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Introduction

This is the 4th version of the JSOM training supplement. The guidelines contained in this supplement are reviewed and compiled annually by a combined group of SOF physicians, ATPs, SOF medical personnel from all of the SOCOM component branches, and civilian medical personnel. The Tactical Medical Emergency Protocols (TMEPS) and Recommended Drug List (RDL) were created, reviewed, and approved for use by the Advanced Tactical Practitioner (ATP).

We can also send any of these products to you as a PDF file. Just request whatever you want via an email to: atp@socom.mil. Please send us CONSTRUCTIVE comments and recommendations as well. We are always looking for a good idea or a better way to ensure you have the latest greatest of information.

LTC Doug McDowell
USSOCOM Chief of Medical Education and Training

U.S. SPECIAL OPERATIONS COMMAND

TACTICAL MEDICAL EMERGENCY PROTOCOLS

For SPECIAL OPERATIONS ADVANCED TACTICAL PRACTITIONERS (ATPs)

January 1, 2010

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PREFACE

Management of medical emergencies is best accomplished by appropriately trained physicians in an Emergency Department setting. Special Operations Combat Medics (SOCMs), however, may often find themselves in austere tactical environments where evacuation of a teammate to an MTF for a medical emergency would entail either significant delays to treatment or compromise the unit's mission. Although SOCM trained medics are not routinely authorized by the services to treat non-traumatic emergencies, in many SOF situations, training SOCMs to treat at least some medical emergencies may result in both improved outcome for the individual and an improved probability of mission success. The disorders chosen have one of the following properties in common: they are relatively common; they are acute in onset; the SOCM is able to provide at least initial therapy that may favorably alter the eventual outcome; and the condition is either life-threatening or could adversely affect the mission readiness of the SOF operator.

The Protocols outlined in the following pages carry the following assumptions:

A. **The SOCM medic is in an austere environment where a medical treatment facility or a unit sick call capability is not available. If a medical treatment facility or a medic authorized to treat patients independently is available, then the patient should be seen in those settings rather than by a SOCM medic.**
B. Immediate evacuation may not be possible and, even if it is, may still entail significant delays to definitive treatment. The medical problem may worsen significantly if treatment is delayed.
C. The SOCM will contact a consulting physician as soon as feasible.
D. SOCM treatment will be done under the appropriate Protocol.
E. **Medication regimens are designed to minimize the number of medications the SOCMs are required to learn and carry. Medications have been used for multiple conditions when feasible without compromising care.**
F. Appropriate documentation of diagnosis and treatment rendered in the patient's medical record will be accomplished when the unit returns to forward operating base.
G. Note these Protocols are not designed to allow SOCM medics to conduct Medical/ Civic Action (MEDCAP) missions independently.
H. Evacuation recommendations are based on the appropriate therapy per Protocol being initiated on diagnosis.
I. The definitions of Urgent, Priority, and Routine evacuations are based on the times found in Joint Publication 4-02.2 of 2, 4, and 24 hours respectively.
J. For any infection, limit contact and use universal precautions.

Changes for 2007:
A. The changes in the combat pill pack (Moxifloxacin (Avelox) and meloxicam), as recommended by the Committee on Tactical Combat Casualty Care (CoTCCC), have been changed in the TME Protocols. (2007)
B. The Fentanyl oral dosage of 800 mcg, as recommended by the CoTCCC has been incorporated into the Pain Protocol. (2007)
C. The change in the IV antibiotics has also been changed to reflect medication availability.
D. When possible, alternate antibiotics or anti-emetics have been listed.

Changes for 2008:
A. The Cellulitis and Cutaneous Abscess Protocols were combined.
B. An Altitude Illness Protocol was created, combining AMS, HACE, and HAPE.
C. The Chest Pain was expanded to provide more guidance.
D. The following new protocols were added: Determination of Death and Envenomation.
E. The following medication changes were made: the use of Zithromax was decreased; Keflex, Quinine, Doxycycline and Corticosporin Otic were removed.
F. The following medications were added: Amoxicillin/Clavulanic Acid (Augmentin), Rabeprazole (Aciphex), Septra DS, Salmeterol (Serevent), Rifampin, Toradol, and Benadryl Quikstrips.
G. The Meningitis Disposition typo error from 2007 was corrected.
H. Modifications were made to most of the TMEPS with respect to further refinement in recommendations.
I. The "Clinical Pearls" section was added.

Changes for 2009:

A. Crush Protocol added
B. Blast Protocol added
C. MACE added
D. Traumatic Brain Injury – Mild (mTBI) Protocol added
E. Bronchitis/Pneumonia: Disposition changed.
F. Flank Pain: antibiotics modified (order of preference)
G. Joint Infection: antibiotics modified (order of preference)
H. Spontaneous Pneumothorax: indications for tube thoracostomy added
I. Urinary Tract Infections: antibiotics modified
J. Drugs added: Calcium Chloride, Calcium Gluconate, Sodium Bicarbonate, Mannitol
K. HIV PEP Protocol updated with new medications added: Atripla, Truvada, Viread, Kaletra
L. Behavioral Changes Protocol changed and midazolam (Versed) added.
M. Seizure Protocol changed and midazolam (Versed) added.

Changes for 2010:

A. K-9 Protocols added
B. Drugs added: tadalafi (Cialis), sildenafil (Viagra)
C. Altitude Illness changed to add tadalafi (Cialis) and sildenafil (Viagra)

Don't Forget…
(Clinical Pearls)

When IV route is recommended, but not obtainable, consider IO, IM, or PO unless contraindicated.

Currently available SL medication formulations include: Benadryl Quikstrips, Sudafed PE SL, Zofran ODT.

If crystalloids (normal saline or lactated Ringer's) are recommended but not available, substitute Hextend or Hespan if available.

DO NOT give epinephrine IV **unless given under the ACLS protocols**

All IV medications may be given slow IV push with the exception of antibiotics which should be in a drip, unless otherwise specified.

Remember to document dose and time of all medications so the receiving facility may be informed.

Do not use local anesthetic with epinephrine on the ears, nose, digits, and penis.

When oxygen is called for in the Protocols, the authors realize that it is recommended, but may not be available.

Due to the high level of physical fitness of SOF personnel, there may be a prolonged period of mental lucidity and apparent stable vital signs despite a severe injury. Treat the injury, not the Operator!

Medical Documentation (SOAP note): In order to ensure proper care and medical information transfer during patient treatment a standardize format for medical documentation is required. The standard format is the SOAP note (Subjective, Objective, Assessment, and Plan).

> Subjective: In the patient's own words, describe the chief complaint. At a minimum you need to include the OPQRST (Onset, Palliative or Provocative, Quality, Radiation, Severity, and Timeline of symptoms). AMPLE (Allergies, Medication, Past Medical and Surgical history, Last meal, and Events leading up to this condition) history is also included in this section
>
> Objective: Vital signs and physical examination findings. At a minimum you need to document pertinent positives and negatives, and measurements of injuries or lesions. Be as detailed as possible.
>
> Assessment: A brief summary of your medical decision making to include what you think it is and what it is not. Include your differential diagnosis list in this section.
>
> Plan: Your course of treatment to include any medications, additional studies, consultation, rehabilitation, evacuation category, and disposition of the patient.

ABDOMINAL PAIN

SPECIAL CONSIDERATIONS:
1. Common causes in young healthy adults include appendicitis, cholecystitis, pancreatitis, perforated ulcer, and diverticulitis.
2. Consider constipation/ fecal impaction as a potential cause of abdominal pain.

SIGNS AND SYMPTOMS SUGGESTIVE FOR CONTINUED OBSERVATION:
1. Epigastric burning pain
2. Present bowel sounds
3. Nausea and/ or vomiting
4. Absence of rebound tenderness
5. If diarrhea is present, treat per *Gastroenteritis Protocol.*

MANAGEMENT:
1. Antacid of choice
2. Ranitidine (Zantac) 150mg PO bid **OR** Rabeprazole (Aciphex) 20mg PO qd **OR** Proton Pump Inhibitor of choice
3. PO hydration

DISPOSITION:
1. Observation and re-evaluation.
2. *Priority* evacuation if symptoms not controlled by this management within 12 hours.

SIGNS AND SYMPTOMS SUGGESTIVE FOR URGENT EVACUATION:
1. Severe, persistent, or worsening abdominal pain is the key sign.
2. Rigid abdomen
3. Rebound abdominal tenderness
4. Fever
5. Absence of bowel sounds
6. Focal percussive tenderness
7. Uncontrollable vomiting
8. Presence of bloody vomitus or stools
9. Presence of black tarry stools
10. Presence of coffee ground vomitus

MANAGEMENT:
1. Start IV with normal saline (NS), 1 liter bolus, followed by NS 150cc/hr. Keep NPO except for medications or PO hydration.
2. Ertapenem (Invanz) 1gm IV qd
3. **OR** Ceftriaxone (Rocephin) 1gm IV qd. plus Metronidazole (Flagyl) 500mg PO q 8h
4. Treat per *Pain Protocol*
5. Treat per *Nausea and Vomiting Protocol*

DISPOSITION: *Urgent* evacuation to a surgical facility.

ALLERGIC RHINITIS/ HAY FEVER/ COLD-LIKE SYMPTOMS

SPECIAL CONSIDERATIONS:
History of allergies to cedar, mold, pollen, etc. Consider long term therapy with non-sedating antihistamine (Zyrtec).

SIGNS AND SYMPTOMS:
1. Clear nasal drainage
2. Pale, boggy, or inflamed nasal mucosa
3. With or without complaints of nasal congestion
4. Watery or red eyes
5. Sneezing
6. Normal temperature

MANAGEMENT:

1. Pseudoephedrine (Sudafed) 60mg PO q 4 – 6h
2. Diphenhydramine (Benadryl) 25 – 50mg PO q 6h if tactically feasible (Drowsiness is a side-effect.)
3. Increase oral fluid intake.

DISPOSITION:
None applicable

ALTITUDE ILLNESS

SPECIAL CONSIDERATIONS

ACUTE MOUNTAIN SICKNESS (AMS)

1. Usually occurs at altitudes of 8,000ft. and higher.
2. Consider pretreatment with acetazolamide (Diamox) 250mg bid, when rapid ascent to altitudes above 8,000ft. may occur.
3. Symptoms may occur as quickly as 3 hours after ascent.
4. Can avoid onset by limiting initial ascent to no higher than 8,000ft., then 1,000ft. per day thereafter. The key to prevention is slow, gradual ascent.

HIGH ALTITUDE CEREBRAL EDEMA (HACE)

1. Rare below 11,500ft.
2. Headache is common at altitude. Ataxia and altered mental status at altitude are HACE until proven otherwise.

HIGH ALTITUDE PULMONARY EDEMA (HAPE)

1. Caused by the hypoxia of altitude, HAPE is the most common cause of death from altitude illness.
2. Usually occurs above 8,000ft. Respiratory distress at high altitude is HAPE until proven otherwise.
3. Nifedipine (Procardia), acetazolamide (Diamox), sildenafil (Viagra), tadalafil (Cialis), salmeterol (Serevent), and albuterol (Proventil) may be used (individually or in combination) prophylactically in personnel who have a history of previous HAPE and are required to operate at altitude.

HACE AND HAPE MAY COEXIST IN THE SAME PATIENT!

SIGNS AND SYMPTOMS:

1. AMS is generally benign and self-limiting, but symptoms may become debilitating. Worsening condition should prompt consideration of a more life-threatening condition (HAPE or HACE).
   A. AMS: Diagnosis is made in presence of headache **AND** one or more of the following: anorexia, nausea, vomiting, insomnia, dizziness, lassitude, or fatigue.
   B. No correlation with fitness level (likely genetic predisposition)
2. HACE: Unsteady, wide, and unbalanced (ataxic) gait and altered mental status are hallmark signs.
3. HAPE: Dyspnea at rest is the hallmark signs. Other symptoms may include cough, crackles upon auscultation, tachypnea, tachycardia, fever, central cyanosis, or low oxygen saturation disproportionate to the elevation level.

MANAGEMENT:

1. Halt ascent. Immediately descend at least 1,500ft for HACE, HAPE, or refractory AMS if tactically feasible.

2. **IF AMS SYMPTOMS PRESENT**

   A. Acetazolamide (Diamox) 250mg PO bid **UNLESS PATIENT IS ALLERGIC TO SULFA** or is already taking as prophylaxis.

   B. Dexamethasone (Decadron) 4mg PO q 6h if patient is allergic to sulfa.

   WARNING If Dexamethasone (Decadron) is administered, no further ascent until asymptomatic for 24 hours after last Dexamethasone dose.

3. **IF HACE SYMPTOMS PRESENT: ATAXIA OR ALTERED MENTAL STATUS**

   A. Dexamethasone (Decadron) 10mg IV/ IM STAT, then 4mg IV / IM q 6h

B. Individuals with HACE should not be left alone and especially not be allowed to descend alone.
C. Administer supplemental oxygen, if available.

4. **IF HAPE SYMPTOMS PRESENT: SHORTNESS OF BREATH AT REST**

A. Nifedipine (Procardia) 10mg PO / SL STAT; then 20mg q 6h if blood pressure is stable, or sildenafil (Viagra) 50mg q 8h, or tadalifil (Cialis) 10mg q 12h.

B. Do not use in HACE; the drop in blood pressure will worsen the symptoms of this disease.

C. Administer supplemental oxygen, if available.

D. Consider Salmeterol (Serevent) 2 inhalations q 12h **OR** albuterol (Ventolin) 2 inhalations q 6h

E. Minimize patient exertion during descent for HAPE since this will exacerbate symptoms.

5. Treat per *Pain Management Protocol,* but avoid the use of narcotics since they may depress respiratory drive and worsen high altitude illness.

6. Treat per *Nausea and Vomiting Protocol*

7. For signs or symptoms of either HAPE or HACE, if immediate descent is not tactically feasible and a GAMOW bag is available, use a GAMOW bag in 1 hour treatment sessions with bag inflated to a pressure of 2 psi (approximately 100mmHg) above ambient pressure. Four or five sessions are typical for effective treatment. **GAMOW BAG TREATMENT IS NOT A SUBSTITUTE FOR DESCENT.**

8. Treat per *Dehydration Protocol.*

DISPOSITION:
1. Most cases of AMS are relatively mild, resolve in 2 - 3 days, and do not require evacuation.
2. Avoid vigorous activity for 3 - 5 days.
3. *Priority* evacuation for AMS patients that worsen despite therapy.
4. *Urgent* evacuation for patients with suspected HACE or HAPE.
5. Individuals who have recovered from HACE or HAPE should not re-ascend without medical officer clearance.

ANAPHYLACTIC REACTION

SPECIAL CONSIDERATIONS:
1. Acute, widely distributed form of shock which occurs within minutes of exposure to an allergen.
2. Primary causes include insect envenomation, medications, and food allergies.
3. Death can result from airway compromise, inability to ventilate, or cardiovascular collapse.
4. The Medic's responsibility is to know if members in the unit have such a condition. Moreover, the medic must also ensure that the member has some sort of anaphylaxis kit and is trained to use it.
5. Consider localized allergic reaction. Anaphylaxis is a life-threatening emergency.

SIGNS AND SYMPTOMS:
1. Wheezing (bronchospasm)
2. Dyspnea
3. Stridor (laryngeal edema)
4. Angioedema
5. Urticaria (Hives)
6. Hypotension
7. Tachycardia

MANAGEMENT:
FOR PATIENTS WITH SIGNS AND SYMPTOMS OF AIRWAY INVOLVEMENT AND/ OR CIRCULATORY COLLAPSE:

1. Epinephrine is the mainstay of therapy.
   A. Administer Epi-Pen
   B. **OR** epinephrine 0.5mg (0.5ml of 1:1000 IM) **DO NOT USE INTRAVENOUSLY.**
   C. Repeat epinephrine q 5 minutes prn
2. Diphenhydramine (Benadryl) 50mg IV / IM / PO / SL
3. IV normal saline TKO (saline lock)
4. Dexamethasone (Decadron) 10mg IV/ IM / PO
5. Oxygen
6. Pulse oximetry monitoring.
7. Ranitidine (Zantac) 150mg PO bid
8. If severe respiratory distress exists, aggressive airway management with bag-valve-mask and airway adjuncts (oral and nasopharyngeal airways). Intubate early if no response to epinephrine.
9. Administer 1 - 2 liters normal saline bolus for hypotension; then titrate to establish systolic blood pressure > 90mmHg or palpable radial pulse if BP cuff not available.

DISPOSITION:
1. *Urgent* evacuation.

ASTHMA (REACTIVE AIRWAY DISEASE)

SPECIAL CONSIDERATIONS:
Other disorders to consider: anaphylactic reaction, spontaneous pneumothorax, HAPE, and pulmonary embolism.

SIGNS AND SYMPTOMS:
1. Wheezing
2. Dyspnea
3. Difficulty with speaking in full sentences

MANAGEMENT:

1. Albuterol (Ventolin) (metered dose inhaler – works best when used with spacer), 2 - 3 puffs q 5 min, repeat up to 3 times.
2. **IF THERE IS NO RESPONSE TO ALBUTEROL** (Ventolin)**,** Epinephrine 0.5mg (0.5ml of 1:1000 solution) IM **(DO NOT INJECT INTRAVENOUSLY)**. May repeat one dose in 5 – 10 min.
3. IV access with saline lock
4. Dexamethasone (Decadron) 10mg IV / IM
5. Oxygen
6. Pulse oximetry monitoring
7. If there is fever, pleuritic chest pain, and productive cough, treat per *Bronchitis/Pneumonia Protocol*.

DISPOSITION:
1. *Urgent* evacuation if no response to treatment.
2. If the patient responds to management, observe for 4 hours.
   A. Return-To-Duty if there is no wheezing or dyspnea and normal oxygen saturation. Continue Albuterol (Ventolin) (2 puffs q 6 h) and re-evaluate in 24 hours. Continue Decadron 10mg IM qd for 4 days.
   B. *Urgent* evacuation if symptoms persist.

BACK PAIN

SPECIAL CONSIDERATIONS:
Motor weakness, saddle anesthesia, sensory loss, loss of bowel or bladder control in the setting of back pain is a neurological emergency requiring *Urgent* evacuation.

SIGNS AND SYMPTOMS:
1. Pain may worsen with movement.
2. Pain may radiate into legs.

MANAGEMENT:
1. Treat per *Pain Management Protocol.*
2. Apply cold compress to painful area for 20 - 25 min tid.
3. Trigger point injections with local anesthetic (**if trained**). Lidocaine 1 – 2cc per trigger point. May repeat qd for 2 days.
4. Consider Diazepam (Valium) 5 – 10mg IM / IV / PO. Repeat once in 6 - 8h prn.
5. Minimize activity initially, but encourage gradual stretching and return to full mobility as soon as tolerated.
6. If back pain is accompanied by fever and / or urinary symptoms, treat per *Flank Pain Protocol*.

DISPOSITION:
1. Evacuation is often not required if the back pain responds to therapy.
2. *Routine* evacuation for severe cases not responding to therapy.
3. *Urgent* evacuation for patients with neurological involvement (other than pain) such as:
   A. Weakness
   B. Bowel or bladder dysfunction
   C. Saddle anesthesia

BAROTRAUMA

SPECIAL CONSIDERATIONS:
1. Pulmonary Over-Inflation Syndrome (POIS) may occur from ascent from depth if compressed air was used or exposure to blast overpressure.
2. The most commonly affected site is the middle ear and tympanic membrane, but paranasal sinuses and teeth may be affected.
3. Pulmonary barotrauma occurs when compressed air is breathed at depth followed by ascending with a closed airway (i.e. breath-holding), and can cause pneumothorax or arterial gas embolism.

SIGNS AND SYMPTOMS:
1. Pain in the ear(s), sinuses, teeth.
2. Pulmonary over-inflation syndrome may present with chest pain, dyspnea, mediastinal emphysema, subcutaneous emphysema, pneumothorax, and arterial gas embolism (AGE).

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MANAGEMENT:
1. Middle ear
   A. If a tympanic membrane rupture is present or suspected, protect the ear from water or further trauma.
   B. Moxifloxacin (Avelox) 400mg PO qd if contamination is suspected.
   C. Pseudoephedrine (Sudafed) 60mg PO q 4 – 6 hr prn
   D. **DO NOT** use ear drops.
   E. Refer to higher level of care when feasible.

2. Paranasal Sinus barotraumas.
   Pseudoephedrine (Sudafed) 60mg PO q 4 - 6 hr prn
   Pulmonary barotraumas to include subcutaneous emphysema:
   A. If no respiratory distress, monitor patient closely. Use pulse oximetry if available
   B. If respiratory distress occurs – Treat per *Spontaneous Pneumothorax Protocol.*
3.

   If arterial gas embolus is suspected, administer 100% oxygen and 1 liter normal saline IV 150cc/hr. *Urgent* evacuation to recompression chamber. If an unpressurized airframe is used, avoid altitude exposure greater than 1000ft.

4. Treat per *Pain Management Protocol.* (Avoid narcotics if recompression is anticipated.)

DISPOSITION:
1. *Urgent* Evacuation for cerebral arterial gas embolus or pneumothorax with respiratory distress,
2. Mild to moderate middle ear, sinus, or pulmonary barotraumas without respiratory distress, observation and *Routine* evacuation.
3. *Routine* evacuation for consultation for Tympanic Membrane rupture.

BEHAVIORAL CHANGES
(INCLUDES PSYCHOSIS, DEPRESSION AND SUICIDAL IMPULSES)

SPECIAL CONSIDERATIONS:
1. In a tactical setting consider sleep deprivation as a cause.
2. Etiologies are numerous and will often dictate the management; thus mental status changes could be caused by head trauma, metabolic and endocrine disease processes, environmental toxins, infections, combat stress disorder, hypoxia, hyperthermia, hypothermia, pharmaceutical agent use (i.e. mefloquine) or withdrawal.
3. Consider diabetic hypoglycemia as a cause of altered mental status.

SIGNS AND SYMPTOMS:
1. Acute behavioral changes include withdrawal, depression, aggression, confusion, or other behavioral patterns atypical for the individual.
2. Psychosis is an acute change in mental status characterized by altered sensory perceptions that are not congruent with reality:
   A. Auditory and/ or visual hallucinations
   B. May include violent or paranoid behavior
   C. Disorganized speech patterns are common
   D. May include severe withdrawal from associates

MANAGEMENT:
1. Remove all weapons or potential weapons from patient AND treating Medic.

2. Check pulse oximetry.

3. Place patient in safe environment under continuous surveillance

4. Give contents of 1 sugar packet sublingually to treat for possible hypoglycemia.

5. Take Temperature
   A. If Temperature is below 95 degrees, treat per *Hypothermia Protocol.*
   B. If Temperature is above 101 degrees, treat per *Meningitis Protocol.*
   C. If Temperature is above 103 degrees, treat per *Meningitis and Hyperthermia Protocols.*
   D. **IF MENINGITIS IS SUSPECTED OR IF THERE IS A DECREASE IN MENTAL STATUS, USE VALIUM WITH CAUTION, DUE TO POSSIBLE RESPIRATORY DEPRESSION, HYPOTENSION, AND MASKING OF PROGRESSION OF DISEASE RELATED ALTERED MENTAL STATUS.**

6. For acute agitation, combativeness, or violent behavior, restrain patient with at least four individuals and give diazepam (Valium) 10mg IM. Repeat after 30 minutes prn.
   OR Midazolam (Versed) 5mg IM.

7. If sedated or restrained, maintain constant vigilance for a change in the hemodynamic status or loss of airway reflexes.

DISPOSITION:
Urgent Evacuation

BLAST INJURY ASSESSMENT

SPECIAL CONSIDERATIONS:
Submersion or confined space environments significantly increase the incidence of injury. Special caution should be taken when examining these patients.

INITIAL EVALUATION AND TREATMENT PER TCCC PROTOCOL

SIGNS AND SYMPTOMS:

1. HEENT - Careful inspection for Tympanic Membrane (TM) rupture during examination.
   A. **Intact TMs do NOT exclude significant blast injury to other parts of the body.**
   B. Check for ear discharge, tinnitus, hearing loss.

2. Pulmonary – Evaluate for shortness of breath and abnormal breath sounds.
3. Neurologic – Evaluate for TBI with MACE and neurological exam.
4. Abdomen – Monitor until 48 hours post injury.

MANAGEMENT:

1. All asymptomatic patients should be monitored for at least 6 hours after the event to rule out late presenting complications.
2. Tympanic Membrane
   A. Keep ear canal dry/covered in case of TM rupture.
   B. Dexamethasone (Decadron) 10mg IM x 1 (If hearing loss is present). Refer to ENT.

3. MACE examination needs to be accomplished on all personnel affected by the blast. Follow Local TBI Protocol.
4. Pulmonary Decompensation
   A. Give high flow O_2 if available. Use caution with high pressure ventilation, this may worsen the patient's condition.
   B. Follow rules for hypovolemic resuscitation given risk for pulmonary edema.
   C. Have high suspicion for tension pneumothorax
   D. Needle decompression
   E. Consider tube thoracostomy:
      1) Recurrence or persistence of respiratory distress after 2 needle decompressions
      2) **OR** Evacuation time > 1 hr
      3) **OR** Patient requires positive pressure ventilation
   F. For air evacuation, fly at the lowest tactically feasible altitude.
5. Abdomen
   A. Any abdominal pain or tenderness within 48 hours of a blast exposure warrants urgent surgical evaluation.
   B. Follow *Abdominal Pain Protocol* for urgent evacuation.
6. Consider possibility of Arterial Gas Embolism (AGE) in patients with focal neurological deficits after pulmonary blast injury. AGE may require recompression therapy. See *Barotrauma Protocol.*

DISPOSITION:

1. TM rupture without complications – Return To Duty after 6 hrs of observation
2. TM rupture with hearing loss – *Routine* evacuation
3. Neurologic Injury - *Urgent Surgical for neurosurgical evaluation*
4. Pulmonary Complications- *Urgent* evacuation
5. Abdominal Pain - *Urgent Surgical* evacuation

Military Acute Concussion Evaluation (MACE)

Defense and Veterans Brain Injury Center

Patient Name: _____

SS#: _____-_____-_____ **Unit:** _____

Date of Injury: ____/____/____ **Time of Injury:** _____

Examiner: _____

Date of Evaluation: ____/____/____ **Time of Evaluation:** _____

History: (I – VIII)

I. **Description of Incident**
Ask:
a) What happened?
b) Tell me what you remember.
c) Were you dazed, confused, "saw stars"? ❒ Yes ❒ No
d) Did you hit your head? ❒ Yes ❒ No

II. **Cause of Injury** (Circle all that apply):
1) Explosion/Blast 4) Fragment
2) Blunt object 5) Fall
3) Motor Vehicle Crash 6) Gunshot wound
7) Other _____

III. **Was a helmet worn?** ❒ Yes ❒ No Type _____

IV. **Amnesia Before: Are there any events just BEFORE the injury that are not remembered? (Assess for continuous memory prior to injury)**
❒ Yes ❒ No If yes, how long _____

V. **Amnesia After: Are there any events just AFTER the injuries that are not remembered? (Assess time until continuous memory after the injury)**
❒ Yes ❒ No If yes, how long _____

VI. **Does the individual report loss of consciousness or "blacking out"?** ❒ Yes ❒ No If yes, how long _____

VII. **Did anyone observe a period of loss of consciousness or unresponsiveness?** ❒ Yes ❒ No If yes, how long _____

VIII. **Symptoms** (circle all that apply)
1) Headache 2) Dizziness
3) Memory Problems 4) Balance problems
5) Nausea/Vomiting 6) Difficulty Concentrating
7) Irritability 8) Visual Disturbances
9) Ringing in the ears 10) Other _____

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This form may be copied for clinical use.

