenderness, boney enlargements or masses"</i>			
126.	Assess passive ROM of forefoot (inversion, eversion)	<i>"full passive range of motion of forefoot without pain"</i>			
127.	Assess active ROM of the toes (flexion, extension)	<i>"full active range of motion without pain"</i>			
128.	Evaluate muscle strength of great toe	<i>"great toe strength _/5"</i>			
<b>Spine</b>					
129.	Inspect soft tissue and joint alignment	<i>"no deformity of the spine; scapulae, shoulder and iliac height are symmetrically aligned and there is no atrophy, swelling or discoloration"</i>			
130.	Palpate spinous processes and paravertebral muscles	<i>"no step-off deformity or tenderness of spinous processes AND there is no swelling, heat or tenderness of soft tissues"</i>			
131.	Assess active ROM of the lumbar spine (flexion, extension, right and left lateral bending, right and left rotation)	<i>"full active range of motion without pain"</i>			
<b>Neurologic</b>					
	<b>Cranial Nerves (Completed throughout exam)</b>				
	<b>Sensory System</b>				
132.	Test sharp vs. dull tactile stimulation of dermatomes (face, UE, LE, trunk)	<i>"no deficit with pain stimulation"</i>			
133.	Test light touch tactile stimulation of dermatomes (face, UE, LE, trunk)	<i>"no deficit with tactile stimulation"</i>			
134.	Test vibratory sense	<i>"no deficit with vibratory stimulation"</i>			
135.	Test position sense	<i>"no deficit with proprioception"</i>			
136.	Test stereognosis	<i>"correct interpretation"</i>			
	<b>Motor System (Completed throughout MS exams)</b>				
	<b>Reflexes</b>				
137.	Test Biceps reflex	<i>"Biceps reflex _ (grade)"</i>			
138.	Test Triceps reflex	<i>"Triceps reflex _ (grade)"</i>			
139.	Test Brachioradialis reflex	<i>"Brachioradialis reflex _ (grade)"</i>			
140.	Test Patellar reflex	<i>"Patellar reflex _ (grade)"</i>			
141.	Test Achilles reflex	<i>"Achilles reflex _ (grade)"</i>			
142.	Test Plantar (Babinski) reflex	<i>"toes curl down"</i>			
143.	Test Clonus	<i>"No clonus"</i>			
	<b>Cerebellar</b>				
144.	Test heel-to-shin	<i>"smooth and accurate"</i>			
145.	Test RAM for upper and lower extremities	<i>"quick, smooth, rhythmic and symmetrical"</i>			
146.	Test finger-to-nose	<i>"smooth and accurate"</i>			
147.	Assess gaits (NL, H, T, H/T)	<i>"balanced and coordinated without weakness or hesitation"</i>			
148.	Shallow knee bend	<i>"balanced and coordinated without weakness or hesitation"</i>			
149.	Test Romberg	<i>"maintains balance with eyes closed"</i>			

150.	Test pronator drift	<i>"no drift"</i>		

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**TOTAL  
POINTS**

/ 150

**Preceptors Impression of Performance**

(circle	wea	–	average	–	stron						
Technique	0	1	2	3	4	5	6	7	8	9	10
Thoroughness	0	1	2	3	4	5	6	7	8	9	10

Preceptor Comments:

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COURSE 201 EXAMINATION AND STUDY OF THE HUMAN BODY  
**Orthopedic Specialty Evaluation**

Student Rank/Name:	Primary Group Instructor(s)
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**OBJECTIVE**

Perform a patient examination.

**REFERENCE/MATERIAL:** Bates Guide to Physical Exams, self designed checklist and all necessary equipment provided

**INSTRUCTIONS FOR THE STUDENTS**

1. This Performance Test is to assess your ability to perform orthopedic specialty examinations on an adult patient.
2. You may not utilize any checklists.
3. You may use any examination equipment provided to you. Please take a minute to organize your equipment.
4. There are 31 exam items.
5. You must complete all exams for two joints/locations and two specific exams.
6. The joint/location and specific exams will be given to you at the beginning of the evaluation.
7. You must successfully complete 70% of the assigned exams to pass.
8. No instructor assistance can be provided
9. You may request 2 time checks

**INSTRUCTIONS FOR THE INSTRUCTORS**

1. The student must perform each item on this checklist and verbalize what a positive finding would elicit. The evaluator will determine satisfactory or unsatisfactory performance of each checklist item.
2. The students may not use any checklist.
3. If the student performs an item satisfactorily, write "S" in the "S" column. If the student either misses the item or demonstrates poor technique, write "U" for unsatisfactory in the "U" column. A point should be awarded if the preceptor is satisfied that the student demonstrated good technique and understanding of the procedure.
4. Items are coupled with a verbalization instruction. These verbal supplements help assess the students understanding of the exam item. Variations may be accepted at the preceptor's discretion.
5. The student must accomplish 70% of the assigned items correctly. If 70% is not achieved, the student will receive a "U" for the PT and will require a minimum of 1 hour of outside special individualized assistance (SIA) counseling. The instructor will re-administer the Performance Test the next duty day.
6. Failure to successfully pass the retake will result in disenrollment from the course.

<b>EXAM</b>	Date:
Grading Instructor:	Length of exam: (max: 60 min)
	Grade: (PASS or FAIL)
<b>RETEST*</b>	Date:
Grading Instructor:	Length of exam: (max: 60 min)
	Grade: (PASS or FAIL)

\*If indicated

Exam		Behavior	Key Indicators of Performance	Skill		Comment
				S	U	
<b>Shoulder</b>						
1.	Neer Impingement Sign	Examiner passively flexes shoulder fully while stabilizing the patient's scapula with the other hand	Pain with passive shoulder flexion is a positive Neer impingement sign and indicates impingement syndrome			
2.	Hawkins Impingement Sign	<p>Patient forward flexes the shoulder 90 degrees with the forearm parallel to the floor and flexes the elbow to 90 degrees</p> <p>Examiner passively internally rotates the shoulder while keeping the arm in the forward flexed position</p>	Pain with passive shoulder internal rotation in this position is a positive Hawkins impingement sign and indicates impingement syndrome			
3	Supraspinatus (Jobe) Test	<p>Examiner passively flexes shoulder to 90 degrees half way between the sagittal and coronal plane</p> <p>The elbows are extended and the arm is internally rotated (thumbs down "empty can" position)</p> <p>The patient is asked to resist a downward force</p>	Weakness indicates injury to the supraspinatus muscle/tendon due to impingement or tear			
4	Subscapularis Liftoff Test	<p>Patient is asked to internally rotate the arm behind the back to the mid lumbar region with dorsum of the hand resting on the back</p> <p>Have the patient lift the hand off the back and hold against resistance</p>	Inability to exert force against the examiner's hand indicates a tear of the subscapularis tendon			
5	Sulcus Sign	<p>Examiner pulls the patient's arm downward and looks for a hollow sulcus between the lateral edge of the acromion and the humeral head</p> <p>This result is compared to the opposite shoulder</p>	The presence of a sulcus sign indicates inferior shoulder laxity and possible multidirectional instability			

6	Apprehension Test	<p>Examiner passively abducts and externally rotates the shoulder while the patient is sitting or in the supine position</p> <p>A gentle force directed over the posterior humerus or increased passive abduction may elicit apprehension</p>	A patient complaint of instability is a positive apprehension test and indicates anterior shoulder instability			
7	Relocation Test	<p>Patient's arm is placed into the apprehension test position until the patient feels pain or apprehension</p> <p>A posteriorly directed force is applied on the anterior aspect of the patient's upper humerus</p>	Relief of a patient's apprehension symptoms is a positive relocation test; this is further proof of symptomatic anterior shoulder instability			
8	Passive Cross-Chest Adduction Test	Examiner passively brings the patient's arm into maximal cross-chest adduction	<p>Pain that the patient localizes to the acromioclavicular joint is a positive test</p> <p>This indicates injury or arthritis of the acromioclavicular joint</p>			
9	Speed's Test	<p>Patient's shoulders are flexed to 90 degrees with the elbows extended and the forearms fully supinated (palms up)</p> <p>Patient is asked to hold the arms in position while a downward force is applied at the wrists</p>	Pain elicited in the anterior shoulder is a positive test and indicates biceps tendonitis			
10	O'Brien's Test	<p>Patient asked to forward flex the shoulder to 90 degrees with the elbow extended and then bring the arm an additional 15 degrees toward the midline</p> <p>Patient asked to maximally externally rotate the shoulder with the palm up and maximally internally rotate the shoulder with the thumb pointed down</p> <p>Patient is asked to resist a downward force</p>	Pain described as deep in the shoulder elicited with the thumbs pointed downward indicates a labral tear			

Elbow and Forearm					
11	Ulnar Nerve Compression Test	Have patient fully flex at the elbow and press on the ulnar nerve in the cubital tunnel	Pain and/or numbness elicited is a positive test and indicates cubital tunnel syndrome		
12	Resisted Wrist Extension	Have patient make a fist and hold wrist in extension, support the patient's forearm, and push down on the hand dorsum	Pain at the lateral epicondyle is a positive test and suggests tennis elbow		
13	Resisted Wrist Flexion	Have patient make a fist and hold wrist in flexion, support the patient's forearm, and pull up on the hand	Pain at the medial epicondyle is a positive test and suggest golfers elbow		
Hand and Wrists					
14	Flexor Digitorum Profundus/Flexor Pollicis Longus Test	Have patient fully flex all digits but the digit tested; in turn test active and resisted flexion at DIP joint for all fingers and IP joint for the thumbs	Inability to flex at DIP joint suggests a flexor digitorum profundus or flexor pollicis longus injury		
15	Flexor Digitorum Superficialis Test	Have patient extend all digits, hold down all digits except finger tested; ask patient to flex at PIP joint	Inability to flex at PIP joint suggests a flexor digitorum superficialis injury		
16	Carpal tunnel compression test	The examiner supports the patient's supinated wrist, flexed to 20 degrees and presses firmly with thumb or finger in the space between the flexor carpi radialis and palmaris longus tendons at the level of the distal wrist crease	Numbness or tingling in the median nerve distribution of the fingers suggests carpal tunnel syndrome		
17	Phalen's Test	Instruct the patient to place the back of both hands together with maximal wrist flexion for one minute	Numbness or tingling in the median nerve distribution of the fingers suggests carpal tunnel syndrome		
18	Thumb Ulnar Collateral Ligament Instability Test	Grasp the patient's non-injured thumb and flex at MCP joint about 30 degrees; apply a force to deviate thumb away from index finger and note any laxity  Compare this result with the injured thumb	Laxity of the thumb MCP joint on the ulnar side suggests an ulnar collateral ligament injury		
19	Finkelstein's Test	Instruct the patient to flex the thumb across the palm and then to ulnarly deviate the wrist	Sharp pain over the first dorsal compartment of the wrist is a positive test and suggests DeQuervain's tenosynovitis		