Military Acute Concussion Evaluation (MACE)

Defense and Veterans Brain Injury Center

Examination: (IX – XIII)

Evaluate each domain. Total possible score is 30.

IX. **Orientation:** (1 point each)

Month:	0	1
Date:	0	1
Day of Week:	0	1
Year:	0	1
Time:	0	1

Orientation Total Score _____/5

X. **Immediate Memory:**
Read all 5 words and ask the patient to recall them in any order. Repeat two more times for a total of three trials. (1 point for each correct, total over 3 trials)

List	Trial 1	Trial 2	Trial 3
Elbow	0 1	0 1	0 1
Apple	0 1	0 1	0 1
Carpet	0 1	0 1	0 1
Saddle	0 1	0 1	0 1
Bubble	0 1	0 1	0 1
Trial Score			

Immediate Memory Total Score _____/15

XI. **Neurological Screening**
As the clinical condition permits, check
Eyes: pupillary response and tracking
Verbal: speech fluency and word finding
Motor: pronator drift, gait/coordination
Record any abnormalities. **No points are given for this.**

Military Acute Concussion Evaluation (MACE)

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XII. Concentration

Reverse Digits: (go to next string length if correct on first trial. Stop if incorrect on both trials.) 1 pt. for each string length.

4-9-3	6-2-9	0	1
3-8-1-4	3-2-7-9	0	1
6-2-9-7-1	1-5-2-8-5	0	1
7-1-8-4-6-2	5-3-9-1-4-8	0	1

Months in reverse order: (1 pt. for entire sequence correct)
Dec-Nov-Oct-Sep-Aug-Jul-Jun-May-Apr-Mar-Feb-Jan
0 1

Concentration Total Score ____/5

XIII. Delayed Recall (1 pt. each)

Ask the patient to recall the 5 words from the earlier memory test (Do NOT reread the word list.)

Elbow	0	1
Apple	0	1
Carpet	0	1
Saddle	0	1
Bubble	0	1

Delayed Recall Total Score ____/5
TOTAL SCORE _____/30

Notes: _____

_____

Diagnosis: (circle one or write in diagnoses)

No concussion
850.0 Concussion without Loss of Consciousness (LOC)
850.1 Concussion with Loss of Consciousness (LOC)

Other diagnoses _____

_____

Defense & Veterans Brain Injury Center
1-800-870-9244 or DSN: 662-6345

Military Acute Concussion Evaluation (MACE)

Defense and Veterans Brain Injury Center

Instruction Sheet

Purpose and Use of the MACE

A concussion is a mild traumatic brain injury (TBI). The purpose of the MACE is to evaluate a person in whom a concussion is suspected. The MACE is used to confirm the diagnosis and assess the current clinical status.

Tool Development

The MACE has been extensively reviewed by leading civilian and military experts in the field of concussion assessment and management. While the MACE is not, yet, a validated tool, the examination section is derived from the *Standardized Assessment of Concussion* (SAC) (McCrea, M., Kelly, J. & Randolph, C. (2000). *Standardized Assessment of Concussion (SAC): Manual for Administration, Scoring, and Interpretation.* (2nd ed.) Waukesa,WI: Authors.) which is a validated, widely used tool in sports medicine. Abnormalities on the SAC correlate with formal comprehensive neuropsychological testing during the first 48 hours following a concussion.

Who to Evaluate

Any one who was dazed, confused, "saw stars" or lost consciousness, even momentarily, as a result of an explosion/blast, fall, motor vehicle crash, or other event involving abrupt head movement, a direct blow to the head, or other head injury is an appropriate person for evaluation using the MACE.

Evaluation of Concussion

History: (I – VIII)

I. Ask for a description of the incident that resulted in the injury; how the injury occurred, type of force. Ask questions A – D.

II. Indicate the cause of injury

III. Assess for helmet use. Military: Kevlar or ACH (Advanced Combat Helmet). Sports helmet, motorcycle helmet, etc.

IV – V Determine whether and length of time that the person wasn't registering continuous memory both **prior** to injury and **after** the injury. Approximate the amount of time in seconds, minutes or hours, whichever time increment is most appropriate. For example, if the assessment of the patient yields a possible time of 20 minutes, then 20 minutes should be documented in the "how long?" section.

VI – VII Determine whether and length of time of **self reported** loss of consciousness (LOC) or **witnessed/observed** LOC. Again, approximate the amount of time in second, minutes or hours, whichever time increment is most appropriate.

VIII Ask the person to report their experience of each specific symptom since injury.

Examination: (IX – XIII)

Standardized Assessment of Concussion (SAC):

Total possible score = 30
Orientation = 5
Immediate Memory = 15
Concentration = 5
Memory Recall= 5

IX Orientation: Assess patients awareness of the accurate time
Ask: WHAT MONTH IS THIS?
WHAT IS THE DATE OR DAY OF THE MONTH?
WHAT DAY OF THE WEEK IS IT?
WHAT YEAR IS IT?
WHAT TIME DO YOU THINK IT IS?

One point for each correct response for a total of 5 possible points. It should be noted that a correct response on time of day must be within 1 hour of the actual time.

X Immediate memory is assessed using a brief repeated list learning test. Read the patient the list of 5 words once and then ask them to repeat it back to you, as many as they can recall in any order. Repeat this procedure 2 more times for a total of 3 trials, even if the patient scores perfectly on the first trial.
Trial 1: I'M GOING TO TEST YOUR MEMORY, I WILL READ YOU A LIST OF WORDS AND WHEN I AM DONE, REPEAT BACK AS MANY WORDS AS YOU CAN REMEMBER, IN ANY ORDER.
Trial 2 &3: I AM GOING TO REPEAT THAT LIST AGAIN. AGAIN, REPEAT BACK AS MANY AS YOU CAN REMEMBER IN ANY ORDER, EVEN IF YOU SAID THEM BEFORE.
One point is given for each correct answer for a total of 15 possible points.

XI Neurological screening
Eyes; check pupil size and reactivity.
Verbal: notice speech fluency and word finding
Motor: pronator drift- ask patient to lift arms with palms up, ask patient to then close their eyes, assess for either arm to "drift" down. Assess gait and coordination if possible. Document any abnormalities.
No points are given for this section.

XII Concentration: Inform the patient:
I'M GOING TO READ YOU A STRING OF NUMBERS AND WHEN I AM FINISHED, REPEAT THEM BACK TO ME BACKWARDS, THAT IS, IN REVERSE ORDER OF HOW I READ THEM TO YOU. FOR EXAMPLE, IF I SAY 7-1-9, YOU WOULD SAY 9-1-7.
If the patient is correct on the first trial of each string length, proceed to the next string length. If incorrect, administer the 2nd trial of the same string length. Proceed to the next string length if correct on the second trial. Discontinue after failure on both trials of the same string length. Total of 4 different string lengths; **1** point for each string length for a total of **4** points.
NOW TELL ME THE MONTHS IN REVERSE ORDER, THAT IS, START WITH DECEMBER AND END IN JANUARY.
1 point if able to recite ALL months in reverse order.
0 points if not able to recite ALL of them in reverse order.
Total possible score for concentration portion: **5.**

XIII Delayed Recall
Assess the patient's ability to retain previously learned information by asking he/she to recall as many words as possible from the initial word list, without having the word list read again for this trial.
DO YOU REMEMBER THAT LIST OF WORDS I READ A FEW MINUTES EARLIER? I WANT YOU TO TELL ME AS MANY WORDS FROM THE LIST AS YOU CAN REMEMBER IN ANY ORDER.
One point for each word remembered for a total of 5 possible points.
Total score= Add up from the 4 assessed domains: immediate memory, orientation, concentration and memory recall.

Significance of Scoring

In studies of non-concussed patients, the mean total score was 28. Therefore, a score less than 30 does not imply that a concussion has occurred. Definitive normative data for a "cut-off" score are not available. However, scores below 25 may represent clinically relevant neurocognitive impairment and require further evaluation for the possibility of a more serious brain injury. The scoring system also takes on particular clinical significance during serial assessment where it can be used to document either a decline or an improvement in cognitive functioning.

Diagnosis

Circle the ICD-9 code that corresponds to the evaluation. If loss of consciousness was present, then circle 850.1. If no LOC, then document 850.0. If another diagnosis is made, write it in.

BRONCHITIS/ PNEUMONIA

SPECIAL CONSIDERATIONS:
1. Consider high altitude pulmonary edema (HAPE) at high altitudes.
2. Consider pulmonary embolism (PE) and pneumothorax (fever and productive cough are atypical for these).

SIGNS AND SYMPTOMS:
1. Fever
2. Productive cough, especially with dark yellow, red tinged, or greenish sputum
3. Chest pain
4. Rales may be present and breath sounds may be decreased over the affected lung.
5. Dyspnea may be present in severe cases.

MANAGEMENT:

1. Azithromycin (Zithromax) 500mg PO first dose then 250mg qd for 4 days **OR** Moxifloxacin (Avelox) 400mg PO qd for 7 days
2. If unable to tolerate PO intake, give Ertapenem (Invanz) 1gm IV / IM **OR** Ceftriaxone (Rocephin) 1gm IV qd.
3. Albuterol (Ventolin) by metered dose inhaler 2 – 4 puffs q 4 – 6 h
4. Treat per *Pain Management Protocol*
5. If febrile, acetaminophen 1gm PO q 6h
6. Pulse oximetry monitoring
7. Oxygen prn
8. If at high altitude, see *Altitude Illness Protocol* and treat for HAPE.

DISPOSITION:
1. *Urgent* evacuation for severe dyspnea or hypoxia
2. *Observation or Routine evacuation* as necessary

CELLULITIS/CUTANEOUS ABSCESS

SPECIAL CONSIDERATIONS:
1. Superficial bacterial skin infection
2. Generally begins about 24 hours following a break in the skin, but more serious types of cellulitis may be seen as early as 6 – 8 hours following animal or human bites.
3. If abscess formation occurs, only attempt I&D in the tactical setting IF:
    a. The abscess is clearly well demarcated and superficial.
    b. Local anesthesia is available

SIGNS AND SYMPTOMS:
1. Painful, erythematous, swollen, tender area
2. Fever may or may not be present
3. Typically, erythema spreads without treatment
4. Rapidly spreading and very painful infections suggest the possibility of necrotizing fasciitis, a life-threatening infection of the deeper tissues that should be treated per *Sepsis/ Septic Shock Protocol.*
5. Fluctuant, tender, well-defined mass indicates abscess formation.

MANAGEMENT:

1. ℞ Moxifloxacin (Avelox) 400mg PO qd for 10 days **OR** Amoxicillin/Clavulanic Acid (Augmentin) 875mg PO bid
2. ℞ **PLUS EITHER** Trimethoprim-Sulfamethoxazole (Septra DS) 1 tab PO bid **OR** Rifampin (Rifadin) 600mg PO bid for 10 days.
3. Clean and dress wound and surrounding area.
4. Use a pen to mark the demarcation border of the infection and re-evaluate in 24 hours.
5. Limit activity until infection resolves.
6. ℞ Add Ertapenem (Invanz) 1gm IV / IM qd if worsening at 24 hours or no improvement at 48 hours of treatment**.**
7. **IF ABSCESS IS PRESENT:**
    A. Incise and drain (I&D) if the environment permits:
        1) Establish sterile incision site with Betadine
        2) ℞ Local anesthesia using Lidocaine
        3) Incise the length of the abscess cavity, but no further
        4) Incision should be parallel to skin tension lines if possible
        5) On initial treatment, leave wound open and pack with iodoform or dampened gauze, if available. On subsequent dressings, wick the wound. **DO NOT SUTURE THE SITE**.
    B. Bandage site and perform wound checks daily.
8. Treat per *Pain Management Protocol.*

DISPOSITION:
1. Re-evaluate daily and watch for progression of erythema while on antibiotics.
2. Cellulitis in critical areas (head, neck, hand, joint involvement, perineal) requires *Priority* evacuation.
3. Use of IV antibiotics requires *Priority* evacuation.

CHEST PAIN

SPECIAL CONSIDERATIONS:
1. This Protocol assumes no access to ACLS medications or monitoring/ defibrillation equipment.
2. Since the ATP does not have access in the field to tests required to accurately determine the etiology of chest pain, early and rapid evacuation should be considered if tactically feasible. High risk etiologies include myocardial infarction (MI), unstable angina, pulmonary embolus, pericarditis, spontaneous pneumothorax, and esophageal rupture.

SIGNS AND SYMPTOMS – CARDIAC:

1. The presence of one or more of the following risk factors increases the likelihood of coronary artery disease: smoking, diabetes, hypertension, elevated cholesterol, obesity, family history of MI at a young age, and patient age over 40.
2. The following are signs and symptoms suspicious for myocardial infarction as the etiology for chest pain:
   A. Substernal chest pain that may radiate to the left arm, neck, or jaw
   B. Pain described as pressure or squeezing
   C. Pain exacerbated with exertion and relieved with rest
   D. Associated dyspnea, diaphoresis (sweating), nausea, lightheadedness, or syncope
   E. Tachycardia, irregular heart rhythm, or severe bradycardia
   F. Bilateral rales / crackles in the lungs on auscultation
   G. Significant hypertension or hypotension

MANAGEMENT:

1. Aspirin (ASA) 325mg PO (non-enteric coated) – chew to speed absorption.
2. IV access with saline lock. Administer 250 – 500cc normal saline boluses as needed to correct hypotension with frequent reassessment.
3. Morphine sulfate 5mg IV initially, then 2mg q 5 – 15 min prn for pain unless hypotension is present.
4. Oxygen
5. Pulse oximetry monitoring
6. Avoid all exertion. Allow the patient to rest in a position of comfort. Frequently reassess the patient including hemodynamic status.

OTHER ETIOLOGIES OF CHEST PAIN:

1. The following signs and symptoms **MAY** suggest a GI etiology such as gastroesophageal reflux disease (GERD): dyspepsia, dysphagia, burning quality to chest pain, exacerbated by laying flat, foul or brackish taste in mouth. A trial of antacids or Ranitidine (Zantac) 150mg PO bid may be useful if evacuation will be delayed.
2. Severe chest pain following forceful vomiting may indicate esophageal rupture. Administer IV normal saline 150cc/hr and Ertapenem (Invanz) 1gm IV and evacuate as *Urgent*.
3. Sudden onset of pleuritic chest pain with dyspnea may indicate pulmonary embolus or spontaneous pneumothorax. Auscultate the lungs; unilaterally diminished breath sounds suggest pneumothorax which may require decompression. Administer oxygen, establish IV access, administer Aspirin 325mg PO for suspected PE, and evacuate as *Urgent*.
4. The following signs and symptoms **MAY** suggest a musculoskeletal etiology: pain isolated to a specific muscle or costochondral joint pain exacerbated with certain types of movements, non-central chest pain reproduced upon palpation. A trial of NSAIDs such as Ibuprofen (Motrin) 800mg PO tid may be useful if evacuation will be delayed.

5. Chest pain with gradual onset and exacerbated by deep inspiration and accompanied by fever and productive cough **MAY** indicate lower respiratory tract infection. Consider treatment per *Bronchitis/ Pneumonia Protocol.*

DISPOSITION:

1. *Urgent* evacuation.
2. Evacuation platform should include ACLS certified medical personnel and the equipment, supplies, and medications necessary for ACLS care.
3. Do not delay evacuation if unsure of chest pain etiology. Strongly consider early contact with a medical officer or medical treatment facility for consultation. Frequently reassess the patient suspected of a non-cardiac etiology to ensure stability and accuracy of the diagnosis.

CONSTIPATION/ FECAL IMPACTION

SPECIAL CONSIDERATIONS:
1. Differential diagnosis includes acute appendicitis, volvulus, ruptured diverticulum, bowel obstruction, pancreatitis, or parasitic infections.
2. Acute onset, severe pain, point tenderness, and fever indicate etiologies other than constipation or fecal impaction.

SIGNS AND SYMPTOMS:
1. Recent history of infrequent passage of hard, dry stools or straining during defecation.
2. Abdominal pain, which is typically poorly localized with cramping.
3. If pain becomes severe and is associated with nausea / vomiting and complete lack of flatus or stools, consider a bowel obstruction.

MANAGEMENT:
1. Bisacodyl (Dulcolax) 10mg PO tid prn
2. Treat per *Pain Protocol* (***no narcotics – they cause constipation***)
3. For impacted stool or no relief with above measures, give normal saline enema 500ml via lubricated IV tubing. (Pt should retain solution for two minutes before evacuating contents).
4. If above measures fail, perform digital rectal examination to check for fecal impaction. If fecal impaction is present, perform digital disimpaction, if trained.
5. Increase PO fluid intake
6. Increase fiber (fruits, bran, and vegetables) in diet if possible.
7. If severe pain, rigid board-like abdomen, fever, and/ or rebound tenderness develop, or moderate to large amounts of blood are present in the stool, then treat per *Abdominal Pain Protocol*.

DISPOSITION:
1. Evacuation is usually not required for this condition
2. *Routine* evacuation if no response to therapy

CONTACT DERMATITIS

SPECIAL CONSIDERATIONS:
1. Insect bite(s) as a differential diagnosis - also accompanied by itching, but with discrete red papular lesions(s).
2. Cellulitis as a differential diagnosis - bright red, painful, non-pruritic, and typically becomes steadily worse without antibiotics.
3. Fungal infection as a differential diagnosis – not always pruritic; infection site(s) slowly enlarge without therapy.
4. Effects are particularly dangerous if contact in or around the eyes.

SIGNS AND SYMPTOMS:
1. Acute onset
2. Skin erythema
3. Intense itching (pruritis)
4. Edema, papules, vesicles, bullae, discharge, and / or crusting may be visible.

MANAGEMENT:
1. Change clothes when possible and bag original clothes until they can be machine washed.
2. Wash area with mild soap and water.
3. Apply cold wet compress to affected area to help decrease itching.
4. ℞ If available, apply 1% hydrocortisone cream to the affected area and cover with a dry dressing to help prevent spread to other parts of the body or clothing.
5. ℞ In severe cases, Dexamethasone (Decadron) 10mg IM qd for 5 days.
6. ℞ Give Diphenhydramine (Benadryl) 25 – 50mg PO / SL q 6 hr prn itching, if tactically feasible. (Sedation may occur.)

DISPOSITION:
1. Evacuation not needed for mild cases.
2. *Priority* evacuation for severe symptoms: intra-oral or eye involvement, or >50% body surface area (BSA) involvement.
3. Monitor for secondary infection; treat per C*ellulitis Protocol* if suspected on the basis of increasing pain, redness, or purulent crusting.

CORNEAL ABRASIONS/ CORNEAL ULCERS/ CONJUNCTIVITIS

SPECIAL CONSIDERATIONS:
1. Contact lens corneal abrasions are at a high risk for development of a corneal ulcer. They should not be patched and require more intensive antibiotic therapy.
2. Consider LASIK Flap dislocation for anyone that sustains eye trauma after LASIK surgery.

SIGNS AND SYMPTOMS:
1. History of eye trauma or contact lens wear
2. Eye pain – typically becoming worse over several days
3. Eye redness
4. Tearing
5. Blurred vision
6. Light sensitivity
7. Fluorescein stain positive
8. White or gray spot on cornea for corneal ulcer (usually need tangential penlight exam to see)
9. For sudden onset of eye pain after trauma in a patient with LASIK surgery, consider LASIK flap dislocation.

MANAGEMENT:
1. Remove contact lens if worn.
2. ℞ Tetracaine 0.5%, 2 drops in the affected eye for pain relief. Do not dispense to patient.
3. Check for foreign body to include eyelid eversion. Irrigate with normal saline prn.
4. ℞ Gatifloxacin (Zymar) 0.3% drops – 1 drop in the affected eye qid while awake.
5. Treat per *Pain Management Protocol.*
6. Reduce light exposure, stay indoors if possible - sunglasses if not possible.
7. For corneal abrasions: monitor daily for worsening signs and symptoms of a corneal ulcer (increasing pain and development of a white or grey spot at abrasion site). **DO NOT PATCH.**
8. Assess using fluorescein drops daily — abrasions should get progressively smaller. Continue antibiotic drops until 24 hours after cornea becomes fluorescein negative (no bright yellow spot).
9. **IF CORNEAL ULCER PRESENT**: Increase Gatifloxacin (Zymar) drops to q 2h and *Priority* evacuation.

DISPOSITION:
1. Evacuation may not be needed for corneal abrasion if improving with treatment.
2. *Priority* evacuation for Corneal Ulcer
3. *Urgent* evacuation for LASIK flap dislocation.

COUGH

SPECIAL CONSIDERATIONS:
Usually viral etiology, but may also occur with high altitude pulmonary edema (HAPE) and pneumonia.

SIGNS AND SYMPTOMS:

1. Cough with or without scant sputum production.

2. Often accompanied by other signs and symptoms of upper respiratory tract infection (i.e. sore throat and rhinorrhea).

MANAGEMENT:

1. Treat symptomatically (using Cepacol lozenges or other appropriate medications) when the findings on history and physical do not suggest pneumonia.
2. ℞ Albuterol (Ventolin) metered dose inhaler 3 – 4 puffs q 4 hr may also help control coughing

3. Encourage PO hydration.

4. Avoid respiratory irritants (smoke, aerosols, etc).

5. If associated with URI symptoms, treat per *Allergic Rhinitis Protocol.*

6. If at altitude, pull balaclava over nose and breathe through it for warm humidified air.

DISPOSITION:

1. Evacuation is usually not required.
2. If accompanied by fever, chest pain, dyspnea, and / or colored sputum (green, dark yellow, or red-tinged), treat per *Bronchitis/ Pneumonia Protocol.*

CRUSH SYNDROME PROTOCOL

SPECIAL CONSIDERATIONS:
1. Be aware of development of crush syndrome starting as early as 4 hours post injury.
2. These medications are not part of the standard atp aid bag and require development of a separate crush injury kit.

The principles of hypotensive resuscitation according to TCCC, DO NOT apply in the setting of extremity crush injury requiring extrication.

In the setting of a crush injury associated with non compressible (thoracic, abdominal, pelvic) hemorrhage, aggressive fluid resuscitation may result in increased hemorrhage.

With extremity injuries, tourniquets should NOT be applied during Phase 1 unless there is hemorrhage, which is not controllable by other means.

Be aware of development of cardiac dysrhythmias due to hyperkalemia immediately following extrication.

DEFINITION:
Massive, prolonged crush injury resulting in profound muscle and soft tissue damage places the patient at significantly increased risk for developing circulatory and renal complications.

MANAGEMENT:
PHASE 1: IMMEDIATE (while attempting extrication):

1. Maintain patent airway (NPA, OPA, etc.) and adequate ventilation.
2. Monitor O_2 sat with pulse ox and administer high flow oxygen if available.
3. Give initial bolus of 1-1.5L of normal saline **PRIOR** to attempts at extrication and continue at 1.5L/hr.
   Ringer's lactate is not recommended due to the potassium content.
4. Maintain urine output at greater than or equal to 200cc/hr. If possible, insert Foley catheter.
5. Assess and reassess mental status.
6. Follow *Pain Management Protocol*
7. Consider prophylactic antibiotics – Ertapenem (Invanz) 1gm IV.
8. Utilize Propack or AED cardiac monitoring if available.
9. Mannitol (administer 1 – 2gm/kg at a rate of 5gm/hr)
   Ensure urine output has been established prior to using Mannitol.

PHASE 2: IMMEDIATELY PRIOR TO EXTRICATION:

10. Immediately prior to extrication, apply tourniquets to crushed extremities, if possible.

Phase 2 Recommended Additional Resuscitative Drugs

11. Sodium Bicarbonate – give 1mEq/kg IV immediately prior to extrication (Bristojet 1 – 2 amps). Additional dosing of sodium bicarbonate may be required if dysrhythmias or cardiac arrest persist after giving calcium chloride or gluconate.

PHASE 3: IMMEDIATELY FOLLOWING EXTRICATION
Cardiac Dysrhythmias or Arrest

12. CPR **should be** initiated if cardiac arrest develops following extrication. **DO NOT** follow the TCCC guidelines on cardiac arrest.
13. If extrication is greater then 4 hours **OR** in the presence of dysrhythymias, administer calcium chloride (1gm, 10ml of 10% solution) or calcium gluconate (1gm, 10ml of 10% solution).

    Calcium should not be given in bicarbonate containing solutions due to precipitation of calcium carbonate.
14. Additional dosing of sodium bicarbonate may be required if dysrhythmias or cardiac arrest persist after giving calcium chloride or gluconate.

15. Following extrication, once the patient is stabilized, be prepared to treat hyperkalemia as tourniquets are released.

DISPOSITION:
Urgent Surgical evacuation

DEEP VENOUS THROMBOSIS (DVT)

SPECIAL CONSIDERATIONS:

1. Risk factors include trauma, long airplane rides, high altitude exposure, and genetic predisposition.
2. May be confused with a ruptured Baker's cyst in a tactical setting.

SIGNS AND SYMPTOMS:

1. Asymmetric pain and swelling in a lower extremity (often the calf muscles).
2. Warmth over affected area.
3. Increased pain in the affected calf muscles with dorsiflexion of the foot.

MANAGEMENT:

1. Monitor patient with pulse oximetry (sudden decrease in oxygen saturation suggests a pulmonary embolism.)
2. ASA 325mg PO
3. For associated respiratory distress consider pulmonary embolus and treat per *Chest Pain Protocol.*
4. Immobilize the affected extremity.

DISPOSITION:

1. *Priority* evacuation if no respiratory distress or chest pain.
2. *Urgent* evacuation if respiratory distress or chest pain are present.

DEHYDRATION

SPECIAL CONSIDERATIONS:
1. Troops in the field are often chronically dehydrated.
2. Prolonged missions, acute diarrhea (gastroenteritis), viral / bacterial infections, and environmental factors (heat stress or strenuous activity) all may exacerbate dehydration.
3. May also occur in cold or high altitude environments.

SIGNS AND SYMPTOMS:
1. Lightheadedness (worse with sudden standing)
2. Mild headache (especially in the morning)
3. Dry mucosa
4. Decreased urinary frequency and volume
5. Dark urine
6. Degradation in performance

MANAGEMENT:
1. Increase oral fluids if tolerated.
   A. If available, use carbohydrate/ electrolyte drink mixes for fluid replacement diluted to a 1:4 solution.
   B. Avoid fluids containing caffeine.

2. If unable to tolerate PO fluids, use an initial bolus of 1 liter normal saline IV, followed by repeat attempt at PO hydration. If still unable to tolerate PO hydration, repeat 1 liter bolus of normal saline IV. If normal saline is not available, use available IV fluids,

DISPOSITION:
1. Monitor closely for recurrence of dehydration.
2. *Priority* evacuation if dehydration persists after treatment.

CRUSH SYNDROME PROTOCOL

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The principles of hypotensive resuscitation according to TCCC, DO NOT apply in the setting of extremity crush injury requiring extrication.

In the setting of a crush injury associated with non compressible (thoracic, abdominal, pelvic) hemorrhage, aggressive fluid resuscitation may result in increased hemorrhage.

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   Ringer's lactate is not recommended due to the potassium content.
4. Maintain urine output at greater than or equal to 200cc/hr. If possible, insert Foley catheter.
5. Assess and reassess mental status.
6. Follow *Pain Management Protocol*
7. Consider prophylactic antibiotics – Ertapenem (Invanz) 1gm IV.
8. Utilize Propack or AED cardiac monitoring if available.

DETERMINATION OF DEATH / DISCONTINUING RESUSCITATION

SPECIAL CONSIDERATIONS:
1. Immediate determination of death is appropriate in a trauma patient without pulse or respirations in the setting of multiple casualties when resuscitative efforts would hinder the care of more viable patients.
2. Patients that are struck by lightening, have hypothermia, cold-water drowning, or intermittent pulses may require extended cardiopulmonary resuscitation.
3. It is assumed that personnel do not have access to ECG, or other monitoring equipment to evaluate heart rhythm, or deliver countershocks.

SIGNS AND SYMPTOMS:
1. Obvious Death -– Persons who, in addition to absence of respiration, cardiac activity and neurologic reflexes have one or more of the following:
   A. Decapitation
   B. Massive crushing and / or penetrating injury with evisceration of the heart, lung or brain
   C. Incineration
   D. Decomposition of body tissue
   E. Rigor mortis or post-mortem lividity

MANAGEMENT:
1. In the setting of obvious death, resuscitative efforts should not be initiated.

2. If resuscitative efforts have been initiated, discontinuation should be considered
   A. After 15 minutes (if the cause is unknown or due to trauma) or after 30 minutes (when the cause is due to hypothermia, electrical injury, lightning strike, cold water drowning, or other cause known to require a prolonged resuscitative effort) when:
      1) There is persistent absence of pulse and respirations despite assuring airway and ventilation as well as administration of resuscitative fluids and medications.
      2) Pupils are fixed and dilated.
      3) No response to deep pain above or below the clavicles.
      4) Absence of end-tidal CO_2, (either colorimetric or wave form) from a correctly placed endotracheal tube or alternative airway.

3. If there is any question as to the discontinuation of resuscitative efforts, then a medical officer should be contacted for guidance.

DISPOSITION:
1. Evacuation of the remains when tactically feasible.
2. In the event of return of spontaneous circulation, *Urgent* Evacuation.

DEEP VENOUS THROMBOSIS (DVT)

SPECIAL CONSIDERATIONS:

1. Risk factors include trauma, long airplane rides, high altitude exposure, and genetic predisposition.
2. May be confused with a ruptured Baker's cyst in a tactical setting.

SIGNS AND SYMPTOMS:

1. Asymmetric pain and swelling in a lower extremity (often the calf muscles).
2. Warmth over affected area.
3. Increased pain in the affected calf muscles with dorsiflexion of the foot.

MANAGEMENT:

1. Monitor patient with pulse oximetry (sudden decrease in oxygen saturation suggests a pulmonary embolism.)
2. ASA 325mg PO
3. For associated respiratory distress consider pulmonary embolus and treat per *Chest Pain Protocol*.
4. Immobilize the affected extremity.

DISPOSITION:

1. *Priority* evacuation if no respiratory distress or chest pain.
2. *Urgent* evacuation if respiratory distress or chest pain are present.

ENVENOMATION

SPECIAL CONSIDERATIONS:
1. Toxic envenomations from a variety of sources, including bees/wasps, scorpions, jellyfish, or snakes, are all capable of causing life-threatening anaphylaxis.
2. Only a minority of snakebites from toxic snakes involve severe, life-threatening envenomations.
3. Incision, excision, electrical shock, tourniquet, oral suction, and cryotherapy should **NOT** be performed to treat snakebites.
4. Suction device is not effective for removing snake venom from a wound. If previously placed, it should be left in place until patient reaches higher level of care.

SIGNS AND SYMPTOMS:

General:
1. Pain
2. Swelling / edema
3. Puncture site(s) from stinger or fangs

Hemotoxins:
1. Sudden pain
2. Erythema
3. Ecchymosis
4. Hemorrhagic bullae
5. Bleeding from site
6. Metallic taste
7. Hypotension/ shock

Neurotoxins:
1. Cranial Nerve dysfunction (i.e. ptosis)
2. Paresthesias
3. Fasciculations
4. Weakness
5. Altered mental status

MANAGEMENT:
1. If signs and symptoms of anaphylaxis present, treat per *Anaphylaxis Protocol.*
2. ℞ Diphenhydramine (Benadryl) 25mg PO / SL / IV
3. Apply cold packs topically for insect envenomations.
4. Treat per *Pain Management Protocol.*
5. If toxic snakebite suspected (significant pain, edema, evidence of coagulopathy or neurologic signs/symptoms):
   A. Minimize activity and place on a litter
   B. Remove all constricting clothing and jewelry
   C. Start IV in unaffected extremity
   D. Monitor and record vital signs and extent of edema every 15 – 30 minutes
   E. Immobilize affected limb in neutral position and wrap affected extremity in an elastic bandage beginning proximally and progressing distally, or in an air splint.

DISPOSITION:
1. *Urgent* evacuation if treated for anaphylaxis.
2. *Urgent* evacuation if evidence of severe envenomation (systemic signs and symptoms, edema reaching root of limb).
3. Evacuation not required if signs and symptoms do not indicate anaphylaxis or severe envenomation after four hours of observation.

EPISTAXIS

SPECIAL CONSIDERATIONS:
1. Common at high altitude and in desert environments due to mucosal drying.
2. May be anterior or posterior
3. Posterior epistaxis may be difficult to stop and may cause respiratory distress due to blood flowing into the airway. This type of epistaxis is uncommon in young healthy adults. It is more commonly seen in older, hypertensive patients.

SIGNS AND SYMPTOMS:
1. Nosebleed
2. Often previous history of nosebleeds

MANAGEMENT:

1. Oxymetazoline (Afrin) nasal spray 2 squirts in each nostril then pinch anterior area of nose firmly for full 10 minutes **WITHOUT RELEASING PRESSURE**.
2. If bleeding continues, insert Afrin-soaked nasal sponge bilaterally along floor of nasal cavity. Continue pinching the nose just below the nasal bridge, for 10 minutes.
3. Once bleeding has stopped (after 30 minutes), remove the Afrin nasal sponge and apply Bactroban to the affected nostril bid – tid.

4. Clear clots and other material from airway (if required) by having patient sit up, lean forward, and blow his/her nose.

5. Normal saline IV TKO prn (based upon severity of nose bleed)

6. **IF BLEEDING CONTINUES:**
   A. Prepare 14 French Foley catheter. (Tip is cut to minimize distal irritation.)
   B. Advance catheter along floor of nose (straight in) until visible in mouth.
   C. Fill balloon with 5cc of normal saline.
   D. Retract catheter until well opposed to posterior nasopharynx.
   E. Add an additional 5cc of normal saline to balloon.
   F. Clamp in place without using excessive anterior pressure.
   G. Moxifloxacin (Avelox) 400mg PO qd until packing is removed.
   H. **LEAVE BALLOON AND PACKING IN PLACE FOR 72 HOURS.**

DISPOSITION:
1. Evacuation may not be required if epistaxis is mild, anterior, and resolves with treatment.
2. *Priority* evacuation for severe epistaxis not responding to therapy or if Foley catheter is used.

FLANK PAIN
(INCLUDES RENAL COLIC, PYELONEPHRITIS, KIDNEY STONES)

SPECIAL CONSIDERATIONS:
1. May proceed to life-threatening systemic infection.
2. May be associated with testicular torsion. Ensure normal external GU exam first.

SIGNS AND SYMPTOMS:
1. Urinary Tract Infection
   A. Dysuria
   B. Polyuria
2. Back pain
3. Flank pain
4. Nausea/ vomiting
5. Costovertebral angle tenderness
6. Fever
7. Hematuria

MANAGEMENT:
1. Treat per *Pain Management Protocol.*

2. Treat per *Nausea and Vomiting Protocol*.

3. Treat per *Dehydration Protocol.*

4. If fever present:
   A. Moxifloxacin (Avelox) 400mg PO qd **OR** Amoxicillin/Clavulanic Acid (Augmentin) 875mg PO bid
   B. Ceftriaxone (Rocephin) 1gm bid IV / IM **OR** Ertapenem (Invanz) 1gm IV / IM if unable to tolerate PO or unresponsive to oral treatment.

DISPOSITION:
Priority evacuation

FUNGAL SKIN INFECTION

SPECIAL CONSIDERATIONS:

1. Insect bite(s), eczema, and contact dermatitis as differential diagnosis -– are also accompanied by itching, but have discrete red papular lesion(s).
2. Cellulitis as a differential diagnosis – is bright red, painful, not pruritic, and typically becomes steadily worse without antibiotics.
3. Acute contact dermatitis as a differential diagnosis – is diagnosed by intense itching, skin erythema and a history of environmental exposure.

SIGNS AND SYMPTOMS:

1. Skin erythema
2. Pruritis is variable
3. Slow spreading
4. Borders of the erythematous plaques are generally irregular and / or circumferential.
5. Often initially diagnosed as contact dermatitis but gets worse with use of steroids (those without antifungal agent added).
6. Most common sites of infection are feet. (“athlete’s foot” or tinea pedis), groin (“jock itch” or tinea cruris), scalp (tinea capitus), and torso or extremities (“ring worm” or tinea corporis).

MANAGEMENT:

1. Fluconazole (Diflucan) 150mg PO once per week for four weeks (total of four doses in the absence of a cure, or 1 dose after clinically clear). If not resolved after 4 weeks, refer to physician.

2. Clean rigorously with mild soap without injuring the skin.

DISPOSITION

Evacuation is usually not required for this condition.

GASTROENTERITIS

SPECIAL CONSIDERATIONS:
1. Etiology of acute diarrhea is often viral, but bacterial or parasitic infections are common in the deployed environment.
2. Emerging fluoroquinolone resistance among enteropathogenic E. Coli and Campylobacter makes azithromycin the new primary agent for therapy.
3. Consider antibiotic-related diarrhea if on antibiotics at onset.
4. Consider parasitic infection if symptoms persist for 3 or more days.
5. Must rule out malaria if fever and GI symptoms exist in a malarious area.

SIGNS AND SYMPTOMS:
1. Acute onset of nausea, vomiting, and diarrhea.
2. Fever may or may not be present.

MANAGEMENT:
1. Loperamide (Imodium) 4mg PO initially, then 2mg PO after every loose bowel movement with a maximum dose of 16mg per day.
2. Do not use loperamide in the presence of fever or bloody stools.
3. Azithromycin (Zithromax) 500mg PO qd for 3 days or moxifloxacin (Avelox) 400mg PO qd for 3 days
4. Treat per *Nausea and Vomiting Protocol*.
5. Treat per *Dehydration Protocol*.
6. If diarrhea persists after 3 days of therapy, or diarrhea develops while already on antibiotics, give metronidazole (Flagyl) 500mg PO tid for 10 days.

DISPOSITION:
1. *Urgent* evacuation if grossly bloody stools or circulatory compromise.
2. *Priority* evacuation if dehydration occurs despite above therapy.
3. *Routine* evacuation if diarrhea persists after 3 days of therapy or if it develops while already on antibiotics.

HEADACHE

SPECIAL CONSIDERATIONS:
1. The number of differential diagnoses for the acute headache is large and includes disorders that encompass the spectrum of minor to severe underlying disorders.
2. Consider altitude sickness, intracranial bleeds, meningitis and carbon monoxide poisoning.

SIGNS AND SYMPTOMS:
1. If the headache is atypical for the patient, check for elevated blood pressure (if possible), fever, neck rigidity, visual symptoms, mental status changes, neurological weakness, and hydration.

MANAGEMENT:
1. If the patient has fever, nuchal rigidity, photophobia, petechial rash, or nausea and vomiting, treat per *Meningitis Protocol.*
2. Treat per *Pain Management Protocol.*
3. If headache is accompanied by nausea and / or vomiting, treat per *Nausea and Vomiting Protocol*.
4. Oxygen if other therapies are ineffective.
5. If dehydration is suspected, treat per *Dehydration Protocol*.
6. If at altitude, treat per *Altitude Illness Protocol.*

DISPOSITION:
1. Evacuation is usually not required if the headache responds to therapy.
2. Acute headache in the presence of fever, severe nausea and vomiting, mental status changes, focal neurological signs, or preceding seizures, loss of consciousness, or a history of “it’s the worst headache in my life” constitutes a true emergency and requires *Urgent* evacuation. Also consider *Urgent* evacuation for anyone without a prior history of headaches if their pain is severe.

HEAD AND NECK INFECTION
(INCLUDES EPIGLOTTITIS AND PERITONSILLAR ABSCESS)

SPECIAL CONSIDERATIONS:
1. Most common causes in young healthy patients include odontogenic (dental origin) cutaneous sources or post-injury (wound or fracture) infections.
2. These infections may progress rapidly from minor to airway/life-threatening.

SIGNS AND SYMPTOMS:
1. Pain, fever and malaise
2. Intra/extra oral swelling
3. Difficulty opening mouth
4. Pus
5. Difficulty swallowing
6. Airway compromise

MANAGEMENT:
1. Manage airway and breathing first!
2. Place patient in position of comfort.
3. Monitor pulse oximetry.
4. Oxygen prn
5. IV access
6. Amoxicillin/clavulanic acid (Augmentin) 875mg PO bid for 7 days **OR** ceftriaxone (Rocephin) 1gm IV / IM qd for 7 days.
7. Treat per *Pain Management Protocol.*
8. Consider dexamethasone (Decadron) 10mg IV for any airway involvement.
9. **Avoid airway manipulation unless absolutely necessary**.
10. If airway intervention is indicated, make a single attempt at intubation if feasible. (The epiglottis is not swollen to the extent that visualization of cords is not possible.)
11. If intubation is attempted, do not make any repeat attempts. If intubation has failed, the next step is a cricothyroidotomy (using lidocaine if conscious).
12. Have cricothyroidotomy kit available BEFORE ATTEMPTING INTUBATION.

DISPOSITION:
1. *Urgent* evacuation if any airway compromise is present.
2. *Routine* evacuation if no airway compromise and the infection is not widespread.

HIV POST EXPOSURE PROPHYLAXIS

SPECIAL CONSIDERATIONS:

1. Initiation of the highly active antiretroviral therapy (HAART) should ideally occur within 2 hours of exposure, but still has some effect up to 72 hours after exposure.
2. Antiretrovirals have a significant side-effect profile, including nausea, vomiting, and diarrhea.
3. Obtain a sample of the source's blood for HIV and hepatitis testing, if possible.
4. Use of a commercially available Rapid HIV Test Kit that uses either an oral specimen or whole blood is recommended for source testing to determine if HAART therapy should be initiated. This should occur within 1-2 hours. The test requires 20-40 minutes to obtain results. The use of one of the following FDA approved Rapid HIV Test kits is recommended (as of 2009):
   A. Whole blood, plasma or oral fluid:
      1) OraQuick Advance Rapid HIV 1/2 Antibody Test
   B. Whole blood or serum/plasma:
      1) Uni-Gold Recombigen HIV Test
      2) Clearview HIV 1/2 Stat-Pak
      3) Clearview Complete HIV 1/2 Test

HIGH RISK EXPOSURES:

1. Percutaneous injury (needle stick or other contaminated penetrating injury).

2. Exposure or exchange of body fluids with persons at high risk for HIV.

3. Transfusion of blood products that have not undergone standard U.S. blood bank or equivalent testing for transmissible diseases.

4. When attempting to evaluate a high risk exposure, take into account the source of the bodily contamination. For example, blood from a fellow Soldier would fall into a low risk category for exposure.

MANAGEMENT:

1. Wash area with soap and water to clean area and minimize exposure.

2. Use a Rapid HIV Test Kit to determine if therapy should be initiated. **In high risk situations, do not delay initiation of therapy if the test kit is not available. HIV PEP should be started within 1 – 2 hours of exposure.**

3. Consult with unit medical officer ASAP to discuss the case and obtain further guidance after any significant exposure.
   A. If the Rapid HIV Test is positive, initiate PEP.
   B. If high-risk exposure occurs and a Rapid HIV Test is unavailable, initiate PEP.
   C. If a Rapid HIV Test is negative, seek medical officer guidance to determine the need for PEP.

4. Initiate antiretroviral triple therapy according to the following priority of drugs. **Choose only 1 of the following drug treatment options.**
   A. Emtricitabine/tenofovir/efavirenz (Atripla), 1 PO qd
      1) 52% incidence of CNS side-effects
      2) Known to cause birth defects. Category D drug.
   B. **OR** lamivudine and zidovudine (Combivir®) 1 tablet PO bid **AND** tenofovir (Viread) 300mg PO qd
   C. **OR** emtricitabine/tenofovir (Truvada) 1 PO qd **AND** lopinavir/ritonavir (Kaletra) 4 pills PO qd, taken simultaneously

D. **OR** emtricitibine/tenofovir (Truvada) 1 PO qd **AND** zidovudine (AZT) 300mg PO bid

1) WARNING Possible antagonism with decreased effectiveness.

E. **OR** lamivudine and zidovudine (Combivir®) 1 tablet PO bid **AND** nelfinavir (Viracept®) 1250mg PO bid

1) WARNING Older regimen. Replaced by options 4a and 4b.

5. WARNING Do not use alcoholic beverages after Combivir administration.

6. For GI side-effects of medication, treat per *Nausea and Vomiting Protocol*

7. Maintain hydration and nutrition status.

DISPOSITION:

1. *Urgent* evacuation if a significant exposure occurs and HAART is not available.
2. *Routine* evacuation if HAART is available and Rapid HIV Test is positive.
3. Consult unit medical officer to determine the need for, and the priority of evacuation, if high-risk exposure has occurred and a Rapid HIV Test is negative.

HYPERTHERMIA

SPECIAL CONSIDERATIONS:
1. Heat stroke is a life-threatening effect of hyperthermia and characterized by altered mental status and elevated core temperature.
2. Mild and moderate hyperthermia can often be treated and the casualty returned to duty.
3. Dehydration often accompanies hyperthermia.
4. Suggest that colloids (Hextend) be avoided in favor of crystalloids.

SIGNS AND SYMPTOMS:
1. Altered mental status
2. Increased core temperature

MANAGEMENT:
1. Place in cool area and remove clothing, spray with water, fan patient. Place ice packs on sides of neck, in armpits, and in groin area. If available, place hands and feet into buckets of ice water. Apply external ice until core temperature reaches 39 degrees C (102 degrees F). **AVOID SHIVERING WHICH WILL RAISE THE PATIENT'S CORE BODY TEMPERATURE!!**
2. Give 1 tube of glucose.
3. Treat per *Dehydration Protocol*.
4. Treat per *Nausea and Vomiting Protocol*.
5. If unable to control shivering, give diazepam (Valium) 5mg IV / IM.

DISPOSITION:
1. Mild to moderate cases can be treated and not evacuated.
2. *Routine* evacuation for heat stroke casualties.
3. *Priority* evacuation for severe hyperthermia.

HEAD AND NECK INFECTION
(INCLUDES EPIGLOTTITIS AND PERITONSILLAR ABSCESS)

SPECIAL CONSIDERATIONS:
1. Most common causes in young healthy patients include odontogenic (dental origin) cutaneous sources or post-injury (wound or fracture) infections.
2. These infections may progress rapidly from minor to airway/life-threatening.

SIGNS AND SYMPTOMS:
1. Pain, fever and malaise
2. Intra/extra oral swelling
3. Difficulty opening mouth
4. Pus
5. Difficulty swallowing
6. Airway compromise

MANAGEMENT:
1. Manage airway and breathing first!
2. Place patient in position of comfort.
3. Monitor pulse oximetry.
4. Oxygen prn
5. IV access
6. Amoxicillin/clavulanic acid (Augmentin) 875mg PO bid for 7 days **OR** ceftriaxone (Rocephin) 1gm IV / IM qd for 7 days.
7. Treat per *Pain Management Protocol.*
8. Consider dexamethasone (Decadron) 10mg IV for any airway involvement.
9. **Avoid airway manipulation unless absolutely necessary**.
10. If airway intervention is indicated, make a single attempt at intubation if feasible. (The epiglottis is not swollen to the extent that visualization of cords is not possible.)
11. If intubation is attempted, do not make any repeat attempts. If intubation has failed, the next step is a cricothyroidotomy (using lidocaine if conscious).
12. Have cricothyroidotomy kit available BEFORE ATTEMPTING INTUBATION.

DISPOSITION:
1. *Urgent* evacuation if any airway compromise is present.
2. *Routine* evacuation if no airway compromise and the infection is not widespread.

INGROWN TOENAIL

SPECIAL CONSIDERATIONS:
1. Consider toenail removal only if close follow-up is possible.
2. **DO NOT USE** local anesthetic with epinephrine.
3. If complete nail removal is indicated, evacuate patient.

SIGNS AND SYMPTOMS:
1. Pressure over the nail margins increases the pain.
2. Inflammatory or infectious responses are generally localized.
3. Partial or complete nail removal is typically indicated in chronic inflammation / infection, with severe pain of both medial and lateral nail folds, especially if the condition has lasted one month or greater.

MANAGEMENT:
1. Partial/complete toenail removal:
   A. Clean the site with soap, water, and betadine.
   B. Perform a digital block at the base of the toe using lidocaine 1% **WITHOUT EPINEPHRINE.**
   C. Apply constricting band to base of toe.
   D. Remove the lateral quarter of the nail toward the cuticle (or whole nail), using a sharp scissors with upward pressure.
   E. Bluntly dissect the nail from the underlying matrix with a flat object, elevate the nail and grasp it with a hemostat or forceps, removing the piece.
   F. Clean the nail grooves to remove any debris.
   G. Remove constricting band.
   H. Control bleeding with direct pressure and dry the underlying nail bed.
2. Mupirocin (Bactroban) 2% ointment to exposed nail bed.
3. Dress with a non-adherent dressing and dry bandage.
4. Instruct the patient to wash the area daily.
5. Recheck wound and change dressing daily.
6. Instruct patient to wear less constricting shoes and to trim their nails straight across. Optimal care is to limit walking and marching for 3 – 5 days.
7. Treat per *Pain Management Protocol.*
8. Systemic antibiotics are typically not needed in these procedures; however, consider using moxifloxacin (Avelox) 400mg PO qd for 10 days, **OR** amoxicillin/clavulanic acid (Augmentin) 875mg PO bid for 10 days if an infection is suspected (increasing pain, redness, and swelling).

DISPOSITION:
1. Evacuation is usually not required if the condition responds to therapy.
2. The nail bed may have serous drainage for several weeks, but will usually heal within 2 – 4 weeks.

JOINT INFECTION

SPECIAL CONSIDERATIONS:
1. May result from penetrating trauma (especially animal or human bites), gonorrhea, or iatrogenic causes (i.e. attempted aspiration of joint effusion).
2. Consider also an acute joint effusion due to blunt trauma or overuse (usually less red and no fever).

SIGNS AND SYMPTOMS:
1. History of adjacent penetrating trauma or infection
2. Single red, swollen joint
3. Fever
4. Pain

MANAGEMENT:
1. IV access
2. Ceftriaxone (Rocephin) 2gm IV / IM bid **OR** ertapenem (Invanz) 1gm IV / IM qd .
3. Treat per *Pain Management Protocol.*
4. **IMMOBILIZE THE JOINT**

DISPOSITION:
Priority evacuation

K-9 EVALUATION AND TREATMENT

VITAL SIGNS OF CANINES:

1. Temperature:
   a. Normal rectal temp is 100 to 102.5 degrees F
   b. Temperature after exercise: 103 to 106 degrees F.
2. Pulse:
   a. Normal pulse rate will vary from 60 to 80 bpm
   b. The pulse rate and respiration rate will vary from dog to dog, and will also vary if the dog is at rest or working.
   c. The femoral artery is located on the inside of a dog's rear thighs. Take your hand as if you were passing someone a plate, grab the dog on the rear of their thigh with your fingers inside the thigh, and palpate the artery.
3. Normal respiration rate for an adult dog will vary between 10 and 40 respirations per minute
4. Capillary refill time: less than 2 seconds.
5. Mucous membrane color: generally pink

SPECIFIC WEIGHT RELATED DRUG DOSES ARE AT THE END OF THIS PROTOCOL
DOG HANDLER CARRIES DRUG CARD FOR THE DOG

MONITORING:

1. Pulse Ox – Placed on tongue, ear or other non pigmented, highly vascular area (lip)

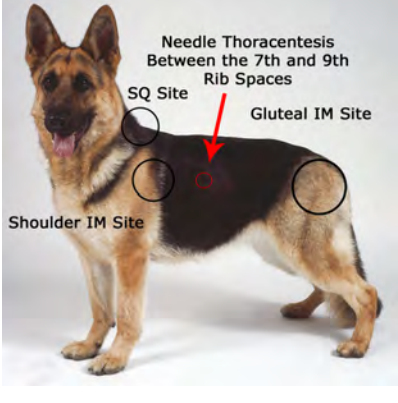
2. EKG – Alligator clips behind each elbow and above left knee. If you do not have alligator clips place the buttons or leads behind the largest pad on the foot using tape and KY jelly.

3. Animals do not have palpable carotid pulses. You can only obtain a femoral pulse in the inguinal crease. ***(Palpate carefully on a conscious dog!)***

IM INJECTION SITES:

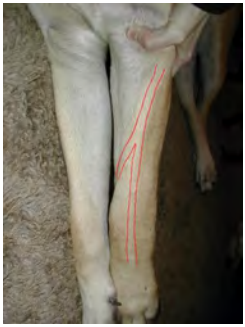
1. Gluteal muscles

2. Shoulder muscles



IV SITES:

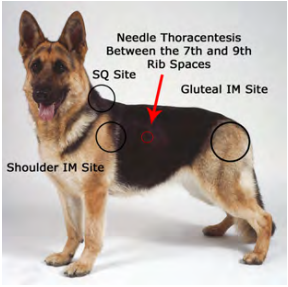
Usually the easiest/best vein to use for a K-9 IV is the one found on their forelegs. There's a major vein that is located on the middle of the foreleg. The veins most commonly used for fluid administration and IV delivery of drugs are the cephalic and accessory cephalic veins in the forelegs.



In the hind leg, typically the lateral saphenous vein is used.