Pelvis, Hip, Thigh					
20	Ober's Test	<p>Place patient in the lateral decubitus position with the side to be tested facing up</p> <p>Flex patient's knee to 90 degrees, abduct hip to about 40 degrees, and fully extend the hip</p> <p>Adduct limb toward examination table</p>	<p>Student must perform test and verbalize that failure of limb to adduct past midline indicates a contracture of the iliotibial tract</p>		
21	Piriformis Test	<p>Place patient in the lateral decubitus position with the side to be tested facing up</p> <p>Flex hip 45 degrees with knee flexed about 90 degrees</p> <p>Stabilize pelvis with one hand and push the flexed knee toward the floor with the other hand</p>	<p>Student must perform test and verbalize that radiating pain along the course of the sciatic nerve indicates piriformis syndrome (entrapment or irritation of the sciatic nerve by the piriformis muscle)</p>		
22	Patrick's Test (FABER)	<p>With patient in supine position, passively flex, abduct, and externally rotate the hip tested so that the patient's heel is touching the opposite patella</p> <p>Push downward on the ipsilateral knee</p>	<p>Pain Elicited in the hip joint is a positive test and indicates pathology. i.e. labral injury, femoroacetabular impingement</p> <p>Pain elicited in the sacroiliac joint is a positive test and indicates pathology in the SI joint i.e. sacroiliitis associated with ankylosing spondylitis</p>		
Knee					
23	Patellar Apprehension Test	<p>With the patient supine and relaxed, you grasp the symptomatic limb at the ankle and abduct it sufficiently to allow the knee to be flexed over the side of the table</p> <p>With the thumb or fingers of the other hand, you perform a lateral patellar glide, pushing the patient's patella as far laterally as possible</p> <p>Then slowly flex the patient's knee with the other hand</p>	<p>Apprehension is a positive test and indicates patella instability</p> <p>Pain with this test can indicate patellofemoral pain syndrome</p>		



24	Passive Patellar Grind Test	<p>With the patient supine and relaxed, you press the patella against the femur with the palm of one hand while passively flexing the knee with the other hand</p> <p>Alternatively, you can perform an active patellar grind test</p> <p>With the patient supine and relaxed, you cup the patella between your thumb and index finger pressing the patella against the femur</p> <p>Then have the patient tighten the quadriceps</p>	Pain is a positive test finding and indicates cartilage damage to the patellofemoral joint			
25	Lachman's Test	<p>With the patient supine and the knee flexed between 20 and 30 degrees</p> <p>Place your thumb just over the tibial tubercle and the other fingers are wrapped around the rest of the calf</p> <p>The other hand is used to grasp the thigh just above the patella; the thumb of this upper hand presses against the femur through the quadriceps tendon while the other fingers wrap around the posterior thigh</p> <p>If the patient is properly relaxed, the limb should feel like a dead weight</p> <p>Once adequately relaxed, you pull forward on the tibia with one hand while simultaneously pushing backward on the femur with other hand in a reciprocating manner</p> <p>Assessing both the amount of anterior translation of the tibia with respect to the femur and the quality of the endpoint</p>	Anterior translation of the tibia greater than 2mm and more than the uninjured side with either a soft endpoint or no endpoint is a positive test and indicates anterior cruciate ligament injury			

26	Anterior and Posterior Drawer Test	<p>With the patient supine and the knee flexed to a 90 degree angle</p> <p>You sit at the end of the examination table with your thigh against the patient's toes to restrain the foot</p> <p>You then grasp the tibia just below the joint line and ask the patient to relax</p> <p>If properly relaxed, you pull forward with both hands (<b>anterior drawer</b>)</p> <p>If properly relaxed, you push backward with both hands (<b>posterior drawer</b>)</p> <p>With each test you are assessing both the amount of anterior or posterior translation of the tibia with respect to the femur and the quality of the endpoint</p>	<p>Anterior or posterior translation of the tibia more than a few millimeters versus the uninjured side with either a soft end point or no end point is a positive test</p> <p>A positive test indicates an anterior cruciate or posterior cruciate ligament injury</p>			
27	Valgus and Varus Stress Tests	<p>With the patient supine and the knee relaxed, you raise the patient's lower limb off the examining table by grasping it gently at the ankle</p> <p>With the knee in full extension, you apply a gentle inward force at the knee and a reciprocating outward force at the ankle (<b>valgus stress</b>)</p> <p>Repeat the same steps with the knee in 10 to 20 degrees of flexion</p> <p>With the patient supine repeat the same steps in both extension and flexed position but apply a gentle outward force at the knee and an inward force at the ankle (<b>varus stress</b>)</p>	<p>Pain or a difference in laxity with comparison to the uninjured knee is a positive test</p> <p>Students must verbalize understanding of the three grades of ligament injury</p> <p>Grade I – MCL/LCL is tender and swollen but exhibits no increased laxity</p> <p>Grade II – MCL/LCL have additional finding of increased laxity to valgus or varus stress but with a firm endpoint</p> <p>Grade III – MCL/LCL have additional valgus or varus stress with an indefinite endpoint (you feel no resistance no matter how far the joint surfaces are separated)</p>			

28	Apley's Compression Test	<p>With the patient prone and the knee flexed to 90 degrees</p> <p>Alternately externally and internally rotate foot</p> <p>If the patient doesn't have any pain, then push downward on the patient's alternately internally and externally rotating the foot</p>	- Pain elicited with compression and rotation is a positive test that indicates a meniscal tear; (medial meniscus – external rotation of the foot, lateral meniscus – internal rotation of the foot)			
<b>Lower Leg, Foot, Ankle</b>						
29	Anterior Drawer Test	<p>Instruct patient to sit on the exam table</p> <p>With one hand, grasp the patient's leg just proximal to the ankle joint to stabilize it</p> <p>With the free hand, grasp the patient's heel and pull forward while pushing posteriorly on the leg</p>	<p>Must evaluate bilaterally</p> <p>An increase in forward translation of at least 3mm versus the opposite ankle is a positive test and indicates instability due to prior anterior talofibular ligament injury</p>			
30	Morton's Test	<p>Instruct the patient to sit on the exam table</p> <p>Grasp the heads of the first and fifth metatarsals and compress them together</p> <p>Further irritation may be reproduced by moving the first and fifth metatarsals up and down in opposite directions</p>	<p>Must evaluate bilaterally</p> <p>Pain or a palpable click (Mulder's click) is a positive test and suggests a Morton's neuroma</p>			
31	Thompson Test	<p>Instruct the patient to lie prone on the exam table</p> <p>With both feet dangling over the end of the exam table, grasp the patient's calf with one or both hands and gently squeeze the muscle</p>	<p>Must evaluate bilaterally</p> <p>Absence of ankle plantarflexion is a positive test and suggests a complete achilles tendon rupture</p>			
		<b>TOTAL POINTS</b>			/31	