PRE-HYDRATION FLUID THERAPY:

1. Handlers may pre-load prior to event
2. Normal saline or lactated Ringer's solution, 500ml SQ
3. Good for about 2 hours
4. Administer SQ between the shoulder blades



HYDRATION STATUS:

1. Normal Hydration: Pick up skin and release. It should return to the position that it was, within 1 second.
    A. Capillary Refill Time (CRT) is measured by pressing on the gums over the canine tooth. Using one finger, press down firmly until the gums turn white under your finger and release. You are looking for the time it takes for the color to return. Also, note the color of your dog's gums and mouth. Dog's gum color may vary from black, pink, reddish brown or any combination of colors.

2. Dehydration:
    A. 6-8% dehydration – loss of skin elasticity, tacky gums, mildly prolonged CRT
    B. 10-12% dehydration – tented skin, dry gums, prolonged CRT, sunken eyes, increased HR, rapid/weak pulses

3. Dehydration Fluid Replacement:
    A. Estimate dehydration
    B. %(as a decimal)x BW(kg) x 1000 = ml for replacement
        i. Example: 45 pound dog, 5% dehydrated = 0.05 x 20kg x 1000ml = 1000ml
    C. Fluid choice is normal saline or lactated Ringer's solution

RESTRAINT (SOF medical personnel should work with handler to learn muzzling techniques):

1. Always muzzle dog when working on them.

2. Physical restraints with muzzles or improvised muzzles

3. Chemical restraint if needed to protect handler and medic
    A. Dexdomitor (if not traumatic injury) reversed with antisedan. Dexdomitor after onset gives 20 to 30 minutes of good sedation when administered with labeled dose.
    B. **Morphine can be used for sedation and restraint at 15 – 30mg IM.**

AIRWAY CONSIDERATIONS:

1. Size 9 or 10mm cuffed endotracheal tube, secure with gauze or IV tubing. Tie over nose.
2. Passive flow airway – secure air line to muzzle.
3. Field expedient masks
4. Dogs do not tolerate nasal trumpets.

K-9 HEAT INJURIES

SPECIAL CONSIDERATIONS:
1. Heat injuries are life threatening for an animal.
2. Dehydration accompanies heat injuries.
3. Crystalloids are preferred over colloids. However, use of colloids is better then nothing.

HEAT EXHAUSTION

SIGNS AND SYMPTOMS:
1. Recent activity and history
2. Rectal temp maybe over 105
3. Fast and shallow panting that does not slow in a couple of minutes
4. Heart rate may be over 140 bpm
5. Brick red mucous membranes
6. Pulse may be bounding, weak and uncoordinated

HEAT STROKE

SIGNS AND SYMPTOMS:
1. Recent activity and history
2. Temp over 106 degrees F
3. Pale gums
4. Rapid and shallow breathing
5. Collapse
6. Weak
7. Uncoordinated
8. Seizures
9. Vomiting
10. Diarrhea

MANAGEMENT:
1. Shade or AC
2. Wet down with cool water
3. Alcohol on pads
4. Cool ice packs under groin and arm pits
5. IV fluid therapy
6. Monitor until temp drops to under 103 degrees F

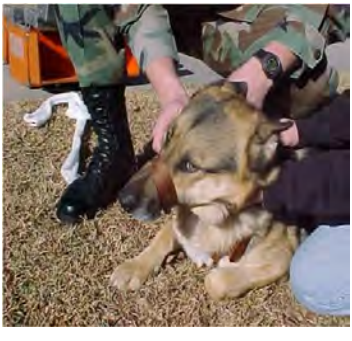
K-9 HIGH ALTITUDE SICKNESS AND PULMONARY EDEMA

SPECIAL CONSIDERATIONS:
Typically not seen in dogs, but may occur

SIGNS AND SYMPTOMS:
1. Reduced appetite
2. Listlessness
3. Reduced activity levels
4. "Mildly dusky" tongue color

PROPHYLAXIS:
1. Acetazolamide (Diamox),
   A. 250mg PO bid 24 hours prior to ascent and continued for 48 hours after maximum altitude is reached.
   B. If the 500mg sustained release tablet is used, dose is 500mg every 24 hours.
2. **If unable to administer acetazolamide 24 hours prior to ascent**, then administer Dexamethazone, 4mg IV / IM / PO q 6 hr

TREATMENT:
1. Descend from altitude and treat symptoms
2. Albuterol inhaler can be attempted
   A. Apply field expedient muzzle as noted.



   B. Improvise a nebulizer by using a plastic bag or paper bag. Open the bag, squirt the albuterol into the bag. Place the bag over the muzzle and let the dog breath a few breaths from the bag.

C. Example of blow by oxygen administration

D. Seek veterinary care.

K-9 TRAUMA MANAGEMENT

SPECIAL CONSIDERATIONS:
1. Control bleeding first based on TCCC standards and guidance for humans.
2. Follow **MARCH** protocol

SIGNS AND SYMPTOMS:
1. Pale color in gums / inside eyelids, capillary refill time greater than 2 seconds
2. Dry lips and gums, dehydration
3. Excessive drooling in some poison cases
4. Weak femoral pulse, rapid 150 to 200 beats per minute
5. Rapid heart rate
6. Cool extremities
7. Hyperventilation, rapid breathing generally over 25 breaths per minute
8. Confusion, restless, anxiousness
9. General weakness

Advanced stages of shock:
1. Continued depression and weakness to the point of not being able to move or becoming unresponsive or unconscious.
2. Dilated pupils.
3. Capillary refill time greater than 4 seconds.
4. White mucous membranes.
5. Body temperature below 98 degrees F, taken rectally.

MANAGEMENT:
1. Muzzle dog
    A. Field expedient muzzle:
        1) Kerlix is wrapped around the snout several times and then tied behind the head.

2) The leash is wrapped around the snout

2. **MARCH** Protocol

3. **M**assive hemorrhage: Control bleeding per TCCC with tourniquet use and hemostatic agents

4. **A**irway
   A. An injured dog or an animal in shock may not recognize you. The dog may bite you out of pain or fear. It is very important to talk to the dog in very soft and reassuring tones. If the dog is having trouble breathing or panting heavily do not put a muzzle on it. If a muzzle is placed on the dog it must be monitored at all times and removed at the first sign of overheating or vomiting. Get help, if possible from someone who can help hold the dog, so you can do an examination and/or treat the dog.
   B. After achieving a patent airway, one must determine whether the animal is breathing, and whether this breathing is effective:
   C. Carefully pull the tongue out of the animal's mouth.
      1) WARNING Even an unresponsive dog may bite by instinct!!
   D. Make sure that the neck is reasonably straight; try to bring the head in-line with the neck.
      1) WARNING Do not hyperextend in cases where neck trauma exists
   E. Visibly inspect the airway by looking into the mouth, and down the throat for foreign objects occluding the airway. Unlike human CPR, rescuers may reach into the airway and remove foreign objects that are visible
   F. Attempt 2 rescue breaths, by closing the mouth, and performing mouth-to-nose ventilations.
   G. Reposition the neck and try step 1 F. again, if spontaneous breathing fails to occur.
   H. Intubation if necessary to assure airway
      1) WARNING Do not attempt to intubate the animal, without prior training, and properly sized ET tubes (size 9 or 10 ETT).

5. **R**espirations
   A. Ventilate the animal by closing the mouth, and performing mouth-to-nose ventilations.
   B. Ventilate at 20 breaths per minute. If supplemental Oxygen is available, and the animal is breathing on its own, use a high-flow blowby.

K-9 HIGH ALTITUDE SICKNESS AND PULMONARY EDEMA

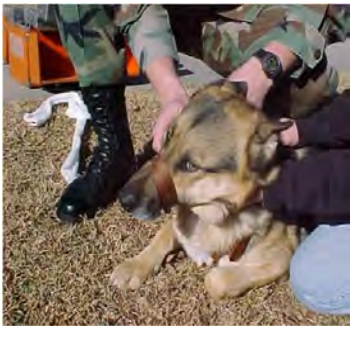
SPECIAL CONSIDERATIONS:
Typically not seen in dogs, but may occur

SIGNS AND SYMPTOMS:
1. Reduced appetite
2. Listlessness
3. Reduced activity levels
4. “Mildly dusky” tongue color

PROPHYLAXIS:

1. Acetazolamide (Diamox),
   A. 250mg PO bid 24 hours prior to ascent and continued for 48 hours after maximum altitude is reached.
   B. If the 500mg sustained release tablet is used, dose is 500mg every 24 hours.
2. **If unable to administer acetazolamide 24 hours prior to ascent**, then administer Dexamethazone, 4mg IV / IM / PO q 6 hr

TREATMENT:
1. Descend from altitude and treat symptoms
2. Albuterol inhaler can be attempted
   A. Apply field expedient muzzle as noted.



   B. Improvise a nebulizer by using a plastic bag or paper bag. Open the bag, squirt the albuterol into the bag. Place the bag over the muzzle and let the dog breath a few breaths from the bag.

LOSS OF CONSCIOUSNESS (WITHOUT SEIZURES)

SPECIAL CONSIDERATIONS:
1. The most common cause of loss of consciousness in healthy adults is orthostatic hypotension (associated with sudden standing) or vasovagal syncope (associated with sudden adverse stimulus – injections are a common cause).
2. Also consider hypoglycemia, anaphylactic reaction, medication, recreational drug use, head trauma, hyperthermia, hypothermia, myocardial infarction, lightning strikes, and intracranial bleeding.

SIGNS AND SYMPTOMS:
Unconsciousness

MANAGEMENT:
1. If no respirations or pulse, follow BLS guidelines.

2. Management of orthostatic hypotension and vasovagal syncope is accomplished by placing the patient in a supine position, ensuring the airway is open. Patients experiencing these two disorders should regain consciousness within a few seconds. If they don't, consider other etiologies and proceed to the steps below.

3. Place either 1 tube Glutose (oral glucose gel) or contents of one packet of sugar in buccal mucosal region.

4. IV access

5. Naloxone (Narcan) 0.8mg IV / IM. Repeat q 2–3 min prn to max dose of 10mg.

6. If no response treat per appropriate Protocol per *Special Considerations #2*.

7. Pulse oximetry monitoring

8. Oxygen

DISPOSITION:
1. *Urgent* evacuation, unless loss of consciousness due to orthostatic hypotension or vasovagal hypotension.
2. The evacuation package should include personnel certified in Advanced Cardiac Life Support (ACLS), with equipment, supplies and medications necessary for ACLS care.

MALARIA

SPECIAL CONSIDERATIONS:

1. Malaria MUST be considered in all febrile patients currently in, or recently in, a malarious area.
2. It is not uncommon for malaria to present like pneumonia or gastroenteritis (with vomiting and diarrhea).
3. It is appropriate to treat suspected malaria cases empirically if diagnostic tests (blood smears or rapid test) are not available. However, the Binax Rapid Diagnostic Test is now FDA approved and should be used, if available, to guide treatment selection.
4. The use of chemoprophylaxis does not rule out malaria.
5. Consider bacterial meningitis in evaluating the patient – treat for both disorders if meningitis is suspected.
6. Patients who cannot tolerate PO meds must be evacuated.
7. **IF SPECIES IS UNKNOWN, TREAT FOR P. *FALCIPARIUM*.**

SIGNS AND SYMPTOMS:

1. Prodrome of malaise, fatigue, and myalgia may precede febrile paroxysm by several days.
2. Paroxysm characterized by abrupt onset of fever, chills, rigors, profuse sweats, headache, backache, myalgia, abdominal pain, nausea, vomiting, and diarrhea (may be watery and profuse) in P. *falciparum.*
3. Intermittent fever to >40C (105F) OR fever may be near continuous in P. *falciparum* malaria; classic "periodicity" is usually absent. Profuse sweating between febrile paroxysms.
4. Tachycardia, orthostatic hypotension, tender hepatomegaly, and delirium (cerebral malaria).

MANAGEMENT: P. *FALCIPARUM* MALARIA

1. Atovaquone 250mg/proguanil 100mg (Malarone) 4 tabs qd for 3 days with food **OR** give Mefloquine 750mg followed by 500mg 12 hours later.
2. Acetaminophen (Tylenol) 1000mg PO q 6 hr prn for fever.

MANAGEMENT: NON - P. *FALCIPARUM* MALARIA

1. Chloroquine 1gm PO one time, then 500mg qd for 3 days starting 6 hours after 1st dose **PLUS** primaquine 30mg qd for 14 days **(MUST** rule out G6PD deficiency before giving primaquine).
2. Acetaminophen (Tylenol) 1000mg PO q 6 hr prn for fever.

DISPOSITION:

1. *Urgent* treatment and evacuation for complicated malaria (cerebral, pulmonary, unstable vital signs) these indicate a medical emergency.
2. *Routine* evacuation for uncomplicated cases (normal vital signs, normal mental status, no nausea and vomiting, no cough/ shortness of breath).

MENINGITIS

SPECIAL CONSIDERATIONS:
1. May be bacterial, viral, or fungal. The bacterial type may cause death in hours, even in previously healthy young adults, if not treated aggressively with appropriate antibiotics.
2. Consider malaria as a differential diagnosis. Treat for both if malaria cannot be ruled out.

SIGNS AND SYMPTOMS:
1. Classic features include:
   A. Severe headache
   B. High fever
   C. Pain with any neck movement, particularly forward flexion
   D. Altered mental status

2. May also include:
   A. Photophobia
   B. Nausea and vomiting
   C. Malaise
   D. Seizures

3. Positive Brudzinski (pain on head and neck flexion) and Kernig's (neck pain with hip flexion and knee extension) signs

MANAGEMENT:
1. If meningitis is suspected, treatment should be initiated immediately.

2. IV access.

3. ℞ Dexamethasone (Decadron) 10mg IV / IM q 6 hr.

4. ℞ Ceftriaxone (Rocephin) 2gm IV q 12 hr (IM route possible alternative but prefer IV route).

5. Treat per *Pain Management Protocol.*

6. Treat per *Nausea and Vomiting Protocol*.

7. If seizures occur, treat per *Seizure Protocol*.

8. ℞ Moxifloxacin (Avelox) 400mg PO once **OR** ceftriaxone (Rocephin) 250mg IM for prophylaxis of close contacts.

DISPOSITION:
1. Urgent evacuation.

NAUSEA AND VOMITING

SPECIAL CONSIDERATIONS:
1. Avoid rapid IV administration of promethazine (Phenergan).
2. **DO NOT** give subcutaneous promethazine (Phenergan).
3. Diphenhydramine (Benadryl) and promethazine (Phenergan) may cause drowsiness.

SIGNS AND SYMPTOMS:
Nausea and Vomiting

MANAGEMENT:

1. Ondansetron (Zofran) 4–8mg IV / IM bid or 8mg PO q 8 hr prn
2. **OR** promethazine (Phenergan) 25mg IV / IM / PO q 6 hr prn
3. **OR** diphenhydramine (Benadryl) 25–50mg IV / IM / PO q 6 hr prn.
4. Treat per *Dehydration Protocol*.

DISPOSITION:
Evacuate per Protocol for underlying condition.

PAIN MANAGEMENT

SPECIAL CONSIDERATIONS:
1. Any use of narcotic medications will be sedating and degrade the mission performance of patients.
2. Avoid IM or SQ injections of narcotic medications due to the potential for delayed absorption.

SIGNS AND SYMPTOMS:
Pain

MANAGEMENT:
1. Start in sequential manner to maximize pain control with mission performance.

A. Acetaminophen (Tylenol) 1000mg PO q 6 hr

B. Non-steroidal anti-inflammatory drugs

1) Meloxicam (Mobic) 15mg PO qd prn

2) **OR** ibuprofen (Motrin) 800mg PO q 8 hr prn

3) **OR** ketorolac (Toradol) 30mg IV / IM q 6 hr prn. .

C. Narcotic Medications

1) Oral transmucosal fentanyl citrate (Actiq Lozenge) 400–800mcg orally over 15 minutes (may repeat dose once).

WARNING **Life-threatening hypoventilation/respiratory arrest could occur at any dose of fentanyl, particularly in patients not taking chronic narcotics. Therefore, closely monitor for respiratory depression.**

2) Morphine sulfate 5mg IV initial dose then 5mg IV q 10 min for max dose of 30mg

2. Treat per *Nausea and Vomiting Protocol*.

DISPOSITION:
Priority evacuation for any patients with narcotic use.

SEIZURE

SPECIAL CONSIDERATIONS:
1. May be caused by injury, infection, high fever, alcohol withdrawal, drug use, toxins, and structural abnormalities of the central nervous system (CNS).

SIGNS AND SYMPTOMS:
1. Generalized seizure
2. Possible history of previous seizures
3. Possible history of recent head trauma
4. Possible history of CNS infection
5. Possible history of headaches

MANAGEMENT:
1. Avoid trauma to patient during the seizure, but do not restrain patient.
2. Diazepam (Valium) 10mg IV / IM / IO for ongoing seizures. May repeat 10mg prn q 15 min for continuing seizures for max dose 30mg.

   A. **OR** midazolam (Versed) 5–10mg IM / IV / IO **OR** 1mg IV slowly q 2–3 minutes to a maximum dose of 10mg for sedation purposes. Titrate to achieve necessary level. (The patient is somewhat somnolent, but still easily arousable.)

3. Do not attempt to force an object into the mouth to open airway.

4. Support and maintain airway and ventilation as needed to include SPO_2.

5. If seizures are accompanied by fever:
   A. Consider meningitis and treat per *Meningitis Protocol*.
   B. Consider malaria if in malaria endemic area and treat per *Malaria Protocol*
6. Place either 1 tube Glutose (oral glucose gel) or contents of 1 sugar packet in buccal mucosa to treat possible hypoglycemia.

DISPOSITION: *Urgent* evacuation

SEPSIS/ SEPTIC SHOCK

SPECIAL CONSIDERATIONS:
1. Sepsis is a severe, life-threatening bacterial blood infection.
2. Rapid onset - death may occur within 4-6 hours without antibiotic therapy.

SIGNS AND SYMPTOMS:
1. Hypotension
2. Fever
3. Tachycardia
4. Altered mental status
5. Dyspnea
6. May see skin rash (purport)

MANAGEMENT:
1. Obtain IV/ IO access.
2. Ertapenem (Invanz) 1gm IV / IO qd **OR** ceftriaxone (Rocephin) 2gm IV / IO.
3. If patient is hypotensive, give 1 liter normal saline or Ringer's lactate fluid bolus. Consider additional fluids if still hypotensive, then an additional liter titrated to maintain systolic blood pressure >90mmHg or palpable radial pulse.
4. Epinephrine 0.5mg (0.5ml of 1:1,000 solution) IM **(DO NOT GIVE IV)** for persistent hypotension after fluid bolus.
5. Dexamethasone (Decadron) 10mg IV if persistent hypotension after fluid bolus and epinephrine.
6. Monitor for decreased mental status and be prepared to manage airway.

DISPOSITION:
Urgent evacuation

NAUSEA AND VOMITING

SPECIAL CONSIDERATIONS:
1. Avoid rapid IV administration of promethazine (Phenergan).
2. **DO NOT** give subcutaneous promethazine (Phenergan).
3. Diphenhydramine (Benadryl) and promethazine (Phenergan) may cause drowsiness.

SIGNS AND SYMPTOMS:
Nausea and Vomiting

MANAGEMENT:

1. Ondansetron (Zofran) 4–8mg IV / IM bid or 8mg PO q 8 hr prn
2. **OR** promethazine (Phenergan) 25mg IV / IM / PO q 6 hr prn
3. **OR** diphenhydramine (Benadryl) 25–50mg IV / IM / PO q 6 hr prn.
4. Treat per *Dehydration Protocol*.

DISPOSITION:
Evacuate per Protocol for underlying condition.

SPONTANEOUS PNEUMOTHORAX

SPECIAL CONSIDERATIONS:
1. Consider also: anaphylaxis, pulmonary embolism, high altitude pulmonary edema (HAPE), asthma, myocardial infarction, and pneumonia.
2. More common in tall, thin individuals, and smokers.

SIGNS AND SYMPTOMS:
1. Spontaneous unilateral chest pain
2. Dyspnea – typically mild
3. No wheezing
4. Decreased or absent breath sounds on affected side

MANAGEMENT:
1. Pulse oximetry monitoring
2. Oxygen (use oxygen for all suspected spontaneous pneumothoraces)
3. Consider needle decompression for suspected tension pneumothorax.
4. If needle decompression allows for patient improvement, followed by worsening of condition, consider repeat needle decompression.
5. Consider tube thoracostomy:
   A. Recurrence of respiratory distress after 2 successful needle decompressions
   B. **OR** evacuation time > 1 hr
   C. **OR** patient requires positive pressure ventilation
6. If at altitude, descend as far as tactically feasible.
7. If evacuation will occur in an unpressurized aircraft, consider decompression for high altitude evacuation and recommend lowest tactically feasible altitude
8. Treat per *Pain Management Protocol*.

DISPOSITION:
1. *Urgent* evacuation for significant respiratory distress despite therapy.
2. *Priority* evacuation for patients whose respiratory status is stable.

SUBUNGUAL HEMATOMA

SPECIAL CONSIDERATIONS:
None

SIGNS AND SYMPTOMS:
1. Pain from the affected nail
2. Purplish-black discoloration under the nail

MANAGEMENT:
1. Decompress the nail with a large gauge needle by rotating needle through the nail directly over the discolored area until the underlying blood has been released and the pressure is relieved. Make sure that it is introduced into the affected nail with a gentle but sustained rotating motion.

2. Gentle pressure on the affected nail may help to evacuate more blood.

3. Treat per *Pain Management Protocol.*

4. If a fracture is suspected, tape the injured finger or toe to an adjacent digit.
5. ℞ If fracture is suspected in a setting of a subungual hematoma, give moxifloxacin (Avelox) 400mg PO qd for 7 days.

DISPOSITION:
Evacuation should not be required for this injury if the subungal hematoma is successfully treated.

TESTICULAR PAIN

SPECIAL CONSIDERATIONS:
1. The primary concern in testicular pain is differentiating testicular torsion from other causes of testicular pain
2. Testicular torsion is an medical emergency requiring urgent correction to prevent loss of the affected testicle
3. Other common causes of testicular pain include epididymitis and orchitis, infections commonly caused by STDs, as well as hernias, and testicular masses

SIGNS AND SYMPTOMS:
1. Testicular Torsion:
   A. Sudden onset testicular pain
   B. Usually associated with activity
   C. Associated testicular swelling
   D. Abnormal position of the affected testicle
   E. Symptoms may be increased by testicular elevation
   F. Usually associated with pain induced nausea and vomiting
   G. Loss of cremasteric reflex is the best diagnostic indicator for testicular torsion.

2. Epididymitis:
   A. Gradual onset of worsening pain
   B. May have fever and/or dysuria
   C. Can also be traumatic
   D. Symptoms may be relieved with elevation
   E. Significant swelling may be present

MANAGEMENT:
1. If pain is sudden onset and the testicle is lying abnormally in the scrotum, an attempt to manual detorse the testicle is warranted.
   A. A single attempt to rotate the testicle outward (like opening the pages of a book) should be made.
   B. If pain increases, 1 attempt to rotate the opposite direction should be made.
   C. Successful detorsion will result in relief of pain.

2. Gradual onset pain with a normal lying testicle should be treated per *Urinary Tract Infection Protocol*.

3. Treat pain per *Pain Management Protocol.*

4. Treat per *Nausea and Vomiting Protocol*

DISPOSITION:
1. *Urgent* evacuation for testicular torsion.
2. For other causes of testicular pain, treat cause and consider evacuation if symptoms persist more than 3 days.

MILD TRAUMATIC BRAIN INJURY (MTBI)

SPECIAL CONSIDERATIONS:

1. DO NOT allow a patient with a mTBI to return to duty while they are symptomatic. This puts them at significant risk for greater injury (to include death) if they sustain another head injury while still symptomatic.
2. mTBI is primarily a clinical diagnosis. If you do not feel that a patient is back to their baseline, do not allow them to RTD and consult a medical provider

SIGNS AND SYMPTOMS:

1. **Red Flags (Symptoms):**
   - A. Neurological
     - a. Any loss of consciousness
     - b. Amnesia/memory problems
     - c. Any significant scalp or facial contusions
     - d. Unusual behavior/combative
     - e. Seizures
     - f. Worsening headache
     - g. Cannot recognize people
     - h. Disoriented to time and/or place
     - i. Abnormal speech
     - j. Irritability
     - k. Dizziness
     - l. Headache
     - m. Confusion > 4 hours
   - B. Eyes
     - a. Unequal pupils
     - b. Double vision
     - c. Photophobia
   - C. Ears
     - a. Phonophobia
   - D. General
     - a. Repeated vomiting
     - b. Weakness
     - c. Unsteady on feet

MANAGEMENT:

1. Consider mTBI (concussion) in anyone who is dazed, confused, “saw stars”, lost consciousness (even if just momentarily) or has memory loss that results from a fall, explosion, motor vehicle crash or any other event involving abrupt head movement, a direct blow to the head or other head injury.

2. Triage and treat other injuries as required. As soon as tactically feasible evaluate for mTBI.

3. Red flags present
   - A. If red flags are present - consult with medical provider for possible urgent evacuation.

4. Initiate treatment
   - A. Rest
   - B. Tylenol 650mg PO q 6 hr or Mobic 1 PO qd
   - C. Hydation

5. Administer MACE
   - A. If MACE <25 or symptoms persist despite rest and appropriate treatment consult with medical provider for possible priority evacuation.

B. If MACE is normal and the patient is asymptomatic after 24–48 hours perform exertional testing:
   1) Exertional Testing Protocol – exercise patient to achieve 65–85% of the target heart rate (THR= 220-age)
      a. Use alternate MACE test for post exertional assessment.
      b. If post exertional MACE <25 or symptoms return consult with a medical provider for possible routine evacuation

6. IF:
   A. There are no red flags
   B. **AND** initial MACE exam is normal
   C. **AND** there no symptoms
   D. **AND** exertional testing is negative for symptom production
   E. **AND** alternate post exertional MACE test is normal
      1) Treatment
      2) Educate
      3) Return to duty

7. **Contraindications**:
   A. If possible, avoid the use of Cox 1 NSAID medication (Motrin, naprosyn, Aleve, ibuprofen) due to effects on platelets and a potentially increased risk of bleeding. If Cox 1 NSAIDS are the only medication available and the patient has no red flags they MAY be used to treat the headache.
   B. Avoid the use of Tramadol (Ultram) due to its effects on platelets, increased bleeding and altered level of consciousness.
   C. Avoid the use of diphenhydramine (Benadryl) due to possibly alteration of the patient's level of consciousness.
   D. Avoid the use of narcotics due to alteration of the patient's level of consciousness.

DISPOSITION:
1. *Urgent* evacuation in the presence of red flags
2. *Priority* evacuation in the presence of MACE <25 and persistent symptoms despite appropriate treatment and rest
3. *Routine* evacuation MACE persistently <25 OR MACE >25 and persistent symptoms despite appropriate treatment

URINARY TRACT INFECTION

SPECIAL CONSIDERATIONS:
1. More common after instrumentation, in females, or in tactical settings with dehydration and/ or kidney stones.
2. Symptoms may be confused with a sexually transmitted disease (STD).

SIGNS AND SYMPTOMS:
1. Dysuria
2. Urinary urgency and frequency
3. Cloudy, malodorous, or dark urine may be present
4. Suprapubic discomfort

MANAGEMENT:

1. Ceftriaxone (Rocephin) 1gm IV / IM **OR** trimethoprim-sulfamethoxazole (Septra DS) 1 PO bid for 3 days
2. **AND** azithromycin 1gm PO once
3. Treat per *Pain Management Protocol.*
4. If fever, back pain, flank pain, and/ or costovertebral angle tenderness develop, suspect kidney infection and treat per *Flank Pain Protocol.*
5. Encourage PO hydration.

DISPOSITION:
1. Usually responds to therapy and evacuation not required if it does.
2. *Routine* evacuation for worsening signs and symptoms
3. *Priority* evacuation for pyelonephritis. See *Flank Pain Protocol*

2010 Tactical Medical Emergency Protocol
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Joint Special Operations
Tactical Medical Emergency Protocol Drug List:

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DEPARTMENT OF EMERGENCY MEDICAL SERVICES AND PUBLIC HEALTH
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PREFACE

- The following is a list of medications mentioned in the Tactical Medical Emergency Protocols. However, most of the TMEPs have a preferred medication recommendation and then an alternate one. All of these recommendations are listed here.
- The CEB and RB recognize that a "one size fits all" approach to a strict formulary is unrealistic due to medication availability, mission requirements, etc. The list of medications is designed to guide the ATP in medication selection.
- For specific order of the recommended medications and specific TMEP application of the medications, **CHECK the specific TME Protocol**.
- Antibiotics: Always check potential drug allergies. If allergic to one class of medications, use alternate class of medications (Cephalosporins/Penicillins, Tetracyclines, Quinolones, Macrolides).
- **Unless specifically noted, the drug dosages listed are for an adult.**
- Changes – 2009:
  - Calcium chloride added
  - Calcium gluconate added
  - Mannitol added
  - Sodium bicarbonate added
  - Rifampin added
  - Antiretroviral medication added (Kaletra, Atriplea, Truvada, Viread)
  - All medications listed under their generic name except for the following HIV medications which are **the only drugs listed under their trade name (Atripla®, Combivir®, Truvada®, Kaletra®)**
  - Midazolam (Versed®) added
  - Pregnancy Categories added according to FDA classification listed below:

Pregnancy Category A	Adequate and well-controlled studies have failed to demonstrate a risk to the fetus in the first trimester of pregnancy (and there is no evidence of risk in later trimesters).
Pregnancy Category B	Animal reproduction studies have failed to demonstrate a risk to the fetus and there are no adequate and well-controlled studies in pregnant women OR Animal studies have shown an adverse effect, but adequate and well-controlled studies in pregnant women have failed to demonstrate a risk to the fetus in any trimester.
Pregnancy Category C	Animal reproduction studies have shown an adverse effect on the fetus and there are no adequate and well-controlled studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.
Pregnancy Category D	There is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience or studies in humans, but potential benefits may warrant use of the drug in pregnant women despite potential risks.

Pregnancy Category X	Studies in animals or humans have demonstrated fetal abnormalities and/or there is positive evidence of human fetal risk based on adverse reaction data from investigational or marketing experience, and the risks involved in use of the drug in pregnant women clearly outweigh potential benefits.

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Medications with grounding requirements for personnel on flight status have been added. In some cases, the recommendation for grounding has been made based on the underlying medical condition and not specifically on the medication. Whenever possible consult a Flight Surgeon or an Aeromedical Physician Assistant prior to prescribing medications to personnel on flight status. Consult your unit medical officer for any unit specific protocols.
  - **REMINDER**: After personnel on flight status have been grounded, they need clearance from a Flight Surgeon or an Aeromedical Physician Assistant to return to flying status.

➢ **Changes – 2010:**
- Tadalafil (Cialis) added
- Sildenafil (Viagra) added
- K-9 doses added to: acetamolazide, ceftriaxone, dexamethasone, ertapenem

Acetaminophen (Tylenol®)

- Description: Nonnarcotic analgesic and antipyretic. Blocks generation of pain impulses in the CNS by preventing sensitization of pain receptors.
- Indications: Mild pain or fever
- Dose:
  - 325–650mg PO q 4–6 hr; or 1gm PO every 6–8 hr
- **Contraindications:**
  - Individuals with hypersensitivity to drug
  - Cautious use in history of excess alcohol use
  - Chronic liver damage
- Pregnancy Category B
- Side-effects:
  - Rash
  - Urticaria
- Adverse reactions:
  - Hemolytic anemia
  - Liver damage
- TMEP Use:
  - Bronchitis/Pneumonia Protocol
  - Malaria Protocol
  - Pain Management Protocol

Acetazolamide (Diamox®)

- WARNING GROUNDING medication for personnel on flight status
- Description: Non-diuretic antihypertensive (carbonic anhydrase inhibitor)
- Indications:
  - Prevention and/or amelioration of symptoms associated with acute mountain sickness in climbers attempting rapid ascent and/or in those who are very susceptible to acute mountain sickness despite gradual ascent. For maximum benefit begin regimen 7 days prior to ascent. Of minimal benefit in Rx of AMS, HACE, or HAPE.
  - Treatment of acute high altitude illness
- Dose (Human):
  - 125–250mg bid, 24 hours prior to ascent, continuing for 48 hours after ascent. Prevention and/or amelioration benefits are nominal once ascent has commenced.
  - If the 500mg sustained release tablet is used, dose is 500mg every 24 hours.

- K-9 Dose:
  - 250mg bid 24 hours prior to ascent, continuing for 48 hours after ascent.
  - If the 500mg sustained release tablet is used, dose is 500mg every 24 hours.
- **Contraindications:**
  - Sulfa allergy.
- Pregnancy category C
- Side-effects:
  - Paresthesia in extremities
  - Hearing dysfunction/tinnitus
  - Loss of appetite
  - Taste alterations
  - Nausea
  - Vomiting
  - Diarrhea
  - Polyuria
  - Drowsiness
  - Confusion
-

  - Use of Diamox results in a significant alteration in taste. Carbonated beverages will have seriously altered taste, and may be undrinkable.

    - Increased fluid intake is required with use of Diamox: Although Diamox is not in the general drug class of "diuretics"; it has diuretic effects and can result in serious dehydration unless great care is taken to maintain proper hydration.
- Adverse reactions:
    - Transient myopia (usually resolves w/ DC of drug)
    - Urticaria
    - Melena
    - Hematuria
    - Flaccid paralysis
    - Photosensitivity
    - Convulsions
- TMEP Use:
    - Altitude Illness Protocol
    - K-9 High Altitude Sickness and Pulmonary Edema Protocol

Aciphex® – See Rabeprazole

Actiq Lozenge® – See Fentanyl, Oral

Adrenalin – See Epinephrine

Afrin Nasal Spray® – See Oxymetazline HCl

Albuterol Inhaler (Ventolin®, Proventil®)

- Aviation personnel are grounded until medical condition no longer interferes with safely preforning aviation duties and the patient is free of side-effects.
- Description: Inhaled beta-adrenergic agonist; relaxes bronchial smooth muscle
- Indications:
    - Relief of bronchospasm
    - Prevention/ treatment of exercise-induced bronchospasm
- Adult dose:
    - 2 inhalations every 4–6 hours
    - Spray 4 times into the air if using for the first time or after >4 weeks of storage
- *Pediatric dose:*
    - *If >4yrs old, 1 inhalation every 4–6 hours may be sufficient*
- **Contraindications:**
    - Known hypersensitivity to Albuterol
    - Pregnancy
- Pregnancy Category C

- Side-effects:
  - Similar in nature to reaction to other sympathomimetic agents
    - Tremor
    - Nausea
    - Nervousness
    - Palpitations
- Adverse reactions:
  - Hypertension
  - Angina
  - Vertigo
  - CNS stimulation
  - Sleeplessness
- TMEP Use:
  - Asthma (Reactive Airway Disease) Protocol
  - Bronchitis/Pneumonia Protocol
  - Cough Protocol
  - Smoke Inhalation Protocol

Amoxicillin/Clavulanate (Augmentin®)

- WARNING Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Oral antibacterial combination consisting of the semisynthetic antibiotic amoxicillin and the β-lactamase inhibitor, clavulanate potassium (the potassium salt of clavulanic acid).
- Indications:
  - Lower respiratory tract infections
  - Otitis media
  - Sinusitis
  - Skin and skin structure infections
  - Urinary tract infections
- Adult dose:
  - The usual adult dose is one 875mg tablet every 12 hours.
- *Pediatric dose:*
  - 30mg/kg/day in divided doses (every 8–12 hours) produces less nausea and diarrhea and is effective for most infections
  - Pediatric patients weighing 40kg or more should be dosed according to the adult recommendations.
- **Contraindications:**
  - WARNING SERIOUS AND OCCASIONALLY FATAL HYPERSENSITIVITY (ANAPHYLACTIC) REACTIONS CAN OCCUR IN INDIVIDUALS WITH A HISTORY OF PENICILLIN HYPERSENSITIVITY
  - Do not use in patients with a history of liver failure

- Pregnancy Category B
- Side-effects: The majority of side-effects observed in clinical trials were of a mild and transient nature but can include:
    - Diarrhea/loose stools
    - Nausea
    - Skin rashes and urticaria
    - Vomiting
    - Vaginitis
- Adverse reactions:
    - Hypersensitivity reactions
    - Hepatic dysfunction
    - Blood and lymphatic dysfunction (likely hypersensitivity-related)
- TMEP Use:
    - Cellulitis/Cutaneous Abscess Protocol
    - Dental Pain Protocol
    - Flank Pain Protocol
    - Head and Neck Infection Protocol
    - Ingrown Toenail Protocol

ASA – See Aspirin

Aspirin (ASA)

- Description: Analgesic, antipyretic, anti-inflammatory, anti-platelet effect
- Indications:
    - For the temporary relief of:
        - Mild to moderate pain
        - Fever.
    - MI Prophylaxis: Reduces the risk of death and/or nonfatal myocardial infarction in patients with a previous infarction or unstable angina pectoris.
    - MI/UA treatment
    - Transient Ischemic Attacks**:** Reducing the risk of recurrent transient ischemic attacks (TIAs) or stroke in patients who have transient ischemia of the brain due to fibrin emboli.
- Adult dose:
    - Adults: 325mg. 1 or 2 tablets/caplets with water. May be repeated every 4 hours as necessary up to 12 tablets/caplets a day or as directed by a doctor.
- *Pediatric dose:*
    - *>12 years and over: 1 or 2 tablets/caplets with water. May be repeated every 4 hours as necessary up to 12 tablets/caplets a day or as directed by a doctor*
    - *<12 years old: Do not give to children under 12 unless directed by a doctor.*
- **Contraindications**:
    - Hypersensitivity to aspirin
    - Hypersensitivity to nonsteroidal anti-inflammatory agents (NSAID)

    - History of gastrointestinal bleeding
    - Patients with bleeding disorders (e.g., hemophilia).
    - Patient age < 16 years old
- Pregnancy Category D
- Side-effects:
    - Gastrointestinal symptoms
    - Gastrointestinal bleeding
    - Stomach pain
    - Heartburn
    - Nausea
    - Vomiting
- Adverse reactions:
    - Interacts with NSAIDs, Coumadin, Heparin
- TMEP Use:
    - Chest Pain Protocol
    - Deep Venous Thrombosis Protocol

Atovaquone 250mg/ Proguanil 100mg (Malarone®)

- GROUNDING medication for personnel on flight status
- Description: Antimalarial
- Indications:
    - Prophylaxis and treatment of *Plasmodium falciparum malaria*
- Adult dose:
    -

There are pediatric tablets as well as adult tablets
    - Prophylaxis
        - Start treatment 1 or 2 days prior to entering malaria endemic area and continue daily during the stay and for 7 days after return
        - 1 tablet (adult strength) daily
    - Treatment
        - 4 tablets (adult strength; total daily dose atovaquone 1gm / 400mg proguanil) as a single daily dose for 3 consecutive days
- *Pediatric dose:*
    -

There are pediatric tablets as well as adult tablets
    - *Tablets may be crushed and mixed with condensed milk just prior to administration for those having difficulty in swallowing tablets*
    - *Prophylaxis dosing based on body weight*
        - *Safety and efficacy for prophylaxis have been established for children >11kg*

Dosage of atovaquone/proguanil in prevention of malaria in pediatric patients		
Weight (kg)	***Atovaquone/proguanil total daily dose***	***Dosage regimen***
11 to 20	*62.5mg / 25mg*	*1 pediatric tablet daily*
21 to 30	*125mg / 50mg*	*2 pediatric tablets as a single daily dose*
31 to 40	*187.5mg / 75mg*	*3 pediatric tablets as a single daily dose*
>40	*250mg / 100mg*	*1 tablet (adult strength) as a single daily dose*

- *Treatment dosing based on body weight*
  - *Safety and efficacy for treatment have been established for children > 5kg*

Dosage of atovaquone/proguanil in treatment of malaria in pediatric patients		
Weight (kg)	***Atovaquone/proguanil total daily dose***	***Dosage regimen***
5 to 8	*125mg / 50mg*	*2 tablets (pediatric strength) daily for 3 consecutive days*
9 to 10	*187.5mg / 75mg*	*3 tablets (pediatric strength) daily for 3 consecutive days*
11 to 20	*250mg / 100mg*	*1 tablet (adult strength) daily for 3 consecutive days*
21 to 30	*500mg / 200mg*	*2 tablets (adult strength) as single daily dose for 3 consecutive days*
31 to 40	*750mg / 300mg*	*3 tablets (adult strength) as single daily dose for 3 consecutive days*
>40	*1gm / 400mg*	*4 tablets (adult strength) as single daily dose for 3 consecutive days*

- **Contraindications:**
  - Hypersensitivity to atovaquone, proguanil
  - Prophylaxis in patients with severe renal impairment (Cr CL < 30mL/min) unless potential benefits outweigh risks of non-treatment (progaunil accumulates in severe renal failure)
- Pregnancy Category C
- Side-effects:
  - Headache
  - Abdominal pain
  - Nausea/ vomiting/diarrhea
  - Dizziness
  - Cough (pediatrics)
- Adverse reactions:
  - Liver transaminase elevations

    - Possible association with seizures and psychotic events (e.g. hallucinations)
    - Cutaneous reactions, including photosensitivity, erythema multiforme and Stevens-Johnson Syndrome
- Other notes:
    - Take daily dose at the same time every day with food or milk.
    - If vomiting occurs within 1 hr of dosing, repeat the dose.
    - Treatment has not been evaluated for treatment of cerebral malaria or other severe manifestations of complicated malaria.
    - Absorption may be reduced in patients with diarrhea or vomiting. May need to add antiemetic to prevent vomiting.
    - Include protective clothing, insect repellants, bed nets as important components of malaria prophylaxis.
    - If a dose is skipped, take it as soon as possible, and then return to normal schedule. Do not double the next dose.
- TMEP Use:
    - Malaria Protocol

Atripla® (efavirenz/emtricitabine/tenofovir)

- GROUNDING medication for personnel on flight status.
- Indications: Treatment of HIV
- Dose:
    - Take 1 tablet qd PO on an empty stomach. Dosing at bedtime may improve the tolerability of nervous system symptoms
- **Contraindications:**
    - Do not take the following medicines with Atripla
        - Cisapride (Propulsid®)
        - Midazolam (Versed®)
        - Tiazolam (Halcion®)
        - Voriconazole (Vfend®)
- Pregnancy Category D
- Side-effects:
    - Cardiac disorders: palpitations
    - Ear and labyrinth disorders: tinnitus
    - Endocrine disorders: gynecomastia
    - Eye disorders: abnormal vision
    - Gastrointestinal disorders:
        - Constipation
        - Malabsorption
        - Abdominal pain
        - Increased amylase
        - Pancreatitis
    - Hepatobiliary disorders:
        - Hepatic enzyme increase
        - Hepatic failure

    - Hepatitis
  - Immune system disorders:
    - Allergic reaction
  - Metabolism and nutrition disorders:
    - Hypercholesterolemia
    - Hypertriglyceridemia
    - Hypophosphatemia
    - Lactic acidosis
  - Musculoskeletal and connective tissue disorders:
    - Arthralgia
    - Myalgia
    - Myopathy
  - Nervous system disorders:
    - Abnormal coordination
    - Ataxia
    - Cerebellar coordination and balance disturbances
    - Convulsions
    - Hypoesthesia
    - Paresthesia
    - Neuropathy
    - Tremor
  - Psychiatric disorders:
    - Aggressive reactions
    - Agitation
    - Delusions
    - Emotional lability
    - Mania
    - Neurosis
    - Paranoia
    - Psychosis
    - Suicide
  - Respiratory, thoracic, and mediastinal disorders:
    - Dyspnea
  - Renal and urinary disorders:
    - Renal insufficiency
    - Renal failure
  - Skin and subcutaneous tissue disorders:
    - Flushing
    - Photoallergic dermatitis
    - Skin discoloration
    - Stevens-Johnson Syndrome
- Other notes:
  - Store at 25°C (77°F); excursions permitted to 15-30°C (59-86°F)
- TMEP Use:
  - HIV Post Exposure Prophylaxis Protocol

Augmentin® – See Amoxicillin/clavulanate

Avelox® – See Moxafloxacin

Azithromycin (Zithromax®, Z-Pak®)

- WARNING Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Macrolide antibiotic
- Indications:
  - Acute bacterial sinusitis
  - Mild community-acquired pneumonia
  - Chancroid (Genital ulcer disease)
  - Pharyngitis/tonsillitis as alternative drug choice to first line therapy
  - Uncomplicated skin infections
  - Urethritis
- Adult dose:
  - For most bacterial infections: 500mg as single dose on day 1, then 250mg daily on days 2 through 5.
  - For gonorrhea: 2gm PO as a single dose
- *Pediatric dose: (6 months of age or older)*
  - *Z-pac is not indicated for children. The oral suspension is the only dose approved for use in children, and is dosed on a mg/kg basis*
    - *10mg/kg up to 500mg the first day; then 5mg/kg up to 250mg for the next 4 days*
- **Contraindications:**
  - Known allergy to Azithromycin
  - Pregnancy
  - Z-pac in children
  - Patients receiving
    - Astemizole (hismanal – antihistamine taken off of the U.S. market)
    - Cisapride (propulsid – GI medication)
- Pregnancy Category B
- Side-effects:
  - Generally mild and reversible upon discontinuation of therapy
  - Nausea, vomiting, diarrhea, abdominal pain
- Adverse reactions
  - Rare:
    - Angioedema (swelling of the larynx)
    - Cholestatic jaundice
  - Hypersensitivity
- Other notes:
  - Can be taken with or without food
  - Continue regimen for duration of prescription
- TMEP Use:
  - Bronchitis/Pneumonia Protocol
  - Ear Infection Protocol

    - Gastroenteritis Protocol
    - Urinary Tract Infection Protocol

AZT (Zidovudine, Retrovir®)

- WARNING GROUNDING medication for personnel on flight status
- Indications:
    - Treatment of HIV infection
- Dose:
    - 300mg bid
- Contraindications: Known allergy to medication
- Pregnancy Category C
- Side-effects:
    - Body as a whole:
    - Back pain
    - Chest pain
    - Flu-like syndrome
    - Generalized pain
- Cardiovascular:
    - Cardiomyopathy
    - Syncope.
- Endocrine:
    - Gynecomastia.
- Eye:
    - Macular edema
- Gastrointestinal:
    - Dysphagia
    - Flatulence
    - Oral mucosa pigmentation
    - Mouth ulcer
    - Nausea
    - Vomiting
    - Diarrhea
- General:
    - Anaphylaxis
    - Angioedema
    - Vasculitis
- Heme and lymphatic:
    - Aplastic anemia
    - Hemolytic anemia
    - Leukopenia
    - Lymphadenopathy
    - Pancytopenia with marrow hypoplasia
    - Pure red cell aplasia
- Hepatobiliary tract and pancreas:
    - Hepatitis

    - Hepatomegaly with steatosis
    - Jaundice
    - Lactic acidosis
    - Pancreatitis
- Musculoskeletal:
    - Muscle spasm
    - Myopathy
    - Myositis
    - Rhabdomyolysis
    - Tremor
- Nervous:
    - Anxiety
    - Confusion
    - Depression
    - Dizziness
    - Loss of mental acuity
    - Mania
    - Paresthesia
    - Seizures
    - Somnolence
    - Vertigo
- Respiratory:
    - Dyspnea
    - Rhinitis
    - Sinusitis
    - Cough
    - Abnormal breathing and wheezing
- Skin:
    - Changes in skin and nail pigmentation
    - Pruritus
    - Stevens-Johnson Syndrome
    - Toxic epidermal necrolysis
- Special senses:
    - Amblyopia
    - Hearing loss
    - Photophobia

- Urogenital:
    - Urinary frequency
    - Urinary hesitancy
- TMEP Use:
    - HIV Post Exposure Prophylaxis Protocol

Bactrim® – See Trimethoprim-Sulfamethoxazole

Bactroban® – See Mupirocin Ointment 2%

Benadryl® – See Diphenhydramine HCl

Bisacodyl (Dulcolax®)

- Description: Stimulant laxative
- Indications:
  - Used to treat constipation or to clean out the intestinal tract before bowel examinations or bowel surgery.
- Adult dose:
  - Swallow the tablets whole with a full glass of water or juice. Do not crush or chew the tablets. The tablets should work within 6–10 hrs.
  - 5–15mg.
- *Pediatric dose:*
  - *6 to 12 years: 5mg, taken at bedtime or in the morning before breakfast to produce evacuation approximately 8 hours later.*
- **Contraindications**:
  - Ileus
  - Intestinal obstruction
  - Acute surgical abdominal conditions like acute appendicitis, acute inflammatory bowel diseases.
  - Severe dehydration.
  - Known hypersensitivity to substances of the triarylmethane group.
- Adverse reactions:
  - Rarely, abdominal discomfort and diarrhea have been reported.
- Other notes:
  - Tablets have a special coating and therefore should not be taken together with milk or antacids. Tablets should be swallowed whole with adequate fluid.
- TMEP Use:
  - Constipation/Fecal Impaction Protocol

Calcium Chloride (10% solution)

-

GROUNDING medication for personnel on flight status.
- Description: Calcium salt (electrolyte)
- Action:
  - Increased calcium levels
  - Has a role in the release of neurotransmitters and hormones
  - Increased cardiac contractile state
  - May increase ventricular automaticity
- Indications:
  - Acute hypocalcemia
  - Acute hyperkalemia
  - Calcium channel blocker overdose
  - Hypermagnesemia

    - Cardiac arrest due to hyperkalemia, hypocalcemia
- Adult dose:
    - 0.5–1gm (5–10ml of a 10% solution) slow IVP over 3-5 minutes

- *Pediatric dose:*
    - *20mg/kg (0.15–3.0 ml/kg of a 10% solution) slow IV push. Maximum dose = 1gm or 10ml*

- **Contraindications:**
    - Hypercalcemia
    - Digitalis toxicity
    - Renal or cardiac disease
- Pregnancy Category: Generally considered to be safe
- Side-effects/precautions:
    -

Extravasation may cause tissue damage and necrosis
    - Rapid injection may cause vasodilation, hypotension, bradycardia, cardiac dysrhythmia, syncope, and cardiac arrest
- Other notes:
    -

Will precipitate if mixed with sodium bicarbonate
- TMEP Use:
    - Crush Injury Protocol

Calcium Gluconate (Kalcinate®)

-

GROUNDING medication for personnel on flight status.
- Description: Calcium salt
- Action:
    - Increased calcium levels
    - Has a role in the release of neurotransmitters and hormones
    - Increased cardiac contractile state
    - May increase ventricular automaticity
- Indications:
    - Acute hypocalcemia
    - Acute hyperkalemia
    - Calcium channel-blocker overdose

- Dose:
    - 1gm (10ml of a 10% solution)
    - 2.25–14mEq intravenously repeated in 1 to 2 minutes
- **Contraindications:**
    - Hypercalcemia
    - Digitalis toxicity.
    - Renal or cardiac disease

- Pregnancy class: Generally considered to be safe
- Side-effects/precautions:
  -

Extravasation may cause tissue damage and necrosis
  - Rapid injection may cause vasodilation, hypotension, bradycardia, cardiac dysrhythmia, syncope, and cardiac arrest
- Other notes:
  -

Will precipitate if mixed with sodium bicarbonate
- TMEP Use:
  - Crush Injury Protocol

Ceftriaxone Sodium (Rocephin®)

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Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description:
  - 3rd generation cephalosporin
  - Broad spectrum bactericidal antibiotic for IV / IM use.
- Indications:
  - Serious infections of the lower respiratory tract (i.e. pneumonia); urinary tract; skin infections; intra-abdominal infections (especially penetrating abdominal trauma); penetrating trauma to the extremities; & CNS infections.
- Adult dose:
  - 1–2gm IM / IV daily or in divided doses bid; max dose 4gm/day
- *Pediatric dose:*
  - *50–75mg/kg given in divided doses q12 hours; max dose 2gm/day.*

- K-9 Dose
  - 1gm IV / IM daily
- **Contraindications:**
  - Use caution in patients with a history of
    - Penicillin allergy
    - Hepatic dysfunction
    - Liver dysfunction
- Pregnancy Category B
- Side-effects:
  - Headaches
  - Dizziness
  - Nausea

    - Vomiting
    - Diarrhea
    - Abdominal cramps
    - Urticaria
    - ↑ temperature
- Adverse reactions:
    - Eosinophilia
    - Thrombocytosis
    - Leukopenia
    - Injection Site
        - Pain
        - Induration
        - Sterile abscess
        - Tissue sloughing
        - Phlebitis
    - Thrombophlebitis with IV use
- Preparation procedure:
    - Withdraw 10cc NaCl from a 100cc bag. Inject 10cc NaCl into 1gm Rocephin vial. Mix.
    - Withdraw entire contents of vial and inject into original 100cc NaCl IV bag. Mix.
    - Piggyback with running IV.
    -

If giving IM, reconstitute with 1% lidocaine **WITHOUT** epinephrine.