Preceptor Comments:

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**Attachment 6**  
**IDMT SOAP NOTE TAKER**

Subjective					
<b>Name/Rank:</b>	<b>SSN:</b>	<b>DOB:</b>	<b>Age:</b>	<b>Sex:</b>	<b>Race:</b>
<b>Unit:</b>	<b>Occupation:</b>	<b>Day/Night Shift:</b>		<b>Grad Date:</b>	<b>TOS:</b>
<b>Status/Branch:</b>	<b>PRP: Y/N</b>	<b>Fly: Y/N</b>		<b>Deployment Related: Y/N</b>	<b>Cell Phone:</b>
<b>CHIEF COMPLAINT:</b>					
<b>DIFFERENTIAL DIAGNOSIS:</b> <i>(Report this out, do not write in note)</i>					
HPI (History of Present Illness)					
<b>SYMPTOMS:</b>					
<b>Onset:</b> When did it start? What was the setting?					
<b>Palliating/Provoking Factors:</b> Better/Worse?					
<b>Quality:</b> What is it like? Describe it.					
<b>Region/Radiation:</b> Does the pain move to any other areas?					
<b>Severity:</b> 0/10, Define 10/10					
<b>Timing/Treatments Tried:</b> Constant/Intermittent? Have you taken anything for it? Did it help?					
<b>Associated Symptoms/Other:</b> (+/- ROS pertinent to the CC)					
HPI (History of Present Illness)					
<b>SYMPTOMS:</b>					
<b>Onset:</b> When did it start? What was the setting?					
<b>Palliating/Provoking Factors:</b> Better/Worse?					
<b>Quality:</b> What is it like? Describe it.					
<b>Region/Radiation:</b> Does the pain move to any other areas?					
<b>Severity:</b> 0/10, Define 10/10					
<b>Timing/Treatments Tried:</b> Constant/Intermittent? Have you taken anything for it? Did it help?					

**Associated Symptoms/Other:**  
(+/- ROS pertinent to the CC)

<b>SYMPTOMS:</b>	
<b>Onset:</b> When did it start? What was the setting?	
<b>Palliating/Provoking Factors:</b> Better/Worse?	
<b>Quality:</b> What is it like? Describe it.	
<b>Region/Radiation:</b> Does the pain move to any other areas?	
<b>Severity:</b> 0/10, Define 10/10	
<b>Timing/Treatments Tried:</b> Constant/Intermittent? Have you taken anything for it? Did it help?	
<b>Associated Symptoms/Other:</b> (+/- ROS pertinent to the CC)	
<b>SYMPTOMS:</b>	
<b>Onset:</b> When did it start? What was the setting?	
<b>Palliating/Provoking Factors:</b> Better/Worse?	
<b>Quality:</b> What is it like? Describe it.	
<b>Region/Radiation:</b> Does the pain move to any other areas?	
<b>Severity:</b> 0/10, Define 10/10	
<b>Timing/Treatments Tried:</b> Constant/Intermittent? Have you taken anything for it? Did it help?	
<b>Associated Symptoms/Other:</b> (+/- ROS pertinent to the CC)	
<b>SYMPTOMS:</b>	
<b>Onset:</b> When did it start? What was the setting?	
<b>Palliating/Provoking Factors:</b> Better/Worse?	
<b>Quality:</b> What is it like? Describe it.	
<b>Region/Radiation:</b> Does the pain move to any other areas?	
<b>Severity:</b> 0/10, Define 10/10	



<b>NECK:</b> stiffness, pain, swollen glands
<b>RESP:</b> cough, wheeze, shortness of breath
<b>CARDIO:</b> chest pain, palpitations, edema
<b>GI:</b> N/V/D, constipation, abdominal pain, stool changes, appetite changes, rectal bleeding
<b>GU:</b> urine changes, pain with urination, discharge, last urine output:
<b>MS:</b> joint pain, joint swelling, bone pain, muscle pain, decreased mobility
<b>SKIN:</b> itching, dry skin, erythema, warmth, rashes, lesions, skin changes
<b>NEURO:</b> numbness, tingling, strength changes, tremors, loss of balance
<b>PSYCH:</b> anxiety, depression, SI/HI.      Able to cope with stress? Y/N      Desire Mental Health? Y/N