- TMEP Use:
    - Abdominal Pain Protocol
    - Bronchitis/Pneumonia Protocol
    - Dental Pain Protocol
    - Flank Pain (Renal Colic, Pyelonephritis, Kidney Stones) Protocol
    - Head and Neck Infection Protocol
    - Joint Infection Protocol
    - K-9 Trauma Management Protocol
    - Meningitis Protocol
    - Sepsis/Septic Shock Protocol
    - Urinary Tract Infection Protocol

Cephalosporins – General Antimicrobial Spectrum

-

Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- 1st generation: Gram positive (including Staph aureus); basic gram negative coverage.
    - *Examples: cefazolin, cephalexin, cefadroxil*

- 2nd generation: Diminished Staph aureus, improved gram negative coverage compared to 1st generation; some with anaerobic coverage.
  - *Examples: cefotetan, cefoxitin, cefuroxime*
- 3rd generation: Further diminished Staph aureus; further improved gram negative coverage compared to 1st and 2nd generation; some with pseudomonas coverage and diminished gram positive coverage.
  - *Examples: ceftriaxone **(see Rocephin**), cefotaxime, cefpodoxime, cefixime, cefoperazone.*
- 4th generation: Same as 3rd generation plus coverage against Pseudomonas.
  - *Example: cefepime*

Chloroquine Phosphate

- Indications:
  - Malaria due to *P. vivax, P. malariae, P. ovale*, and susceptible strains of *P. falciparum.*
- Dose
  - The dosage of chloroquine phosphate is often expressed in terms of equivalent chloroquine base. Each 500mg tablet of chloroquine phosphate contains the equivalent of 300mg chloroquine base.
- Adult dose:
  - Prophylaxis: 500mg (= 300mg base) on the same day of each week. Initiate therapy 1-2 weeks prior to departure to endemic area
  - Dose must be administered on same day of week
  - Continue prophylaxis for 4 additional weeks upon return from endemic area
  - Treatment: 1gm PO x1 then 500mg PO daily x 3 days starting 6 hours after first dose
- *Pediatric dose: The weekly suppressive dosage is 5mg calculated as base, per kg of body weight, but should not exceed the adult dose regardless of weight.*
-

Precautions: Liver disease, blood disorders, psoriasis, a certain metabolic disease (glucose-6-phosphate dehydrogenase-G6PD deficiency), hearing problems, seizures.
- **Contraindications:** Known allergy to medication
- Pregnancy Category C – Generally accepted as safe.
- Side-effects:
  - Nausea
  - Vomiting
  - Stomach upset
  - Cramps
  - Loss of appetite
  - Diarrhea
  - Blurred vision
  - Trouble seeing at night or problems focusing clearly
  - Easy bleeding or bruising

-

  - It has been found that certain strains of *P. falciparum* have become resistant to chloroquine and hydroxychloroquine. Chloroquine resistance is widespread and, at present, is particularly prominent in various parts of the world including sub-Saharan Africa, Southeast Asia, the Indian subcontinent, and over large portions of South America, including the Amazon basin[1].
  - Before using chloroquine for prophylaxis, it should be ascertained whether chloroquine is appropriate for use in the region to be visited by the traveler. Chloroquine should not be used for treatment of P. *falciparum* infections acquired in areas of chloroquine resistance or malaria occurring in patients where chloroquine prophylaxis has failed. Patients infected with a resistant strain of plasmodia, as shown by the fact that normally adequate doses have failed to prevent or cure clinical malaria or parasitemia, should be treated with another form of antimalarial therapy.
- Drug interactions:
  - Ampicillin
  - Antacids
  - Cimetidine
  - Cyclosporine
  - Kaolin
  - Magnesium trisilicate
- TMEP Use:
  - Malaria Protocol

Cialis® - see Tadalafil

Combivir® (Lamivudine and Zidovudine (AZT, ZDV))

-

GROUNDING medication for personnel on flight status
- Indications: HIV infection
- Dose:
  - One Combivir tablet given twice daily
- **Contraindications:** Known allergy to medication.
- Pregnancy Category C
- Side-effects:
  - Cardiovascular:
    - Cardiomyopathy
  - Endocrine and metabolic:
    - Gynecomastia
    - Hyperglycemia
  - Gastrointestinal:
    - Oral mucosal pigmentation
    - Stomatitis.
    - Nausea

        - Vomiting
        - Diarrhea
        - Decreased appetite
    - General:
        - Vasculitis
        - Weakness
        - Malaise and fatigue
        - Fever or chills
    - Heme and lymphatic:
        - Anemia, (including pure red cell aplasia and severe anemias)
        - Lymphadenopathy
        - Splenomegaly
    - Hepatic and pancreatic:
        - Lactic acidosis
        - Hepatic steatosis
        - Pancreatitis
        - Post-treatment exacerbation of hepatitis B
    - Hypersensitivity:
        - Sensitization reactions (including anaphylaxis)
        - Urticaria
    - Musculoskeletal:
        - Muscle weakness
        - Myalgia
        - Arthralgia
        - Rhabdomyolysis
    - Nervous:
        - Paresthesia
        - Peripheral neuropathy
        - Seizures
        - Dizziness
    - Respiratory:
        - Abnormal breath sounds
        - Wheezing
    - Skin:
        - Alopecia
        - Erythema multiforme
        - Stevens-Johnson Syndrome

- TMEP Use:
    - HIV Post Exposure Prophylaxis Protocol

Decadron® – See Dexamethasone

Dexamethasone (Decadron®)

-

GROUNDING medication for personnel on flight status

- Description: Parenteral steroid (glucocorticoid)
- Indications:
    - Emergency treatment of AMS, HACE, HAPE, when tactical conditions preclude descent or acclimatization.
    - Use of Decadron ↓symptoms of AMS, but does not speed acclimatization.
    - Use of Decadron does not preclude the need for an emergency descent. (Administer Decadron every 6 hours until descent is accomplished)
    - Inflammatory conditions
    - Allergic conditions
- Dose (Human): 4mg IV / IM / PO q 6 hr
- K-9 Dose:
    - 4mg IV / IM / PO q 6 hr
- **Contraindications:**
    - Use caution in patients with a history of:
        - Diabetes
        - Hypertension
        - Ulcers
- Pregnancy Category C
- Side-effects:
    - Delayed wound healing
    - Acne
    - Various skin eruptions
    - Edema
- Adverse effects usually dose related.
    - Psychotic behavior
    - Congestive heart failure
    - Hypertension
    - Cataracts
    - Glaucoma
    - Hypokalemia
    - Hyperglycemia
    - Carbohydrate intolerance
- TMEP Use:
    - Altitude Illness Protocol
    - Anaphylactic Reaction Protocol
    - Asthma (Reactive Airway Disease) Protocol
    - Blast Injury Protocol
    - Contact Dermatitis Protocol
    - Head and Neck Infection, Including Epiglottitis, Protocol
    - K-9 High Altitude Sickness and Pulmonary Edema Protocol
    - Meningitis Protocol
    - Sepsis/Septic Shock Protocol
    - Smoke Inhalation Protocol

Dextrose - See Glutose

Diamox® - See Acetazolamide

Diazepam (Valium®)

- GROUNDING medication for personnel on flight status
- Description: General CNS depressant (anticonvulsant/sedative). Benzodiazepine Class.
- Indications:
  - Acute anxiety
  - Seizures
  - Status epilepticus
  - Relaxation of skeletal muscle
  - Drug of choice for treatment of convulsions associated with chemical agents or organophosphates. NOTE: Successful treatment of convulsions from organophosphate or chemical exposure may require mass quantities and repeated administration of Diazepam (Valium).
  - Has **NO** analgesic or anesthetic properties.
  - Overdose may be reversed w/ Romazicon (Flumazenil)
- Dose:
  - Status Epilepticus: 5–10mg IV slow push
  - Acute anxiety: 5–15mg IV slow push
  - Relaxation of skeletal muscle: 5–15mg IV slow push
  - Chemical warfare: 10–15mg IV slow push
    - Auto injection Diazepam should be used for seizures induced by chemicals
- **Contraindications:**
  - Head injury
  - ↓ BP
  - Acute narrow angle glaucoma
  -

Has additive effect with other respiratory depressants (morphine, phenergan and alcohol). Be prepared to perform BLS.
- Pregnancy Category D
- Side-effects:
  - ↓ BP
  - ↓ Respirations
  - Drowsiness
  - Venous irritation
  - Pain at injection site
  - N & V
- Adverse reactions:
  - Bradycardia

    - CV collapse
    - Amnesia
    - Abdominal discomfort
- TMEP Use:
    - Back Pain Protocol
    - Behavioral Changes Protocol
    - Hyperthermia Protocol
    - Seizure Protocol

Diflucan® - See Fluconazole

Diphenhydramine HCl (Benadryl®)

- WARNING GROUNDING medication for personnel on flight status
- Description: Antihistamine. Prevents (but does not reverse) histamine-mediated responses. H1 blocker.
- Indications:
    - Mild to moderate allergic symptoms and/or allergic reactions
    - Dystonic reaction
- Adult dose:
    - 25–50mg IM / IV / PO qid; max dose 400mg/day.
- *Pediatric dose:*
    - *(Children < 12 years): 5mg/kg/day in divided doses qid PO / IM / IV.*
- **Contraindications:**
    - Asthma
    - Pregnant or lactating females
- Pregnancy Category C
- Side-effects:
    - Sedation
    - Blurred vision
    - Nausea
    - Vomiting
    - Diarrhea
    - Headache
- Adverse reactions:
    - Insomnia
    - Vertigo
    - Palpitations
    - Dry mouth
    - Constipation
    - Dysuria
    - Urine retention
- TMEP Use:
    - Allergic Rhinitis/Hay Fever/Cold Like Symptoms Protocol
    - Anaphylactic Reaction Protocol

- Contact Dermatitis Protocol
- Envenomation Protocol
- Nausea and Vomiting Protocol

Dulcolax® – See Bisacodyl

Efavirenz and Emtricitabine and Tenofovir – See Atripla®

Emtricitabine and Efavirenz and Tenofovir – See Atripla®

Emtricitabine and Tenofovir – See Truvada ®

Epinephrine (Adrenaline)

- GROUNDING medication for personnel on flight status
- Description: Alpha and beta adrenergic sympathomimetic.
  - First-line drug for anaphylaxis (See ACLS drugs for cardiac therapy)
  - Causes bronchodilatation, vasoconstriction, increases blood pressure.
  - Decreases edema/swelling due to allergic reactions.
    - NOTE:
      - 1:1,000 dilution epinephrine (1mg in 1cc) is standard pararescue issue.
      - 1:10,000 dilution (1mg in 10cc) is the standard 'Cardiac' dosage form for IV use.
      - 1:1,000 epinephrine can be diluted to the 1:10,000 form by putting 1cc of 1:1,000 epinephrine (1mg epinephrine) in 9cc of normal saline (total volume of 10cc).
- Indications: Anaphylaxis
  - Allergic reactions (mild/moderate/severe)
  - Asthma
- Adult dose (Epinephrine):
  - Anaphylaxis: 0.3–0.5mg (3–5cc of 1:10,000 dilution) IV or 0.3–0.5mg (0.3–0.5cc of 1:1,000 dilution) IM
  - Allergic reaction: 0.3–0.5mg (0.3–0.5cc of 1:1,000 dilution) SQ / IM
  - Asthma: 0.3–0.5mg (0.3–0.5cc of 1:1,000 dilution) SQ / IM
- *Pediatric dose: 0.01mg/kg SQ / IM. Not to exceed 0.5mg*
- **Contraindications:**
  - **1:1,000 Epinephrine is NOT given IV**.
  - Use caution in patients with a history of heart disease or over the age of 40.

    - Do not inject Epinephrine (or solutions containing Epi) into/near the fingers, toes, nose, ears or penis. Intense vasoconstriction may cause necrosis.
- Pregnancy Category C
- Side-effects:
    - Cardiac arrhythmias
    - Ventricular tachycardia
    - Ventricular fibrillation
    - Angina
    - Hypertension
    - ↑BP
    - Nausea
    - Vomiting
    - Vasoconstriction
- Adverse reactions
    - Uncontrolled effects on myocardium & arterial system
- TMEP Use:
    - Anaphylactic Reaction Protocol
    - Asthma (Reactive Airway Disease) Protocol
    - Sepsis/Septic Shock Protocol

Ertapenem IV (Invanz®)

-

Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Carbapenem antibiotic
- Indications
    - Complicated intra-abdominal infections
    - Complicated skin infections
    - Pneumonia
    - Complicated UTI, including pyelonephritis
    - Acute pelvic infections
    - **Drug of choice for penetrating battlefield trauma**
- Adult dose
    - 1gm daily
    - May be administered IV up to 14 days or IM injection for up to 7 days
    - For IV administration, infuse over 30 minutes
- *Pediatric dose*
    - *Not approved in patients < 18 yrs*
-
K-9 Dose
    - 250 mg IV / IM three times a day
- **Contraindications:**
    - Hypersensitivity to ertapenem
    - Penicillin allergy with documented severe reaction to PCN

    - Hypersensitivity to other carbapenem antibiotics
    - Anaphylactic reactions to other beta-lactam antibiotics
    - IM: hypersensivity to lidocaine or other anesthetics of amide-type
- Pregnancy Category B
- Side-effects:
    - Diarrhea
    - Infused vein phlebitis/thrombophlebitis
    - Nausea/ vomiting
    - Headache
    - Vaginitis
- Adverse reactions:
    - Seizures
- Other notes:
    - Visually inspect any solution of ertapenem for particulate matter and discoloration prior to use when possible. Solutions range in color from colorless to pale yellow. Variations in color do not affect potency of the drug.
    - IV administration – must be reconstituted prior to administration
        - Do not mix or co-infuse with other medications
        - Do not use diluents containing dextrose
        - Reconstitute the contents of a 1gm vial of ertapenem with 10ml of 0.9% NaCl, or bacteriostatic water for injection
        - Shake well to dissolve, and immediately transfer contents to 50ml of 0.9% NaCl
        - Complete infusion within 6 hrs of reconstitution
    - IM administration - must be reconstituted prior to administration
        - Reconstitute the contents of a 1gm vial of ertapenem with 3.2ml of 1% lidocaine HCl injection (without epinephrine). Shake vial thoroughly to form solution
        - Immediately withdraw the contents of the vial, and administer by deep IM injection into a large muscle mass (such as the gluteal muscles or lateral part of the thigh)
        - Use the reconstituted IM solution within 1 hr after preparation**. DO NOT ADMINISTER THE RECONSTITUTED IM SOLUTION IV.**
- TMEP Use:
    - Abdominal Pain Protocol
    - Bronchitis/Pneumonia Protocol
    - Cellulitis/Cutaneous Abscess Protocol
    - Crush Injury Protocol
    - Flank Pain (Renal Colic, Pyelonephritis, Kidney Stone) Protocol
    - Joint Infection Protocol
    - K-9 Trauma Management Protocol
    - Meningitis Protocol
    - Sepsis/Septic Shock Protocol

Fentanyl – See Oral Fentanyl

Flagyl® – See Metronidazole

Fluroquinolones – See Quinolones, Moxafloxacin, Gatifloxacin, Levofloxacin

Fluconazole (Diflucan®)

- WARNING Aviation personnel are grounded for the initial 24 hours of antifungal therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Synthetic triazole antifungal agent
- Indications:
  - Vaginal candidiasis (vaginal yeast infections due to *Candida*).
  - Oropharyngeal and esophageal candidiasis.
  - Fungal skin infections
- Dose:
  - Skin infection: 150mg, 1 pill per week x 4 weeks
  - Single dose: Vaginal candidiasis: The recommended dosage of fluconazole for vaginal candidiasis is 150mg as a single oral dose.
  - Oropharyngeal candidiasis: The recommended dosage of fluconazole for oropharyngeal candidiasis is 200mg on the first day, followed by 100mg once daily. Clinical evidence of oropharyngeal candidiasis generally resolves within several days, but treatment should be continued for at least 2 weeks to decrease the likelihood of relapse.
- **Contraindications:**
  - Hypersensitivity to fluconazole.
- Pregnancy Category C
- Side-effects/adverse reactions:
  - *Dermatologic:*
    - Exfoliative skin disorders including Stevens-Johnson Syndrome and toxic epidermal necrosis.
- TMEP Use:
  - Fungal Skin Infection Protocol

Gatifloxacin 0.3% Ophthalmic Liquid (Zymar®)

- WARNING Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Ocular fluoroquinolone
- Indications: Eye infections
- Adult dose
  - Days 1 and 2: instill 1 drop in affected eye(s) every 2 hrs while awake, up to 8 times/day

    - Days 3 to 7: Instill 1 drop in affected eye(s) up to 4 times/day while awake
- *Pediatric dose*
    - *Safety and efficacy in infants < 1 year not established*
    - *Pediatric dosing like adult dosing*
- **Contraindications**
    - Hypersensitivity to any component of product
- Pregnancy Category C
- Side-effects
    - Upon instillation, may cause temporary blurring of vision or stinging
    - If stinging, burning, or itching becomes pronounced, or redness, irritation, swelling, decreasing vision, or pain persists or worsens, discontinue and consider alternative therapy
    - Lid margin crusting, white crystalline precipitates and foreign body sensation in the eye have been reported
    - Bad/bitter taste in mouth
    - Nausea
- Adverse reactions
    - Discontinue at first sign of skin rash or other allergic reaction
    - Corneal staining
    - Tearing and photophobia
- Other notes:
    - To instill in eye, tilt head back, place medication in conjunctival sac and close eye(s).
    - Apply light finger pressure on lacrimal sac for 1 minute following instillation
    - To avoid bottle contamination, do not touch tip of container to any surface. Replace cap after use.
    - In general, contact lenses should not be worn during therapy
- TMEP Use:
    - Corneal Abrasion, Corneal Ulcer, Conjunctivitis Protocol
    - Ear Infection Protocol

Glucose – See Glutose

Glutose (Dextrose, Glucose)

- Description: Carbohydrate
- Route: Oral
- Indications: Altered mental status caused by hypoglycemia defined as;
    - Adults:
        - Diabetics = fingerstick blood glucose analysis less than 110mg/dL
        - Non-diabetics = fingerstick blood glucose analysis less than 80mg/dL
    - Children:
        - Diabetics = fingerstick blood glucose analysis less than 90mg/dL
        - Non-diabetics = fingerstick blood glucose analysis less than 60mg/dL

- Adult dose
  - Full tube given in small doses (25–50gm) – standing order
- *Pediatric dose:*
  - *0.5gm/kg in small doses – standing order*
- Drug action: Increases blood glucose level
- Onset:1 minute
- Duration: Depends on the degree of hypoglycemia
- Precautions: Assure gag reflex is present
- Side-effects:
  - Aspiration
- **Contraindications:**
  - Absent gag reflex
  - Patients who are unable to protect their own airway
  - Patients who are unable to swallow
- Pregnancy Category C
- TMEP Use:
  - Behavioral Changes Protocol
  - Hyperthermia Protocol
  - Loss of Consciousness (without seizures) Protocol
  - Seizure Protocol

Hespan® (Hetastarch in NaCl) Plasma Volume Expander (Artificial Colloid)
Hextend® (Hetastarch in Lactated Electrolyte Solution)

- Description: Plasma volume expander (artificial colloid)
- Both Hespan and the newer product Hextend are artificial colloids and are used to expand the plasma volume. The major advantage over crystalloids is that these products give more volume expansion for a longer period of time for the same infused volume. These products are not blood or plasma replacements, they have no oxygen carrying capacity, and they have no coagulation properties**. These products should not be the primary fluid used to treat dehydrated patients, but can be used if no other fluids are available.**
- Indications: Treatment of shock secondary to hemorrhage.
- Dose:
  - Patient in shock, bleeding not controlled: hold fluid and control bleeding.
  - Patient in shock, bleeding controlled: start 500cc of Hespan/Hextend IV, check for improvement in BP.
    - Titrate to SBP of 85 **OR** improvement in mental status **AND** presence of radial pulse. Hold further fluid when either improvement point is met.
  - Patient still in shock after first 500cc of Hespan/Hextend; start second 500cc bag and titrate to improvement.
  - Do not give more than 1 liter (1000cc) of Hespan or Hextend to any casualty.
- **Contraindications:**
  - Known bleeding disorders or uncontrolled hemorrhage
  - CHF

    - Renal impairment
    - Not for use in children under 12 years
    - Use with caution in pregnancy.
- Pregnancy Category C
- Side-effects:
    - Nausea/vomiting
    - Peripheral and facial edema
    - Urticaria
    - Flushing chills
- Adverse reactions:
    - Severe anaphylaxis (rare)

Ibuprofen (Motrin®)

- Description: NSAID, analgesic, antipyretic. Cox-1 inhibitor.
- Indications:
    - Mild to moderate pain
    - Arthritis
- Dose:
    - 200–800mg PO tid or qid. Not to exceed 2400mg/day (800mg tid)
- **Contraindications:**
    - NOTE: Should not be given to pts with a history of aspirin sensitivity or severe asthma
    - Penetrating trauma
    - Suspected internal bleeding
    - Suspected intracranial bleeding
    - Pregnancy
    - Nursing mothers
- Pregnancy Category B
- Side-effects:
    - Nausea
    - Vomiting
    - Headache
    - Dizziness
    - Drowsiness
- Adverse reactions:
    - Prolonged bleeding time
    - Tinnitus
    - Edema
    - Peptic ulcer
- TMEP Use:
    - Chest Pain Protocol (Other Etiologies)
    - Pain Management Protocol

Imodium ®– See Loperamide HCl

Invanz® - See Ertapenem IV

Kalcinate® - See Calcium Gluconate

Kaletra® (Lopinavir and Ritonavir)

- GROUNDING medication for personnel on flight status.
- Class: Protease inhibitors.
- Action: This medication prevents human immunodeficiency virus (HIV) cells from multiplying in your body
- Indications: HIV treatment
- Dose: 4 pills daily, taken together and with Truvada
- **Contraindications:**
  - **Do not take the following medicines with KALETRA because they can cause serious problems or death.**
    - Triazolam (Halcion®)
    - Astemizole (Hismanal®)
    - Pimozide (Orap®)
    - Cisapride (Propulsid®)
    - Terfenadine (Seldane®)
    - Midazolam (Versed®)
    - Rifampin (Rimactane®, Rifadin®, Rifater®, or Rifamate®)
    - Cholesterol lowering medicines
      - Lovastatin (Mevacor®)
      - Simvastatin (Zocor®)
      - Atorvastatin (Lipitor®)
- Pregnancy Category C
- Side-effects/precautions:
  - Body as a whole
    - Allergic reaction, back pain, chest pain, chest pain substernal, cyst, drug interaction, drug level increased, face edema, flu syndrome, hypertrophy, infection bacterial, malaise, neoplasm, and viral infection
  - Cardiovascular system
    - Atrial fibrillation, cerebral infarct, deep vein thrombosis, migraine, myocardial infarct, palpitation, postural hypotension, thrombophlebitis, varicose vein, and vasculitis
  - Digestive system
    - Cholangitis, cholecystitis, constipation, dry mouth, enteritis, enterocolitis, eructation, esophagitis, fecal incontinence, gastritis, gastroenteritis, hemorrhagic colitis, hepatitis, hepatomegaly, increased appetite, jaundice, liver fatty deposit, liver tenderness, mouth ulceration, pancreatitis, periodontitis, sialadenitis, stomatitis, and ulcerative stomatitis
  - Endocrine system
    - Cushing's Syndrome, diabetes mellitus, and hypothyroidism

- Heme and lymphatic system
  - Anemia, leukopenia, and lymphadenopathy
- Metabolic and nutritional disorders
  - Avitaminosis, dehydration, edema, glucose tolerance decreased, lactic acidosis, obesity, peripheral edema, and weight gain
- Musculoskeletal system
  - Arthralgia, arthrosis, bone necrosis, joint disorder, and myasthenia
- Nervous system
  - Abnormal dreams, agitation, amnesia, anxiety, apathy, ataxia, confusion, convulsion, dizziness, dyskinesia, emotional lability, encephalopathy, extrapyramidal syndrome, facial paralysis, hypertonia, nervousness, neuropathy, peripheral neuritis, somnolence, thinking abnormal, tremor, and vertigo
- Respiratory system
  - Asthma, cough, increased dyspnea, lung edema, pharyngitis, rhinitis, and sinusitis
- Skin and appendages
  - Acne, alopecia, dry skin, eczema, exfoliative dermatitis, furunculosis, maculopapular rash, nail disorder, pruritis, seborrhea, skin benign neoplasm, skin discoloration, skin striae, skin ulcer, and sweating
- Special senses
  - Abnormal vision, eye disorder, otitis media, taste loss, taste perversion, and tinnitus
- Urogenital system
  - Abnormal ejaculation, amenorrhea, breast enlargement, gynecomastia, impotence, kidney calculus, nephritis, and urine abnormality

- Other notes:
  - Store KALETRA soft gelatin capsules at 36°F - 46°F (2°C - 8°C) until dispensed. Avoid exposure to excessive heat. For patient use, refrigerated KALETRA capsules remain stable until the expiration date printed on the label. If stored at room temperature up to 77°F (25°C), capsules should be used within 2 months.
- TMEP Use:
  - HIV Post Exposure Prophylaxis Protocol

Ketorolac (Toradol®)

- Description:
  - Analgesic, non-steroidal anti-inflammatory (NSAID).
  - Inhibits platelet function.
- Indications:
  - For the temporary relief of:
    - Mild to moderate pain
    - Fever (if ASA or Acetaminophen are not available).
- Adult dose:
  - 30mg IV / IM. May be repeated every 6 hours. ***Do not use more than 5 consecutive days.***

- *Pediatric dose*
    - *Adolescents 13–16 years and children 2–12 years: 1mg/kg IM to a maximum of 30mg or 0.5mg/kg IV to a maximum of 15mg*
- **Contraindications**:
    - Hypersensitivity to nonsteroidal anti-inflammatory agents (NSAID)
    - History of gastrointestinal bleeding
    - Patients with bleeding disorders (e.g., hemophilia).
    - Suspected or confirmed
        - Cerebrovascular bleeding
        - Hemorrhagic diathesis
        - Incomplete hemostasis
        - High risk of bleeding
    - Prior to major surgery
    - Exercise extreme caution in patients with a history of
        - Hypertension or hypertension and congestive heart failure
        - Cardiovascular disease
        - Peripheral vascular disease
        - Cerebrovascular disease (e.g., stroke, transient ischemic attack)
    - Advanced renal impairment
    - Patients at risk for renal failure due to volume depletion
- Pregnancy Category B
- Side-effects:
    - Gastrointestinal symptoms
    - Gastrointestinal bleeding
    - Stomach pain
    - Heartburn
- TMEP Use:
    - Pain Management Protocol

Lamivudine and Zidovudine (AZT, ZDV) - See Combivir®

Larium® – See Mefloquine

Lidocaine HCL – See Xylocaine®

- WARNING Aviation personnel are grounded for 12 hours after the use of local anesthesia and until symptoms have resolved enough to allow safe performance of duties.
- Description: Local anesthetic; see ACLS drugs for cardiac therapy.
-

Some lidocaine solutions contain 1:10,000 epinephrine. This causes intense vasoconstriction and prolongs the duration of the anesthesia. These solutions are identified by a red label or red lettering

on the label. **DO NOT use solutions containing epinephrine on or near the fingers, toes, nose, ears, or penis.**

- Indications:
  - Local anesthetic: Suturing, debridement, nerve blocks, thoracostomy, or other similar procedures. Duration of anesthesia is 30 to 60 minutes.
  - Cardiac Use: Use ACLS Protocols
- Dose (Local anesthesia): To desired effect. Maximum single adult dose is 4.5mg/kg or 300mg (15cc of the 2% solution contains 300mg lidocaine).
    - NOTE 1: This is a different max dose than with IV lidocaine for ACLS use.
    - NOTE 2: 2% lidocaine contains 20mg of lidocaine per cc. Diluting 2% lidocaine 1:1 with normal saline gives a 1% solution (10mg per cc) that is just as effective as the 2% solution.
- **Contraindications:**
  - 2nd degree, 3rd degree AV block
  - Hypotension
  - Stokes-Adams Syndrome
- Pregnancy Category B
- Side-effects:
  - Slurred speech
  - Altered mental status
  - Tinnitus
  - Edema
- Adverse Reactions:
  - Dermatologic reactions
  - Status asthmaticus
  - Anaphylaxis
  - Seizures
- TMEP Use:
  - Back Pain Protocol
  - Cellulitis/Cutaneous Abscess Protocol
  - Ingrown Toenail Protocol

Loperamide HCl (Imodium®)

- Aviation personnel are grounded until medical condition is not a factor and free of side-effects for 24 hours.
- Description: Antidiarrheal (opioid)
- Indications: Treatment of acute diarrhea. For use in acute, non-invasive diarrhea only.
  - Refer to medical emergencies if blood and/or mucus are present in stool, or diarrhea is associated with fever (infectious diarrhea).

- Dose: 2 capsules (4mg) first dose, then 1 capsule (2mg) after every unformed stool, not to exceed 16mg (8 capsules) in 24 hours. Use only if control of diarrhea is critical for continued operations.
- **Contraindications:**
  - Acute dysentery.
  - Not for use in children < 12 years old
- Pregnancy Category B
- Side-effects:
  - Abdominal pain/distention
  - Nausea
  - Vomiting
  - Severe constipation
  - Drowsiness
  - Dizziness.
- Adverse reactions: Hypersensitivity
- TMEP Use:
  - Gastroenteritis Protocol

Lopinavir and Ritonavir – See Kaletra®

Macrolide Class of Antibiotics – See Azithromycin (Z-Pak®)

Malarone® - See Atovaquone 250mg/ proguanil 100mg

Mannitol (Osmotrol®)

- GROUNDING medication for personnel on flight status.
- Description: Osmotic diuretic
- Action:
  - Increases osmolarity of the glomerular filtrate, which increases the reabsorption of water, increasing sodium and chloride.
- Indications;
  - Crush injury
- Dose:
  - 1–2gm/kg at the rate of 5gm/hr
- **Contraindications:**
  - Anuria
  - Pulmonary edema
  - Dehydration
  - Congestive heart failure
  - Hypovolemia
  - Hypotension
  - Hypersensitivity
- Pregnancy Category C
- Side-effects/precautions

    - Sodium depletion
    - Transient volume overload
    - Pulmonary edema
    - Hypotension (excessive diuresis)
    - Angina like chest pain
    - Dizziness
    - Headache
    - Nausea and vomiting
    - Chills
    - Drug may crystallize at temperatures of 45 degrees F or lower
- Other notes:
    -

Use an in line filter
- TMEP Use:
    - Crush Injury Protocol

Mefloquine (Larium®)

- GROUNDING medication for personnel on flight status
- Description: Antimalarial agent
- Indications:
    - Prevention of mild to moderate malaria caused by *Plasmodium falciparum* (including chloroquine-resistant strains) and *P. vivax*
    - Treatment of mild to moderate malaria caused by mefloquine-susceptible strains of *P. falciparum* (both chloroquine-susceptible and resistant strains) and *P. vivax*
- Adult dose:
    - Prophylaxis: 250mg once weekly
        - Initiate therapy 1 to 2 weeks prior to departure to endemic area
        - Dose must be administered on same day of week
        - Continue prophylaxis for 4 additional weeks upon return from endemic area
    - Treatment: 5 tablets (1250mg) given as a split dose taken 6–8 hours apart.
    - Do not take on empty stomach
    - Take with at least 240ml (8oz.) glass water
- *Pediatric dose*
    - *Prophylaxis:*
        - *Children > 45kg: one 250mg tablet should be taken in children*
        - *Children < 45kg: weekly dose decreases in proportion to body weight (3-5mg/kg once weekly):*
            - *30–45kg: ¾ tablet*
            - *>20–30kg: ½ tablet*
            - *Up to 20kg: ¼ tablet*
            - *Experience with mefloquine in infants < 3 months or weighing < 5mg is limited*

        - *Initiate therapy 1 week prior to departure to endemic area.*
        - *Dose must be administered on same day of week.*
        - *Continue prophylaxis for 4 additional weeks upon return from endemic area.*
    - *Treatment: 20–25mg/kg for nonimmune patients*
        - *Splitting the dose into 2 doses taken 6-8 hours apart may reduce adverse effects.*
        - *Treatment in children has been associated with early vomiting; if patient vomits within 30 minutes of dose and a significant loss of drug is suspected by inspection of emesis, re-dose patient with full dose; if vomiting occurs within 30 to 60 minutes, administer ½ the full dose.*
        - *Do not administer on an empty stomach and give with ample water.*
        - *For very young patients, dose may be crushed, mixed with water or sugar water and may be administered via oral syringe.*
        - *Experience in infants < 3 months or < 5kg is limited.*

- **Contraindications:**
    - Hypersensitivity to related compounds (e.g. quinine, quinidine)
    - Patients with:
        - Active depression
        - Recent history of depression
        - Generalized anxiety disorder
        - Psychosis
        - Schizophrenia or other major psych disorders
        - History of convulsions
- Pregnancy Category C
- Side-effects:
    - Cardiac rhythm disturbances
    - Exercise caution when performing activities requiring alertness and fine motor coordination such as driving, piloting, operating heavy machinery as dizziness, loss of balance have occurred with mefloquine during and following its use.
- Adverse reactions:
    - Reactions (symptoms) attributable to mefloquine cannot be distinguished from symptoms of malaria. Due to long half-life of the drug, symptoms could persist for several weeks following the last dose.
    - Prophylaxis
        - Vomiting (3%)
        - Dizziness
        - Syncope (fainting)
        - Extrasystoles (skipped hearbeats; < 1%)
    - Treatment
        - Dizziness, headache
        - Myalgia (muscle aches)
        - Nausea, vomiting
        - Fever, chills
        - Diarrhea
        - Skin rash

        - Abdominal pain
        - Fatigue
        - Loss of appetite
        - Tinnitus (ringing in the ears)
- Other notes:
    - Patients given mefloquine for *P. vivax* are at high risk for relapse and should subsequently receive primaquine.
    - There is insufficient clinical data to document mefloquine's effect on malaria caused by *P. ovale* or *P. malariae*
    - Liver impairment can prolong the elimination of mefloquine
    - When mefloquine is taken concurrently with oral live typhoid vaccines, attenuation of immunization cannot be excluded. Therefore, complete attenuated oral live vaccinations at least 3 days before starting mefloquine.
    - Anticonvulsant blood levels (e.g. phenytoin [Dilantin®], valproic acid [Depakote®], carbamazepine [Tegretol®], and phenobarbital) may be reduced by mefloquine and therefore, risk for convulsions may increase in patients with history of epilepsy. Mefloquine itself has also been associated with convulsions in the absence of anticonvulsant treatment.
- TMEP Use:
    - Malaria Protocol

Meloxicam (Mobic®)

- Description: NSAID
- Indications:
    - Relief of the signs and symptoms of osteoarthritis and rheumatoid arthritis. .
    - Mild to moderate pain relief
- Dose:
    - 7.5mg or 15mg daily. The maximum recommended daily oral dose is 15mg.
- **Contraindications**:
    - Allergy to NSAID class of drugs, Aspirin.
- Pregnancy Category B (1st and 2nd trimesters)
- Pregnancy Category C (3rd trimester)
- Side-effects:
    - Allergic reaction
    - Anaphylactoid reactions including shock
    - Face edema
    - Fatigue
    - Fever
    - Hot flushes
    - Malaise
    - Syncope
    - Weight decrease
    - Weight increase
    - Dyspepsia
- TMEP Use:

- Pain Management Protocol

Metronidazole (Flagyl®)

- WARNING Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Nitroimidazole antibiotic
- Indications:
  - Gastroenteritis presumed due to Giardia
- Adult dose:
  - Amebic Dysentery – 750mg PO tid x 5–10 days
  - Trichomoniasis – 2gm PO x 1 dose; OR 250mg PO tid x 7 days
  - Giardia – 250mg PO tid x 5–7 days
  - Severe anaerobic infections – 1gm IV, the 500mg IV q 6 hr
- *Pediatric dose:*
  - *Safety and efficacy have not been established, except for amebiasis. 35–50mg/kg tid for 10 days. Newborns exhibit a reduced capacity to eliminate the drug.*
- **Contraindications:**
  - Hypersensivity to any component of product, or other nitroimidazole derivatives
  - Pregnancy (first trimester in patients with trichomoniasis)
  - Administer with caution to patients with CNS diseases
  - Use with caution in patients with history of blood dyscrasias
- Pregnancy Category B
- Side-effects:
  - Disulfiram-like reaction including flushing, palpitations, tachycardia, nausea, vomiting may occur with concomitant ethanol ingestion. Refrain from ethanol during therapy and ≥1 to 3 days afterward.
- Adverse reactions:
  - Seizures
  - Peripheral neuropathy (numbness or paresthesia of extremity)
  - Patients with undiagnosed candidiasis may present more prominent symptoms during therapy; treat with candicidal agent
- TMEP Use:
  - Abdominal Pain Protocol
  - Gastroenteritis Protocol

Midazolam (Versed®)

- WARNING GROUNDING medication for personnel on flight status
- Class: Benzodiazepine
- Indications:

- Pain Management Protocol

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  - Pregnancy (first trimester in patients with trichomoniasis)
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- Adverse reactions:
  - Seizures
  - Peripheral neuropathy (numbness or paresthesia of extremity)
  - Patients with undiagnosed candidiasis may present more prominent symptoms during therapy; treat with candicidal agent
- TMEP Use:
  - Abdominal Pain Protocol
  - Gastroenteritis Protocol

Midazolam (Versed®)

- WARNING GROUNDING medication for personnel on flight status
- Class: Benzodiazepine
- Indications:

- Seizures Protocol

Mobic® – See Meloxicam

Motrin® – See Ibuprofen

Morphine Sulfate (Opiod)

- WARNING GROUNDING medication for personnel on flight status
- Description: Narcotic analgesic – alters perception of pain and emotional response to pain.
-

  - Have Narcan available when using Morphine.
  - Alters perception & emotional response to pain
- Indications:
  - Severe pain
  - Pain from cardiac ischemia
- **Contraindications:**
  - Respiratory depression
  - Hypotension
  - Head injury
- Pregnancy Category B
- Adult dose:
  - 4–15mg IV / IM slow push. Titrate to response.
- *Pediatric dose:*
  - *0.1–0.2mg/kg IM / IV. Do not exceed 15mg.*
- K-9 Dose:
  - Acute Pain: 30mg IM
  - Sedation: 15-30mg IM
- Side-effects:
  - ↓ RR
  - Hypotension
  - Bradycardia
  - Nausea
  - Vomiting
  - Dizziness
  - Pruritus
  - Skin flushing
  -
- Adverse reactions:
  - Seizures with large doses
  - Constipation

    - Ileus
    - Urinary retention
- TMEP Use:
    - Chest Pain Protocol
    - Pain Management Protocol
    - K-9 Trauma Management Protocol

Moxifloxacin (Avelox®)

-

Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description:
    - 4th generation quinolone
    - Broad spectrum antibiotic with broad anaerobic coverage for PO / IV administration)
    - Inhibits DNA preventing cellular replication and division
- Indications:
    - Community-acquired pneumonia (CAP), including CAP caused by multi-drug resistant *Streptococcus pneumoniae**
    - Complicated skin and skin structure infections, including diabetic foot infections
    - Complicated intra-abdominal infections, including polymicrobial infections such as abscesses
- Dose: 400mg/day PO / IV
    - IV infusion should be over 60 minutes
    - Avoid use with antacids
    - Decrease dose in renal impairment
    - Avoid using with antiarrhythmics – May cause prolonged QT interval
- **Contraindications:**
    - Hypersensitivity to fluroquinolones
    - Patients < 18 years old
    - Pregnancy and lactation
    - Uncorrected hypokalemia
- Pregnancy Category C
- Side-effects:
    - Headache
    - Nausea
    - Diarrhea
    - Photosensitivity
    - Insomnia
    - Vertigo
- Adverse reactions:
    - Tendon rupture
    - Use cautiously with NSAIDs due to increased CNS stimulation

    - Prolonged QT interval
    - Abnormal dreams
    - Pseudomembranosus colitis
- Other notes:
    -

Oral antacids decrease absorption of the moxafloxacin when taken orally.
    - Visually inspect any solution of moxafloxacin for particulate matter and discoloration prior to use. Solution must be clear.
    - IV administration- must be reconstituted prior to administration
        - Do not mix or co-infuse with other medications
        - At cool temperatures precipitation may occur, which will re-dissolve at room temperature.
- TMEP Use:
    - Barotrauma Protocol
    - Bronchitis/Pneumonia Protocol
    - Cellulitis/Cutaneous Abscess Protocol
    - Ear Infection Protocol
    - Epistaxis Protocol
    - Flank Pain (Renal Colic, Pyelonephritis, Kidney Stone) Protocol
    - Gastroenteritis Protocol
    - Ingrown Toenail Protocol
    - Meningitis Protocol (Prophylaxis)
    - Subungual Hematoma Protocol

Mupirocin Ointment 2% (Bactroban®)

- Description: Topical antibacterial
- Indications:
    - Impetigo
    - Topical skin infection
- Adult dose:
    - Clean affected area
    - Apply small amount of antibiotic on the area 1-3 times/day
    - The affected area may be covered by gauze or a sterile bandage
- *Pediatric dose:*
    - *Safety in children has been established in ages 2-16 yrs*
    - *Pediatric dosing like adult dosing*
- **Contraindications:**
    - Should not be used with open wounds
- Pregnancy Category B
- Side-effects:
    - Burning, stinging, pain, itching at application site
    - Adverse reactions
    - Nausea
- Adverse reactions:
    - Dry skin
    - Tenderness

    - Swelling
    - Contact dermatitis
    - Increased exudate (rare)
    - Systemic reactions (rare)
- Other notes:
    - For external use only
    - Avoid eyes and mucosal membranes
    - If no improvement in 3-5 days, consider alternative therapy
- TMEP Use:
    - Epistaxis Protocol
    - Ingrown Toenail Protocol

Narcan® – See Naloxone HCl

Naloxone HCl (Narcan®)

- WARNING GROUNDING medication for personnel on flight status
- Description: Narcotic antagonist.
- Indications: Known or suspected narcotic induced respiratory depression.
    - WARNING Have available when using Morphine.
- Adult dose: 0.4–2mg IV. Repeat q 2-3 min/prn.
    - Duration is 20-40 minutes (< duration of action of Morphine). Repeat doses of may be necessary after 20-30 minutes.
- *Pediatric dose: 0.01mg/kg dose IM / IV / SQ q 2–3 min.*
    - *If initial dose does not result in clinical response, increase dose up to 0.1mg/kg*
    - *If no response after 10mg has been administered, diagnosis of narcotic induced toxicity should be questioned.*
- **Contraindications:** Known allergy to medication
- Pregnancy Category B
- Side-effects:
    - In narcotic dependent patient, withdrawal symptoms may be precipitated.
- Adverse reactions: With higher than recommended doses:
    - Nausea
    - Vomiting
    - Tachycardia
    - Hypertension
    - Tremors
- TMEP Use:
    - Loss of Consciousness (without seizures) Protocol

Nelfinavir (Viracept®)

- WARNING GROUNDING medication for personnel on flight status
- Description: Anti-retroviral agent, protease inhibitor
- Indications: HIV post exposure prophylaxis
- Adult dose: 750mg tid, or 1250mg bid if taken with food.
- *Pediatric dose: Children 2–13 years old: 45–55mg/kg bid, or 25–35mg/kg tid.*
    - *If tablets are unable to be taken may use powder form mixed with water, milk, formula, or dietary supplement. Do not use acidic juices. Once mixed, do not store for more than 6 hours.*
- **Contraindications:**
    - Hypersensitivity to Nelfinavir
    - Concurrent therapy with amiodarone, ergot derivatives, midazolam, pimozide, quinidine, triazolam
- Pregnancy Category B
- Adverse reactions:
    - Diarrhea (14–20% of adults, 39–47% of children)
    - Nausea
    - Flatulence
    - Rash
    - Decreased lymphocytes
    - Decreased neutrophils
    - Decreased hemoglobin
    - Increased creatine kinase
    - Increased transaminases
    - Abdominal pain
    - Weakness
    - Other reactions occur at a rate of less than 2%
- Other notes:
    - Has high potential for interactions with other drugs.
    - Not recommended for use with rifampin, St. John's Wort, lovastatin, simvastatin, or proton pump inhibitors. Serum levels will be significantly reduced.
    - Should be taken with meals to increase plasma concentration.
    - If mixed with acidic food or juice (orange juice, apple juice, applesauce) it may have a bitter taste.
- TMEP Use:
    - HIV Post Exposure Prophylaxis Protocol

Nifedipine (Procardia®)

- WARNING GROUNDING medication for personnel on flight status
- Description: An antianginal drug belonging to a class of pharmacological agents, the calcium channel blockers. It works by relaxing blood vessels so blood can flow more easily.

- Indications:
  - HAPE prophylaxis/treatment
  - Certain types of chest pain (angina). It may help to increase exercise tolerance and decrease the frequency of angina attacks. Use other medications (e.g., sublingual nitroglycerin) to relieve attacks of chest pain.
- **Contraindications:** Known allergy to medication
- Pregnancy Category C
- Dose:
  - 10mg PO, then 20mg PO q 6 hr.
- Side-effects: Primarily vasodilatory in nature (hypotension, peripheral edema)
-

  - Although, in most patients, the hypotensive effect of nifedipine is modest and well tolerated, occasional patients have had excessive and poorly tolerated hypotension.
- TMEP Use:
  - Altitude Illness Protocol

Ondansetron (Zofran®)

-

GROUNDING medication for personnel on flight status
- Description: Antiemetic
- Indications
  - Prevention of nausea and vomiting
- Adult dose:
  - Oral dose: 4–8mg PO tid up to 48 hrs
  - IV / IM dose : 4mg IV over 2–5 min or 4mg IM tid
- *Pediatric dose:*
  - *Oral dose:*
    - *Little information available on dosing in children <= 3 yrs*
    - *4–11 years of age: 4mg tid up to 48 hours*
    - *>12 years of age: 4–8mg PO bid up to 48 hrs*
  - *IV dose:*
    - *Little information available on dosing in children <= 2 yrs*
    - *2–12 years old and <40kg: single .1mg/kg IV dose over 2–5 min*
    - *2–12 Years and > 40kg: 4mg IV over 2–5 min*
- **Contraindications:**
  - Hypersensitivity to any component of product
- Pregnancy Category B
- Side-effects:
  - Anxiety
  - Dizziness
  - Sedation/drowsiness
  - Headache

    - Malaise/fatigue
    - Chills/shivering
    - Constipation or diarrhea
    - Fever
    - Pruritis
    - Urinary retention
    - Musculoskeletal pain
    - Extrapyramidal symptoms
    - Arrhythmias
    - Hypotension
    - Chest pain
- Adverse reactions:
    - Elevated liver transaminases
    - Rare cases of hypersensitivity, sometimes severe (anaphylaxis) have been reported
    - Syncope (rare)
    - Grand mal seizures (rare)
    - Bronchospasm (rare)
    - Transient blurred vision (rare)
    - Hypokalemia (rare)
    - Rifampin may decrease ondansetron levels
- TMEP Use:
    - Nausea and Vomiting Protocol

Fentanyl, Oral (Actiq Lozenge®)

- GROUNDING medication for personnel on flight status
- Description: Opioid – Oral transmucosal fentanyl citrate
- Indications: Severe battlefield related trauma pain
- Dose: 400–800mcg.
    - The blister package should be opened with scissors immediately prior to product use. The patient should place the ACTIQ unit in his or her mouth between the cheek and lower gum, occasionally moving the drug matrix from one side to the other using the handle. The ACTIQ unit should be sucked, not chewed. A unit dose of ACTIQ, if chewed and swallowed, might result in lower peak concentrations and lower bioavailability than when consumed as directed.
    - The ACTIQ unit should be consumed over a 15-minute period. Longer or shorter consumption times may produce less efficacy than reported in ACTIQ clinical trials. If signs of excessive opioid effects appear before the unit is consumed, the drug matrix should be removed from the patient's mouth immediately and future doses should be decreased.
- **Contraindications:** Known allergy to medication
- Pregnancy Category C
- **Treatment of overdose**:

    - Ventilatory support
    - Intravenous access
    - Narcan (naloxone) or another opioid antagonist may be warranted in some instances, but it is associated with the risk of precipitating an acute withdrawal syndrome.
- Side-effects: The most serious adverse effects associated with all opioids are:
    - Respiratory depression (potentially leading to apnea or respiratory arrest)
    - Circulatory depression
    - Hypotension
    - Shock
    - All patients should be followed for symptoms of respiratory depression.
- TMEP Use:
    - Pain Management Protocol

Osmotrol® – See Mannitol

Oxymetazline HCl (Afrin® Nasal Spray)

- Description: Vasoconstrictor (decongestant)
- Indications: Use as an adjunct to valsalva maneuver to clear ears and sinuses during compression and decompression.
- Dose: Spray into each nostril 2 times, twice daily. Not to exceed three consecutive days due to rebound congestion
    - NOTE: Do not tilt head backwards while spraying.
- **Contraindications:**
    - Severe damage to tympanic membrane/sinuses from barotrauma.
- Pregnancy Category C
- Side-effects:
    - Burning
    - Sneezing and stinging of nasal mucosa
- Adverse reactions:
    - Rhinitis
    - Rebound congestion
- TMEP Use:
    - Epistaxis Protocol

Phenergan® - See Promethazine HCl

Primaquine

- Description: Antimalarial
- Indications: Used to prevent relapse of *P. vivax* and *P. ovale* malarias and to prevent attacks after departure from areas where *P. vivax* and *P. ovale* malarias are endemic.

- Dose: 30mg PO daily x 14 days beginning immediately after leaving the malarious area
    - Screen for G6PD deficiency prior to dispensing.
    - Give with food to prevent gastric irritation.
- **Contraindications:**
    - G6PD deficiency
    - Rheumatoid Arthritis
    - SLE
    - Pregnancy
- Pregnancy Category C
- Side-effects:
    - Darkening of urine
    - Fevers
    - Chills
    - Cyanosis
    - Nausea
    - Vomiting
    - Abdominal cramps
- Adverse reactions:
    - Visual disturbances
    - Hypertension
    - Anemia/leukopenia
    - Methemoglobinemia
- TMEP Use:
    - Malaria Protocol

Procardia® - See Nifedipine

Promethazine HCl (Phenergan®)

-

GROUNDING medication for personnel on flight status
- Description: Phenothiazine class. An H_1 receptor blocking agent. Antihistamine, sedative, antimotion-sickness, antiemetic, and anticholinergic effects. The duration of action is generally from 4-6 hours. The major side-effect this drug is sedation.
- Indications:
    - Antihistamine for allergies
    - Anaphylactic reactions in addition to epinephrine.
    - Nausea
    - Vomiting
    - Motion sickness.
    - Antiemetic therapy
- Adult dose:
    - Oral dose
        - Nausea / vomiting: The average adult dose is 25mg q 4 hr.

        - Motion sickness: The average adult dose is 25mg bid. The initial dose should be taken one-half to one hour before anticipated travel and be repeated 8 to 12 hours later if necessary. On succeeding days of travel, it is recommended that 25mg be given on arising and again before the evening meal.
    - Parenteral: administered by deep IM injection
        - Nausea / vomiting: 12.5–25mg q 4–6 hr PRN. If taking narcotics or barbiturates, it may be necessary to reduce doses of those medications to prevent excess somnolence.
        - Motion sickness: 12.5–25mg; repeat PRN up to 4 times/day
- *Pediatric dose:*
    - *Oral dose:*
        - *Nausea / vomiting*
            - *2 to12 years old: 1.1mg/kg of body weight. Do not exceed half of the suggested adult dose.*
            - *Children < 2 years old:* ***Contraindicated***
        - *Motion Sickness:* ***Contraindicated*** *in children*
    - *Parenteral: administered by deep IM injection*
        - *Nausea / vomiting :*
            - *2 to 12 years old: 12.5–25mg q 4–6 hr PRN. If taking narcotics or barbiturates, reduce the dose to 1.1mg/kg.*
        - *Motion sickness:* ***Contraindicated*** *in children*
- **Contraindications:**
    - Subcutaneous injection may result in tissue necrosis
    - Children < 2 years old
    - Comatose states
    - Antiemetics should not be used in vomiting of unknown etiology in children.
    - Asthma
- Pregnancy Category C
- Side-effects:
    - Drowsiness, sedation, sleepiness
    - Anticholinergic effects – dry mouth, urinary retention, dry eyes, constipation
    - Photosensitivity
    - Bradycardia
    - Urticaria
    - Sedation
    - Respiratory depression
    - Hypotension
    - Chest pain
- Adverse reactions:
    - Lowers seizure threshold
    - Extrapyramidal symptoms, dystonia
    - May exacerbate glaucoma
    - May exacerbate hypertension
    - Cholestatic jaundice
    - Arrhythmias

-

    - Intra-arterial injection may result in gangrene of the affected extremity.
    - Because of the potential for Phenergan to reverse epinephrine's vasopressors effect, epinephrine should **NOT** be used to treat hypotension associated with Phenergan overdose.
- Other notes:
    - Store at room temperature, between 15° to 25° C (59° to 77° F).
    - Protect from light.
    - Use carton to protect contents from light.
    - Do not use if solution is discolored or contains a precipitate.
    - IV administration may be hazardous and is **NOT** recommended
- TMEP Use:
    - *Nausea and/or Vomiting Protocol*

Proventil® – See Albuterol Inhaler

Pseudoephedrine (Sudafed®)

- Description: Adrenergic class. Primary activity though α-effects on respiratory mucosal membranes reducing congestion, hyperemia, edema, and minimal bronchodilation secondary to β-effects.
- Indications:
    - Nasal decongestant
    - Adjunct in otitis media with antihistamines
- Adult dose:
    - 30–60mg q 4–6 hr PO
- *Pediatric dose:*
    - *6 to 12 years old: 30mg/dose PO q 4–6 hr*
    - *2 to 5 years old: 15mg/dose PO q 4–6 hr*
- **Contraindications:**
    - Hypersensitivity
    - Narrow angle glaucoma
- Pregnancy Category C
- Precautions:
    - Pregnancy
    - Cardiac disorders
    - Hyperthyroidism
    - Diabetes mellitus
    - Prostatic hypertrophy
    - Lactation
    - Hypertension
- Side-effects:
    - CNS: Tremors, anxiety, insomnia, headache, dizziness, hallucinations, seizures
    - CV: Palpitations, tachycardia, hypertension, chest pain, dysrrhythmias
    - EENT: Dry nose, irritation of nose and throat

    - GI: Nausea, vomiting, anorexia, dry mouth
    - GU: dysuria
- Other notes:
    - Do not use continuously, or more than recommended dose.
    - Rebound congestion may occur.
    - Avoid taking at bedtime, stimulation may occur.
- TMEP Use:
    - *Allergic Rhinitis/Hay Fever/ Cold Like Symptoms*
    - *Barotrauma Protocol*