Objective							
Vital signs							
Time:	BP:	P:	R:	T: Oral/Rectal	HT: Stated N / Y	WT: Stated N / Y BMI:	SPO2:
<b>ORTHOSTATIC Vital Signs:</b>	<b>Laying:</b> Time:	<b>Sitting:</b> Time:	<b>Standing:</b> Time:	<b>Vision: Uncorrected</b>	Left Eye:	Right Eye:	Both Eyes:
BP				<b>Vision: Corrected</b>	Left Eye:	Right Eye:	Both Eyes:
Pulse:							
General							
General Overall Appearance of Patient				WDWN, NAD, AOX3, Appears: _____			
Integumentary							
Full skin exam for diffuse complaints. Limited exam for small, confined areas.				Size, distribution, color, shape, (macule, papule, pustule, etc), location, and secondary findings (crust, scale, exudates, etc)			
Head							
Inspect head/hair/scalp				Normocephalic with even hair distribution; no masses or swelling			
Palpate head/hair/scalp				Hair texture is normal without infestations; scalp has no scaling or lesions. Mastoid is non-tender and without discoloration bilaterally.			
Inspect, palpate and perform ROM of TMJ (Open, close, side to side, forward, back)				TMJ non-tender and without swelling bilaterally. No pain, popping or locking with ROM bilaterally.			
CN V (Clench teeth-temporalis/masseter)				Able to clench teeth with temporalis and masseter muscles CN V intact			
CN VII (Raise eyebrows, frown, close eyes and attempt to open with resistance, show teeth, smile and puff out cheeks)				Able to smile, raise eyebrows, show teeth, frown, puff out cheeks, and keep eyes closed with resistance CN VII intact			
Eyes							
Inspect eyes, brows, lashes and lids				No exophthalmos, ptosis, periorbital discoloration, edema, or skin lesions of eye, brows, lashes or lids bilaterally.			
Inspect conjunctiva and sclera				No injection, icterus, lesions, edema or foreign bodies of conjunctiva or sclera bilaterally.			
Inspect and palpate lacrimal duct				No swelling and no regurgitation of lacrimal ducts bilaterally.			
Evaluate visual fields by confrontation				Visual fields are full and equal to examiner bilaterally, CN II intact			
Check extraocular movement and lid lag				EOMs intact and equal without nystagmus, no lid lag bilaterally			
Assess for pupillary reaction to convergence and accommodation				Eyes converge equally and pupils constrict with near focus bilaterally			
Evaluate position and alignment of eyes (cover/uncover and Hirschberg)				No strabismus observed with cover/uncover and Hirschberg test bilaterally			
Inspect iris and pupillary reaction to light (direct and consensual)				Pupils are equal, round, and reactive to light and accommodation bilaterally (PERRLA), CN III, IV and VI intact			
Anterior chamber depth				No crescent shadow bilaterally			
Eyes: Fundoscopic Examination							
Inspect for red reflex				Red reflex present bilaterally			
Inspect clarity of cornea, anterior chamber, lens, and vitreous				Cornea, anterior chamber, lens, and vitreous are clear without opacities, haze or encroachments bilaterally.			
Inspect optic disc				Disc color is_____, margins are sharp, and cup-to-disc ratio is 1:2 bilaterally.			
Inspect retinal vessels				AV ratio is 2:3 without nicking or spasms bilaterally			
Inspect fundus				There are no hemorrhages or exudates of the fundus bilaterally			
Inspect macula (have pt look into light)				No lesions on macula bilaterally			
Ears							
Inspect/Palpate auricles and tragus				Auricles and Tragus are without lesion or discoloration and are non-tender bilaterally			
Inspect external auditory canals				EAC without swelling, redness, or obstruction bilaterally			
Inspect general appearance of TMs				TMs are pearly gray and translucent; light reflex is ant-inf. quadrant; pars tensa, pars flaccida, umbo, handle of malleus visualized and undistorted bilaterally			
Inspect for fluid in middle ear				No fluid behind TM bilaterally			



Nose and Sinuses		
Inspect/palpate nose		Inspect for lesions or tenderness
Check patency of nares		Nasal passageways are patent bilaterally
Discrimination of odors		Able to discriminate between odors, CN I intact
Inspect septum, turbinates, and floor of nasal cavity		mucosa is pink and moist without lesions; septum is without perforations; Unable to visualize superior turbinate, middle, inferior turbinates without polyps, edema, exudates or discharge bilaterally
Palpate and percuss paranasal sinuses		No maxillary or frontal sinus tenderness bilaterally
Mouth and Throat		
Inspect lips, oropharyngeal mucosa, gingiva		Lips are pink, mucosa moist without lesions, swelling or discoloration
Inspect tonsils and uvula		Tonsils are [grade size] and equal with midline uvula; no exudates or lesions
Inspect tongue surface		No discoloration or lesions of the tongue
Inspect Stensen's/Wharton's ducts		No stones or obstructions in Stenson's/Wharton's ducts bilaterally
Perform bimanual exam (Palpate lips, tongue, gingival and buccal mucosa)		Lips, tongue, gingival, and buccal mucosa without edema, masses, or lesions
Tongue midline/move side to side		Tongue is midline and able to move side to side, CN XII intact
Inspect and percuss teeth		Teeth are in good repair and nontender
Uvula rises with phonation/gag reflex		Uvula rises with phonation and gag reflex is present, CN IX, CN X intact
Neck		
Inspect skin of neck		Neck is without lesions, swelling, discoloration and musculature is symmetrical
Inspect for trachea position/mobility		Trachea is midline and mobile
Palpate lymph nodes of neck and head		No lymphadenopathy/tenderness of the occipital, pre and postauricular, submental, submandibular, tonsillar, superficial cervical, deep cervical, posterior cervical, supra and infraclavicular lymph nodes bilaterally
Inspect and palpate thyroid gland		Thyroid is normal size, shape, and consistency without nodules or tenderness
Test active ROM of neck (flexion, extension, lateral bending, rotation)		Neck has full active ROM without pain with flexion/ extension/ righ and left lateral bending, and right and left rotation
Strength testing (rotation and shoulder shrug)		Head rotation and shoulder shrug strength_/5 bilaterally, CN XI intact
Basic Respiratory and Cardio exam: List separate as Resp and Cardio		
Auscultate anterior/posterior Chest LUL / LLL / RUL / RML / RLL		A/P chest is CTAB without adventitious sounds
Auscultate with diaphragm/bell at 4 valvular locations and left 3 <sup>rd</sup> ICS		RRR without M/R
Respiratory		
Inspect anterior/posterior chest		A/P chest is symmetric without lesions, cyanosis, or deformities A/P diameter is less than lateral diameter
Palpate anterior/posterior chest		A/P chest without masses, crepitus, or tenderness, symmetric expansion with inspiration
Palpate for tactile fremitus		A/P tactile fremitus equal in all fields
Percuss lung fields		A/P resonant with no areas of dullness
Auscultate lung fields		A/P CTAB with no adventitious sounds. No egophony, bronchophony or whispered pectoriloquy of the A/P chest
Cardiovascular		
Inspect chest		No lifts or heaves, PMI non-displaced
Palpate precordium for vibrations/thrills		No vibrations/thrills
Auscultate with diaphragm/bell at 4 valvular locations and left 3 <sup>rd</sup> ICS		RRR without M/R/G, no fixed splits
Auscultate for aortic regurgitation		No murmur of aortic regurgitation
Palpate peripheral pulses		Carotid, brachial, radial, ulnar, femoral, popliteal, dorsalis pedis, and posterior tibialis pulses are graded____bilaterally
Inspect nail beds and cap refill		No cyanosis/clubbing/Edema of fingers/toes. Cap refill less than 2 seconds
Palpate abdominal aorta		Abdominal aorta is ____cm without lateral pulsations

Check tibial edema/skin temp		No tibial edema bilaterally, skin temp is warm bilaterally
Auscultate/Palpate bruits		No carotid, aortic, renal, iliac, or femoral bruits bilaterally
<b>Abdomen</b>		
Inspect abdomen		No discoloration, lesions, or scars. Contour is ____ with visible aortic pulsations
Auscultate 4 quadrants and epigastrium		NABS in the 4 abdominal quadrants and epigastrium
Percuss 4 quadrants, epigastrium, and bladder		No discomfort or large areas of dullness with percussion in the 4 abdominal quadrants. No dullness to percussion in the stomach or bladder
Percuss liver size		Liver size estimated at ____ cm at R MCL
Percuss spleen size		No areas of dullness with percussion anterior to midaxillary line, no change in tympani with inspiration
Palpate 4 quadrants		No tenderness, guarding, or rigidity in all 4 quadrants with light palpation. No masses or rebound tenderness with deep palpation
Palpate liver edge		Liver edge is smooth and nontender
Palpate for spleen enlargement		Spleen is nontender and not enlarged
Psoas sign (resisted R hip flexion)		Negative Psoas
Obturator sign (passive flexion/internal rotation of right hip)		Negative Obturator
Percuss for CVA tenderness		No CVA tenderness
<b>Shoulder/Upper Arm</b>		
Inspect		Shoulders/upper arms symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, boney enlargements or masses of the shoulders/upper Arms bilaterally
ROM		Full active ROM of the shoulder without pain with flexion, extension, abduction, adduction, internal rotation, and external rotation bilaterally
Strength		Shoulder strength is /5 with flexion, extension, abduction, and adduction bilaterally
Neer Impingement Sign		Neer Impingement Sign Negative
Hawkins Impingement Sign		Hawkins Impingement Sign Negative
Supraspinatus (Jobe) Test		Supraspinatus (Jobe) Test Negative
Subscapularis Liftoff Test		Subscapularis Liftoff Test Negative
Sulcus Sign		Sulcus Sign Negative
Apprehension Test		Apprehension Test Negative
Relocation Test		Relocation Test Negative
Passive Cross-Chest Adduction Test		Passive Cross-Chest Adduction Test Negative
Speed's Test		Speed's Test Negative
O'Brien's Test		O'Brien's Test Negative
<b>Elbow/Lower Arm</b>		
Inspect		Elbows/lower arms symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, boney enlargements or masses of the elbows/lower arms bilaterally
ROM		Full active ROM of the elbow without pain with flexion, extension, supination, and pronation bilaterally
Strength		Elbow strength is /5 with flexion and extension bilaterally
Ulnar Nerve Compression Test		Ulnar Nerve Compression Test negative
Resisted Wrist Extension		Resisted Wrist Extension negative
Resisted Wrist Flexion		Resisted Wrist Flexion negative
<b>Wrist</b>		
Inspect		Wrists symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, boney enlargements or masses of the wrists bilaterally
ROM		Full active ROM of the wrists without pain with flexion, extension, abduction, and adduction bilaterally
Strength		Wrist strength is /5 with flexion and extension bilaterally
Carpal tunnel compression test		Carpal tunnel compression test negative

Phalen's Test		Phalen's Test negative
Finkelstein's Test		Finkelstein's Test negative
<b>Hand/Fingers</b>		
Inspect		Hands and fingers symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, bony enlargements or masses of the hands and fingers bilaterally
ROM		Full active ROM of the hands/fingers without pain with flexion and extension bilaterally
Strength		Hand/finger strength is /5 with grip strength, thumb opposition, and finger abduction bilaterally
Flexor Digitorum Profundus/Flexor Pollicis Longus Test		Flexor Digitorum Profundus/Flexor Pollicis Longus Test negative
Flexor Digitorum Superficialis Test		Flexor Digitorum Superficialis Test negative
Thumb Ulnar Collateral Ligament Instability Test		Thumb Ulnar Collateral Ligament Instability Test negative
<b>Hip/Thigh</b>		
Inspect		Hips/thighs symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, bony enlargements or masses of the hips/thighs bilaterally
ROM		Full active ROM of the hip without pain with flexion, extension, abduction, adduction, internal rotation, and external rotation bilaterally
Strength		Hip strength is /5 with flexion, extension, abduction, and adduction bilaterally
Ober's Test		Ober's Test negative
Piriformis Test		Piriformis Test negative
Patrick's Test (FABER)		Patrick's Test (FABER) negative
<b>Knee</b>		
Inspect		Knees symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, bony enlargements or masses of the Knees bilaterally
ROM		Full active ROM of the Knees without pain with flexion and extension bilaterally
Strength		Knee strength is /5 with flexion and extension bilaterally
Patellar Apprehension Test		Patellar Apprehension Test negative
Passive Patellar Grind Test		Passive Patellar Grind Test negative
Lachman's Test		Lachman's Test negative
Valgus/Varus Stress Test		MCL/LCL without laxity
Anterior/Posterior Drawer Test		Drawer sign negative, ACL/PCL without laxity
Apley's Compression Test		Apley's negative
<b>Ankle/Lower Leg</b>		
Inspect		Ankles/lower legs symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, bony enlargements or masses of the ankles/lower legs bilaterally
ROM		Full active ROM of the ankles without pain with dorsiflexion, plantar flexion, inversion, and eversion bilaterally
Strength		Ankle strength is /5 with dorsiflexion and plantar flexion bilaterally
Thompson Test		Thompson Test negative
Anterior Drawer Test		Anterior Drawer Test negative
<b>Feet/Toes</b>		
Inspect		Feet and toes symmetrically aligned without scars, atrophy, deformities, fasciculations, or tremors bilaterally
Palpate		No soft tissue swelling, tenderness, bony enlargements or masses of the feet and toes bilaterally
ROM		Full passive ROM of the forefoot without pain with inversion and eversion bilaterally

		Full active ROM of the toes without pain with flexion and extension bilaterally
Strength		Great toe strength is $\geq 5$ with flexion and extension bilaterally
Morton's Test		Morton's Test negative
<b>C/T/L Spine</b>		
Inspect		No deformity of the spine; scapulae, shoulder, and iliac height are symmetrically aligned without atrophy, swelling, or discoloration
Palpate		No step-off deformity or tenderness of spinous processes; no swelling, heat or tenderness of soft tissues
ROM		Full active ROM of the C/T/L spine without pain with flexion, extension, right/left lateral bending, and right/left rotation
Straight leg raise		No radicular pain with straight leg raise bilaterally
<b>Neurologic</b>		
<b>Cranial Nerves</b>		
	CN I through XII intact (only documentation required if no discrepancies)	
CN I		Able to discriminate between odors, CN I intact
CN II		Visual acuity checked; Visual fields are full and equal to examiner bilaterally, CN II intact
CN III, IV, VI		EOMs intact and equal without nystagmus, no lid lag bilaterally. Pupils are equal, round, and reactive to light and accommodation bilaterally (PERRLA), CN III, IV and VI intact
CN V		Able to clench teeth with temporalis and masseter muscles; no deficit with pain or tactile stimulation on the face, CN V intact
CN VII		Able to smile, raise eyebrows, show teeth, frown, puff out cheeks, and keep eyes closed with resistance, CN VII intact
CN VIII		No deficit with whisper test, CN VIII Intact; Weber equal bilaterally; Rinne AC>BC bilaterally
CN IX, X		Uvula rises with phonation and gag reflex is present, CN IX, CN X intact
CN XI		Head rotation and shoulder shrug strength $\geq 5$ bilaterally, CN XI intact
CN XII		Tongue is midline and able to move side to side, CN XII intact
<b>Sensory System</b>		
Sharp vs. dull tactile stimulation and light touch		No deficit with pain and tactile stimulation of the face, upper extremity, trunk, and lower extremity, to include the 1st, 3rd, and 5th digits bilaterally
Test vibratory sense		No deficit with vibratory stimulation of the thumb and great toe bilaterally
Test position sense		No deficit with proprioception of the thumb and great toe bilaterally
Test stereognosis		Correct interpretation of stereognosis bilaterally
<b>Reflexes</b>		
Extremities		Bicep, tricep, brachioradialis, patellar, and achilles reflexes are ____ bilaterally
Plantar (Babinski) reflex		Toes curl down with Babinski test bilaterally
Clonus		No clonus of the ankle bilaterally
<b>Strength</b>		
Shoulder		Shoulder strength is $\geq 5$ with flexion, extension, abduction, and adduction bilaterally
Elbow		Elbow strength is $\geq 5$ with flexion and extension bilaterally
Wrist		Wrist strength is $\geq 5$ with flexion and extension bilaterally
Hand/Finger		Hand/finger strength is $\geq 5$ with grip strength, thumb opposition, and finger abduction bilaterally
Hip		Hip strength is $\geq 5$ with flexion, extension, abduction, and adduction bilaterally
Knee		Knee strength is $\geq 5$ with flexion and extension bilaterally
Ankle		Ankle strength is $\geq 5$ with dorsiflexion and plantar flexion bilaterally
Great Toe		Great toe strength is $\geq 5$ with flexion and extension bilaterally
<b>Cerebellar</b>		
Heel-to-shin and finger to nose		Point to point testing of the upper and lower extremities smooth and accurate bilaterally
RAM		RAM of the upper and lower extremities quick, smooth, rhythmic and symmetrical bilaterally

Gaits		Normal, heel, toe, heel to toe, and shallow knee bend gaits balanced and coordinated without weakness or hesitation bilaterally
Romberg and Pronator drift		Maintains balance with eyes closed with Romberg test; no pronator drift
<b>Male GU</b>		
Inspect		The pubic area is (shaved/normal adult hair distribution) without lesions, infestations, pustules, inflammation. The penis is (circumcised/uncircumcised), dorsal vein present, no ulcerations, warts, scars or cysts; the scrotum is without ulcers, warts or swelling bilaterally.
Palpate		Penis is non-tender, urethral opening at tip; no discharge. Scrotum is without swelling, pain or cysts bilaterally. Testes are smooth and non-tender; epididymis and vas without nodules, swelling or tenderness bilaterally.
Hernias		No abdominal, femoral or inguinal hernias bilaterally
<b>Rectal Exam</b>		
Inspect		Anus without external hemorrhoids, prolapsed rectum, fissures, lumps, rashes, scars, inflammation, excoriation or pilonidal dimpling
Palpate anus		Anus without tenderness, heat or induration; sphincter tone intact
Palpate rectal wall		Rectum is smooth without masses, ulcers, tenderness, polyps and hemorrhoids
Palpate prostate		Prostate is (firm/boggy), (smooth/nodular), (non-tender/tender); median sulcus palpated and midline
<b>Breast Exam</b>		
Inspection		Breasts are normal shape, color, texture, and are symmetric bilaterally. No lesions, dimpling, or venous patterns bilaterally. Nipples are (retracted/normal) bilaterally.
Palpate		Breast tissue is without cysts, masses, or areas of tenderness bilaterally; skin temperature and texture are normal bilaterally. Nipples are without discharge bilaterally.
Lymph nodes		No clavicular or axillary lymphadenopathy
<b>Gynecological Exam</b>		
Inspect external genitalia		The pubic area is (shaved/normal adult hair distribution). Mons, labia majora, labia minora, clitoris, urethra, introitus, bartholins/skene's glands, perineum, and anus are without lesions, swelling, excoriations, discharge, infestations, or signs of trauma.
Palpate external genitalia		Labia majora, labia minora, bartholin's/skene's glands, and urethra are without masses, tenderness or discharge
Vagina		Vaginal walls are pink without lesions or discharge
Cervix		Cervix is _____(color), pointing (midline, anterior, posterior), and (nulliparous/multiparous) without discharge. Squamocolumnar junction is visible.
Bimanual exam		Vaginal walls are without masses or tenderness. Cervix palpated without cervical motion tenderness. Fundus is (palpable/nonpalpable), without tenderness, masses, or enlargement. Adnexa is without pain or masses bilaterally.

Interventions						
Vitals						
Time:	BP:	P:	R:	T:	SpO2	RA/O2
Time:	BP:	P:	R:	T:	SpO2	RA/O2
Time:	BP:	P:	R:	T:	SpO2	RA/O2
Peak Flow						
Peak Flow:			Peak Flow:			
Time:			Time:			
O2						
Time:	Mask:	NRB/SFM/NC/Neb	LPM:	Pt tolerate: Y/N		
Time:	Mask:	NRB/SFM/NC/Neb	LPM:	Pt tolerate: Y/N		
IV Therapy						
Time:	Gauge: Lot #	Site:	# Attempts:	Solution: Lot #	Rate:	Volume Infused:
Time:	Gauge: Lot #	Site:	# Attempts:	Solution: Lot #	Rate:	Volume Infused:
Time:	Gauge: Lot #	Site:	# Attempts:	Solution: Lot #	Rate:	Volume Infused:
Medication						
Time:	Medication:	Dose:	Route:	Pt Tolerate: Y/N	Effect:	
Time:	Medication:	Dose:	Route:	Pt Tolerate: Y/N	Effect:	
Time:	Medication:	Dose:	Route:	Pt Tolerate: Y/N	Effect:	
Labs						
Time:	Name:	Result:	Time:	Name:	Result:	
Time:	Name:	Result:	Time:	Name:	Result:	
Radiology						
Time:	Name:	Impression:				
Time:	Name:	Impression:				
Procedures						
Time:	Name:	Indication:	Consent: Y/N	Complications:	Pt Tolerate: Y/N	
Time:	Name:	Indication:	Consent: Y/N	Complications:	Pt Tolerate: Y/N	

Assessment		
DX 1:	DX 2:	DX 3:
Plan		
DX 1:		
RX:		
RX:		
Education:		
F/U:		
DX 2:		
RX:		
RX:		
Education:		
F/U:		
DX 3:		
RX:		
RX:		
Education:		
F/U:		

**Attachment 7:**  
**IDMT PRESCRIPTION INFORMATION**

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**REQUIREMENTS:**

1. Name of medication: List all drug components for combo drugs (i.e Mucinex-D)
2. Strength of medication: List all strengths for combo drugs (i.e. 600/60)
3. # of tablets/capsules/suppositories/etc per dose
4. Route of administration
5. # doses per day/dosing interval
6. Medical indication: reason for taking medication
7. # tablets/capsules/suppositories dispensed
8. Any refills
9. Maximum dosage: maximum allowed tablets/capsules/suppositories to be used in a 24-hour period
10. Any special instructions *if indicated*

*1-9 are absolute requirements to obtain a satisfactory grade*

**EXAMPLES:**

Motrin 800mg- take one tab (tablet) po (orally) TID (three times daily) prn (as needed) for pain/inflammation. #30/— refills. Do not take more than three tabs in a 24-hour period. Take with food to avoid GI upset.

Allegra 180mg- take one tab po daily for allergies. #30/— refills. Do not take one than one tab in a 24-hour period.

Zantac 150mg- take one tab po BID (twice daily) for GERD. #60/— refills. Do not take more than 2 tabs in a 24-hour period.

Mucinex-D (guaifenesin/pseudoephedrine) 600mg/60mg- take one tab po BID for cough and congestion. #60/— refills. Do not take more than 2 tabs in a 24-hour period.



Attachment 8  
**IDMT EKG REFERENCE GUIDE**

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1. RATE

2. RHYTHM

3. WAVES and INTERVALS

- a. P Wave
- b. PR Interval
- c. QRS Complex
- d. QT Interval

4. AXIS

5. HYPERTROPHY

6. INFARCTION SIGNS

- a. ST Interval
- b. Q Waves
- c. T Waves

## ANALYZING EKGs

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### Rate:

- Use the Triplicate Method to determine the rate
  - Count the lines: 300, 150, 100, 75, 60, 50

### Rhythm:

- Determine if the rate is regular or irregular
  - Measure the distance between the R-R interval of the QRS complex

### Waves and Intervals:

- P Wave:
  - Determine if P waves are present
  - Determine if each P wave precedes each QRS complex
  - Determine if the P waves look similar or different from each other
- PR Interval:
  - Determine if the PR interval is normal or widened
    - Normal PR Interval: less than 0.2 seconds (1 large square)
- QRS Complex:
  - Determine if the interval is widened
    - A normal (narrow) QRS: less than three small squares (0.12 seconds)
  - Determine if there are any bundle branch blocks (BBBs)
- QT Interval:
  - Determine the QTc

### Axis:

- Determine the axis by looking at the deflections of Lead I and Lead AVF

### Hypertrophy:

- Determine if LVH is present
  - Hypertrophy is present if the depth in the S wave in lead V1 + the depth of the R wave in V5 is greater than 35mm

### Infarction Signs:

- ST Interval:
  - Determine if the ST interval is elevated or depressed
- Q Waves:
  - Determine if any Q waves are present
    - Significant Q wave is at least one small square wide (0.04 sec) or is 1/3 or more the amplitude of the entire QRS complex
- T Waves:
  - Determine if there are any new inverted T waves, especially in leads V2-V6

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