Quinolones – General Antimicrobial Spectrum

- Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- 1st generation: Gram negative (excluding Pseudomonas), urinary tract only.
    - *Example nalidixic acid*
- 2nd generation: Gram negative (including Pseudomonas); *Staph aureus* but not *Pneumococcus*; some atypicals.
    - *Examples: ciprofloxacin, norfloxacin, ofloxacin*
- 3rd generation: Gram negative (including Pseudomonas); gram positive (including *Staph aureus* and *Pneumococcus*); expanded atypical coverage.
    - *Example: levofloxacin*
- 4th generation: Same as 3rd generation: plus broad anaerobic coverage.
    - *Examples: gatifloxacin, moxifloxacin, trovafloxacin*
- **Contraindications:** Known allergy to medication
- Pregnancy Category C

Rabeprazole (Aciphex®)

- Description: GI agent – proton pump inhibitor (PPI)
- Gastric PPI that specifically suppresses gastric acid secretion by inhibiting the acid secretion in the cells of the stomach. Does not have H2 histamine receptor blocking properties.
- Indications: For healing and maintenance of erosive or ulcerative gastroesophageal reflux disease (GERD), duodenal ulcers and hypersecretory conditions.
- **Contraindications:**
    - PPI hypersensitivity
    - Pregnancy
- Pregnancy Category B
- Adult dose:
    - 20mg PO qd

- *Pediatric dose:*
    - ***Contraindicated***
- Side-effects:

    - Headaches
    - Nausea
    - Vomiting
    - Diarrhea
    - Abdominal cramps
    - ↑ temperature
- Adverse reactions:
    - Stevens-Johnson Syndrome
    - Toxic epidermal necrolysis (Fatalities have been reported)
- Other notes:
    - This medication should be swallowed whole. It should not be crushed or chewed.
- TMEP Use:
    - *Abdominal Pain Protocol*

Ranitidine (Zantac®)

- WARNING Aviation personnel are grounded for 72 hours when taking an H2 blocker for the first time. There is no grounding period if aviation personnel have taken before without any no side-effects.
- Description: H2 blocker; ↓ secretion of stomach acid
- WARNING NOTE: Drug Interactions: ↓absorption of oral diazepam.
- Indications:
    - Gastric and/or peptic ulcers
    - Upper GI bleeds
    - Prevention of stress ulcers in burn victims or patients on steroid treatment.
    - Drug of choice for treatment of gastric or peptic ulcers.
    - Adjunct in treatment of urticaria and anaphylaxis.
- Adult dose:
    - 50mg IV / IM q 6–8 hr for ulcers, burns, steroid use, upper GI bleeds, urticaria, or anaphylaxis.
    - Oral dose: 150mg bid for ulcer, urticaria.
- *Pediatric Dose: 1.5mg/kg IV x 1, then 0.75mg/kg IV q 12 hr*
- **Contraindications:**
    - Known/suspected liver disease
- Pregnancy Category B
- Side-effects:
    - Headache
    - Diarrhea
    - Constipation
    - Muscle aches
    - Vertigo
    - Malaise

    - Dry mouth
    - Nausea
    - Vomiting
- Adverse reactions:
    - Thrombocytopenia
    - Liver toxicity

- TMEP Use:
    - *Abdominal Pain Protocol*
    - *Anaphylactic Reaction Protocol*
    - *Chest Pain Protocol (Other Etiologies)*

Retrovir® - See AZT (Zidovudine)

Rifadin® – See Rifampin

Rifampin (Rifadin®)

- Aviation personnel are GROUNDED for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Inhibits DNA-dependent RNA polymerase
- Class: Bacteriacidal antibiotic
    - Indications:
    - Tuberculosis
    - Anthrax
    - Brucellosis
    - Asymptomatic carriers of *Neisseria meningitidis* to eliminate meningococci from the nasopharynx
    - MRSA soft tissue infections
- Dose:
    - 600mg PO bid
- **Contraindications:**
    - Liver dysfunction
- Pregnancy Category C
- Side-effects/precautions:
    - Hepatotoxic
        - Hepatitis
        - Jaundice
        - Liver failure in severe cases
    - Respiratory
        - Shortness of breath
        - Wheezing
    - Cutaneous
        - Flushing
        - Pruritus

        - Rash
        - Redness and watering of eyes
    - Abdominal
        - Nausea
        - Vomiting
        - Abdominal cramps
        - Diarrhea
        - Jaundice
        - Flatulence

-

Concomitant antacid administration may reduce the absorption of rifampin. Daily doses of rifampin should be given at least 1 hour before the ingestion of antacids.
    - Rifampin and its metabolites may impart a red-orange color to urine, feces, sputum, sweat, and tears; soft contact lenses worn during rifampin therapy may become permanently stained.

- TMEP Use:
    - *Cellulitis/ Cutaneous Abscess Protocol*

Ritonavir and Lopinavir – See Kaletra®

Rocephin® (Ceftriaxone Sodium)

Salmeterol (Serevent®)

- Description: Long acting inhaled beta-2 adrenergic agonist; relaxes bronchial smooth muscle (bronchodilator)
- Indications:
    - Relief of asthma
    - Prevention/treatment of exercise-induced bronchospasm
    - Treatment for chronic obstructive pulmonary disease (COPD)
    - Nocturnal asthma
    - HAPE prophylaxis/treatment
- Adult dose:
    - 1 inhalation every 12 hrs (twice daily)
- *Pediatric dose:*
    - *If more than 4 years of age, same as adult dose*
- **Contraindications:**
    - Hypersensitivity to salmeterol or other beta-2 agonists
- Pregnancy Category C
- Side-effects:
    - Dry mouth/throat (sugarless hard candy or ice chips will often relieve symptoms)
- Adverse reactions:
    - Cardiovascular: tachyarrythmias
    - Neurologic: dizziness, headache, tremor

    - Respiratory: throat irritation, also exacerbation of asthma (severe)
- Caution:
    - This medication **DOES NOT** give immediate relief in the event of asthma attack or bronchospasm
    - This medication **SHOULD NOT** be used in combination with other long-acting inhaled beta-agonists (e.g. formoterol, salmeterol/fluticasone)
    - Milk allergy; milk protein in the inhalation powder formulation
- TMEP Use:
    - *Altitude Illness Protocol*

Septra® – See Trimethoprim-Sulfamethoxazole

Serevent® – See Salmeterol

Sildenafil (Viagra®)

- Class: PDE5 inhibitor.
- Action: Vasodilator with potential blood pressure lowering effects
- Dose: 50mg
- Contraindications:
    - Nitrates – Concomitant use of nitrates in any form. Tadalafil potentiates the hypotensive effects of nitrates
- Pregnancy Category B
- Side Effects:
    - Cardiovascular- angina pectoris, chest pain, hypotension, myocardial infarction, postural hypotension, tachycardia
    - Digestive - dry mouth, dysphagia, esophagitis, gastritis,
    - Ophthalmologic- blurred vision, conjunctivitis (including conjunctival hyperemia), eye pain
-

    - Alpha Blockers: Coadministration may potentiate the blood pressure lowering effects of alpha blockers.
    - Antihypertensive: Coadministration may potentiate the blood pressure lowering effects of alpha blockers.
    - Antacids: Simultaneous administration of antacids reduces the absorption of Cialis
    - Ritonavir and HIV Protease Inhibitors: Increased tadalafil absorption.

Sodium Bicarbonate

-

GROUNDING medication for personnel on flight status.

- Description: Alkalinizing agent, electrolyte
- Action:
  - Sodium bicarbonate combines with hydrogen ions to form water and carbon dioxide
  - Buffers metabolic acidosis
  - Forces an intracellular shift of excess potassium in hyperkalemia
  - Increased pH
- Indications:
  - Severe metabolic acidosis in cardiac arrest refractory to ventilation
  - Tricyclic antidepressant overdose
  - Hyperkalemia
  - Alkalinization agent for specific toxins (salicylates, phenobarbital)
- Dose:
  - 1mEq/kg IV
- **Contraindications:**
  - Metabolic or respiratory alkalosis
  - Hypocalcemia
  - Hypokalemia
  - Hypernatremia
- Pregnancy Category C
- Side-effects/precautions:
  - Metabolic alkalosis may occur
  -

Precipitates when mixed with calcium chloride or gluconate
  - May increase intracellular acidosis
  - May cause imbalance
  - May deactivate catecholamine
  - Large solute load may lead to fluid overload
- TMEP Use:
  - *Crush Injury Protocol*

Sudafed® - See Pseudoephedrine**)**

Tenofovir (Viread®)

-

GROUNDING medication for personnel on flight status.
- Indications: Treatment of HIV
- Dose:
  - 1 pill daily
- **Contraindications:** Known allergy to medication
- Pregnancy Category B
- Side-effects:
  - Immune system disorders
    - Allergic reaction

- Metabolism and nutrition disorders
  - Lactic acidosis
  - Hypokalemia
  - Hypophosphatemia
- Respiratory, thoracic , and mediastinal disorders
  - Dyspnea
- Gastrointestinal disorders
  - Pancreatitis
  - Increased amylase
  - Abdominal pain
- Hepatobiliary disorders
  - Hepatic steatosis
  - Hepatitis
  - Increased liver enzymes (most commonly AST, ALT gamma GT)
- Skin and subcutaneous tissue disorders
  - Rash
- Musculoskeletal and connective tissue disorders
  - Rhabdomyolysis,
  - Osteomalacia (manifested as bone pain and which may contribute to fractures)
  - Muscular weakness
  - Myopathy
- Renal and urinary disorders
  - Acute renal failure
  - Nephrogenic diabetes insipidus
  - Renal insufficiency
  - Proteinuria
- General disorders
  - Weakness
  - Fatigue
- TMEP Use:
  - *HIV Post Exposure Prophylaxis Protocol*

Tenofovir and Emtricitabine – See Truvada®

Tenofovir and Emtricitabine and Efavirenz – See Atripla®

Tequin® – Gatifloxacin **(No longer used)**

Tetracaine .5% Drops

-

Aviation personnel are grounded for 12 hours after the use of local anesthesia and until symptoms have resolved enough to allow safe performance of duties.

- Description: Local anesthetic
- Indications: As a topical optic anesthetic (may aid in ocular exam to relieve blepharospasm); removal of foreign bodies.
- Dose:
  - 1 or 2 drops – 2-3 minutes before procedure
  - See appropriate TMEP
- **Contraindications:**
  - Not for prolonged use
- Pregnancy Category C
- Side-effects:
  - Stinging
  - Tearing
  - Swelling
  - Sensitivity to light
- Adverse reactions:
  - Conjunctival redness
  - Transient eye pain
  - Hypersensitivity reactions
- TMEP Use:
  - *Corneal Abrasion, Corneal Ulcer, Conjunctivitis Protocol*

Tadalafil (Cialis®)

- Class: PDE5 inhibitor.
- Action: Vasodilator with potential blood pressure lowering effects
- Dose: 10 mg
- Contraindications:
  - Nitrates – Concomitant use of nitrates in any form. Tadalifil potentiates the hypotensive effects of nitrates
- Pregnancy Category B
- Side Effects:
  - Cardiovascular- angina pectoris, chest pain, hypotension, myocardial infarction, postural hypotension, tachycardia
  - Digestive - dry mouth, dysphagia, esophagitis, gastritis
  - Ophthalmologic- blurred vision, conjunctivitis (including conjunctival hyperemia), eye pain
-

  - Alpha Blockers Coadministration may potentiate the blood pressure lowering effects of alpha blockers.
  - Antihypertensive: Coadministration may potentiate the blood pressure lowering effects of alpha blockers.
  - Antacids: Simultaneous administration of antacids reduces the absorption of Cialis
  - Ritonavir and HIV Protease Inhibitors: Increased tadalafil absorption.
  - Rifampin: Reduced tadalafil absorption 46%. The reduced exposure of tadalafil with the coadministration of rifampin can be anticipated to

decrease the efficacy of tadalafil for once daily use; the magnitude of decreased efficacy is unknown.

- TMEP Use:
  - *Altitude Illness*

Toradol® – See Ketorolac

Trimethoprim-Sulfamethoxazole (TMP-SMZ, Bactrim®, Septra®)

- Aviation personnel are grounded for the initial 24 hours of antibiotic therapy and until the medical condition no longer interferes with safely performing aviation duties and the patient is free of side-effects.
- Description: Antimicrobial – antibacterial, sulfonamide
- Action:
  - Fixed combination of TMP and SMZ, synthetic folate antagonists and enzyme inhibitors that prevent bacterial synthesis of essential nucleic acids and proteins; effective against *Pneumocystis carinii* pneumonitis, Shigellosis enteritis, most strains of enterobacteriaceae, *Nocardia, Legionella micdadei, and Legionella pneumophila, and Haemophilus ducreyi*
- Indications:
  - Cellulitis
  - Enteritis
  - Urinary tract infections
- Adult dose: 160mg TMP/800mg SMZ (DS) PO bid
- **Contraindications:**
  - TMP, SMZ, sulfonamide, or bisulfite hypersensitivity
  - Group A beta-hemolytic streptococcal Pharyngitis
  - Use caution with severe allergy or bronchial asthma
  - G6PD deficiency
  - Pregnancy
- Pregnancy Category C
- Adverse effects:
  - Rash
  - Toxic epidermal necrolysis
  - Nausea and vomiting
  - Diarrhea
  - Pseudomembranous enterocolitis
  - Abdominal pain
- TMEP Use:
  - *Cellulitis/Cutaneous Abscess Protocol*
  - *Urinary Tract Infection Protocol*

Truvada® (Emtricitabine and Tenofovir)

-

GROUNDING medication for personnel on flight status.
- Indications: Treatment of HIV
- Dose:
  - Adult Dose: 1 tablet daily
- **Contraindications:** Known allergy to medication
- Pregnancy Category B
- Side-effects:
  - General
    - Fatigue
  - Infections
    - Sinusitis
    - Upper respiratory infections
    - Nasopharynigitis
  - CNS
    - Headache
    - Dizziness
  - Psychiatric
    - Depression
    - Insomnia
  - Immune system disorders
    - Allergic reaction
  - Metabolism and nutrition disorders
    - Lactic acidosis
    - Hypokalemia
    - Hypophosphatemia
  - Respiratory, thoracic, and mediastinal disorders
    - Dyspnea
  - Gastrointestinal disorders
    - Pancreatitis
    - Increased amylase
    - Abdominal pain
    - Nausea
    - Vomiting
    - Diarrhea
  - Hepatobiliary disorders
    - Hepatic steatosis
    - Hepatitis
    - Increased liver enzymes (most commonly AST, ALT gamma GT)
    - Jaundice
  - Skin and subcutaneous tissue disorders
    - Rash
  - Musculoskeletal and connective tissue disorders
    - Rhabdomyolysis
    - Osteomalacia (manifested as bone pain and which may contribute to fractures), muscular weakness, myopathy
  - Renal and urinary disorders

        - Acute renal failure
        - Nephrogenic diabetes insipidus
        - Renal insufficiency
        - Proteinuria
        - Polyuria
    - General disorders and administration site conditions
        - Fatigue
- Other notes:
    - Store at 25 °C (77 °F), excursions permitted to 15–30°C (59–86°F).
- TMEP Use:
    - *HIV Post Exposure Prophylaxis Protocol*

Tylenol® – See Acetaminophen

Valium® - See Diazepam

Ventolin® – See Albuterol Inhaler

Versed® – See Midazolam

Viagra® - see Sildenafil

Viread® - See Tenofovir

Viracept® – See Nelfinavir

Xylocaine® – See Lidocaine HCL

Z- Pak® - See Azithromycin

Zantac® – See Ranitidine

Zidovudine - See AZT

Zithromax® – See Azithromycin

Zofran® – See Ondansetron

Zidovudine (AZT, ZDV) and Lamivudine - See Combivir®

Zymar® – See Gatifloxacin 0.3% Ophthalmic Liquid

NOTES:

Common Name	Nomenclature	AHFS Category	NSN	Recommended NDC	Controlled	JDF status
acetaminophen (Tylenol) 325mg tablet 100s	acetaminophen 325mg tablet 100s	analgesics and antipyretics, misc	6505015302679	51111048878	No	Yes
acetaminophen (Tylenol) 500mg tablets USP 100s	acetaminophen tablets USP 500mg 100s	analgesics and antipyretics, misc	6505014367129	51079039620	No	Yes
acetazolamide (Diamox) tablets 250mg 100 tablets per bottle	acetazolamide tablets USP 250mg 100 tablets per bottle	carbonic anhydrase inhibitors	6505006640857	51672402301	No	Yes
albuterol sulfate (CFC-F) inhalation 90mcg aer w/adap 6.7 gm 200 actuations	albuterol sulfate (CFC-F) inhalation 90mcg aer w/adap 6.7gm 200 actuations	sympathomimetic (adrenergic) agents	6505015382871	00085113201	No	Yes
aspirin (St Josheph's Children's Aspirin) 81mg tab chew 36s	aspirin 81mg tab chew 36s	salicylates	6505010339866	00904404073	No	Yes
aspirin tablets USP 0.324gm 100s	aspirin tablets USP 0.324gm 100s	salicylates	6505001009985	00904200960	No	Yes
atovaquone 250mg & proguanil 100mg tablets (Malarone) 100s	atovaquone 250mg & proguanil 100mg tablets 100s	antiprotozoals, misc	6505014919430	00173067501	No	Yes
azithromycin tablets 250mg 18s (3 Z-Paks 6s)	azithromycin tablets 250mg 18s (3 Z-Paks 6s)	Other macrolides	6505014491618	00781149668	No	Yes
bisacodyl (Dulcolax) tablets USP 5mg film enteric I.S. 100s	bisacodyl tablets USP 5mg film enteric I.S. 100s	cathartics and laxatives	6505001182759	00574000411	No	Yes

ceftriaxone sodium (Rocephin) 1gm vial 10s	ceftriaxone sodium 1gm vial 10s	3rd generation cephalosporins	6505012192760	00004196401	No	Yes
ceftriaxone sodium sterile (Rocephin) USP 2gm vial 10 vials per package	ceftriaxone sodium sterile USP 2gm vial 10 vials per package	cephalosporins	6505012293149	00781320995	No	Yes
cephalexin (Keflex) 250mg capsules 100s	cephalexin 250mg capsules 100s	1st generation cephalosporins	6505001656545	00093314501	No	Yes
chloroquine phosphate tablets USP 500mg 25 tablets per bottle	chloroquine phosphate tablets USP 500mg 25 tablets per bottle	antimalarials	6505012679662	00143212522	No	Yes
ciprofloxacin (Cipro) 400mg in 200ml D5W piggyback bags 24s	ciprofloxacin 400mg in 200ml D5W piggyback bags 24s	quinolones	6505013366179	00085174102	No	Yes
ciprofloxacin concentrate (Cipro) for injection 10mg/ml, 40ml vi	ciprofloxacin concentrate for injection 10mg/ml, 40ml vial 10s	quinolones	6505014866591	00085173101	No	Yes
ciprofloxacin (Cipro) tab USP 500mg I.S. 100s	ciprofloxacin tablets USP 500mg I.S. 100s	quinolones	6505012738650	00172531210	No	Yes
ciprofloxacin (Cipro) tablets USP 500mg I.S. 30 tablets per pack	ciprofloxacin tablets USP 500mg I.S. 30 tablets per package	quinolones	6505014912834		No	Yes
dexamethasone sodium phosphate injection (Decadron) 4mg/ml 30ml	dexamethasone sodium phosphate injection 4mg/ml 30ml	adrenals	6505015225164	63323016530	No	Yes

dextrose tablets 45gm multi-use squeeze tube 12 tablets	dextrose tablets 45gm multi-use squeeze tube 12 tablets	caloric agents	6505014253165	08290328230	No	No
diazepam (Valium) 5mg tablets I.S. 100s	diazepam 5mg tablets I.S. 100s	benzodiazepines	6505010985802	51079028521	Yes	Yes
diazepam (Valium) 5mg/ml, 2ml autoinjector (cana)	diazepam 5mg/ml, 2ml autoinjector (cana)	benzodiazepines	6505012740951		Yes	Yes
diazepam (Valium) inj 5mg/ml MDV 5s	diazepam injection 5mg/ml MDV 5s	benzodiazepines	6505015138434	00409321302	Yes	Yes
diazepam (Valium) injection 5mg/ml 2ml syringe luer-lock, w/o ne	diazepam injection USP 5mg/ml 2 ml unit 10 per package	benzodiazepines	6505015053476	00409127332	Yes	Yes
diphenhydramine hydrochloride (Benadryl) capsules USP 50mg 100s	diphenhydramine hydrochloride capsules USP 50mg 100s	ethanolamine derivatives	6505001168350	00555005902	No	Yes
diphenhydramine hydrochloride (Benadryl) inj USP 50mg/ml 1ml carpuject 10s	diphenhydramine hydrochloride inj USP 50mg/ml 1ml carpuject 10s	ethanolamine derivatives	6505015182962	00409229031	No	Yes
diphenhydramine hydrochloride (Benadryl) inj USP 50mg/ml 1ml vi	diphenhydramine hydrochloride inj USP 50mg/ml 1ml vial 25s	ethanolamine derivatives	6505010917538	00641037625	No	Yes
doxycycline hyclate (Vibratabs) tablets USP 100mg I.S. 30 tablets	doxycycline hyclate tablets USP 100mg I.S. 30 tablets/package	tetracyclines	6505014915506		No	Yes
doxycycline hyclate (Vibratabs) tablets USP 100mg 500s	doxycycline hyclate tablets USP 100mg 500s	tetracyclines	6505011534335	00172362670	No	Yes

doxycycline hyclate (Vibratabs) tablets USP 100mg, I.S., 100s	doxycycline hyclate tablets USP 100mg, I.S., 100s	tetracyclines	6505015050146	00182153589	No	Yes
epinephrine injection (Adrenaline) USP 0.1mg/ml 10ml Lifeshield syringe 10s	epinephrine injection USP 0.1mg/ml 10ml Lifeshield syringe 10s	sympathomimetic (adrenergic) agents	6505015273957	00074492134	No	Yes
epinephrine injection (Adrenaline) USP 0.1mg/ml syringe-needle unit10ml10s	epinephrine injection USP 0.1mg/ml syringe-needle unit10ml10s	sympathomimetic (adrenergic) agents	6505010932384	00074490118	No	Yes
ertapenem sodium (Invanz) 1gm vial 10s	ertapenem sodium 1gm vial 10s	carbapenems	6505015035374	00006384371	No	Yes
fluconazole (Diflucan) tablets 100mg 100 tablets per package	fluconazole tablets 100mg 100 tablets per package	azoles	6505013198233	00049342041	No	No
fluconazole tablets (Diflucan)100mg 30 tablets per bottle	fluconazole tablets 100mg 30 tablets per bottle	azoles	6505013198248	00049342030	No	No
gatifloxacin (Zymar) ophthalmic solution 0.3% 2.5ml	gatifloxacin ophthalmic solution 0.3% 2.5ml	antibacterials	6505015090735	00023921803	No	No
hetastarch 6% in lactated electrolytes (Hextend) 500ml plastic bag	hetastarch 6% in lactated electrolytes 500ml plastic bag 12s	replacement preparations	6505014988636	00409155554	No	Yes
hetastarch 6% in sodium chloride (Hespan) 500ml	hetastarch 6% in sodium chloride 500ml plastic bag	replacement preparations	6505012811247	00264196510	No	Yes

plastic bag 12s	(Hespan) 12s					
ibuprofen tablets (Motrin) USP 400mg 500s	ibuprofen tablets USP 400mg 500s	other nonsteroidal anti-inflammatory agents	6505001288035	53746013105	No	Yes
ibuprofen tablets (Motrin) USP 800mg 500 tablets per bottle	ibuprofen tablets USP 800mg 500 tablets per bottle	other nonsteroidal anti-inflammatory agents	6505012149062	53746013705	No	Yes
lamivudine 150mg & zidovudine 300mg (Combivir) capsules 60s	lamivudine 150mg & zidovudine 300mg (Combivir) capsules 60s	nucleoside and nucleotide reverse transcriptase inhibitors	6505014629945	00173059500	No	Yes
levofloxacin (Levaquin) in dextrose 5mg/ml 100ml	levofloxacin in dextrose 5mg/ml 100ml	quinolones	6505014974346	00045006801	No	Yes
levofloxacin (Levaquin) injection 25mg/ml, 20ml single dose vial	levofloxacin injection 25mg/ml, 20ml single dose vial	quinolones	6505014448356	00045006951	No	Yes
levofloxacin (Levaquin) tablets 500mg I.S. 100s	levofloxacin tablets 500mg I.S. 100s	quinolones	6505014446635	00045152510	No	Yes
lidocaine hydrochloride (Xylocaine) 2% injection USP 20ml vial	lidocaine hydrochloride 2% injection USP 20ml vial	local anesthetics	6505005986117	00186012001	No	Yes
loperamide hydrochloride (Imodium) capsules 2mg I.S. 100	loperamide hydrochloride capsules 2mg I.S. 100	antidiarrhea agents	6505012385632	51079069020	No	Yes

capsule	capsules/package					
mefloquine hydrochloride (Lariam) tablets 250mg I.S. 25s	mefloquine hydrochloride tablets 250mg I.S. 25s	antimalarials	6505013151275	00004017202	no	Yes
meloxicam (Mobic)15mg tablets 100s	meloxicam 15mg tablets 100s	nonsteroidal anti-inflammatory agents	6505015413243	00597003001	No	Yes
metronidazole HCL (Flagyl IV RTU) 500mg in 100ml sodium chloride	metronidazole hcl 500mg in 100ml sodium chloride piggyback bags 24s	antiprotozoals, misc	6505014626450	00338105548	No	Yes
metronidazole (Flagyl) tablets USP 250mg I.S. 100s	Metronidazole tablets USP 250mg I.S. 100s	antiprotozoals, misc	6505011424914	00182133089	No	Yes
morphine sulfate 15 mg/ml injection 20ml	morphine sulfate 15 mg/ml injection 20ml	opiate agonists	6505011533284	10019017963	Yes	Yes
morphine sulfate injection 10mg automatic injector	morphine sulfate injection 10mg automatic injector	opiate agonists	6505013025530		Yes	Yes
morphine sulfate injection 10mg/ml 1ml vial 25 per package	morphine sulfate injection 10mg/ml 1ml vial 25 per package	opiate agonists	6505014830274	10019017844	Yes	Yes
morphine sulfate injection 10mg/ml, 1ml cartridge unit, luer-lock,needleless	morphine sulfate injection 10mg/ml, 1ml cartridge unit, luer-lock, needleless, 10s	Opiate agonists	6505015055813	00409126130	Yes	Yes
moxifloxacin hydrochloride (Avelox)	moxifloxacin hydrochloride	quinolones	6505015034772	00026858169	No	No

moxifloxacin hydrochloride (Avelox) tablets 50s	moxifloxacin hydrochloride tablets 50s	quinolones	6505015163194	00026858188	No	No
moxifloxacin (avelox) hydrochloride tablets 5s	moxifloxacin hydrochloride tablets 5s	quinolones	6505015163201	00026858141	No	No
mupirocin (Bactroban) 2% ointment 22gm	mupirocin 2% ointment 22gm	antibacterials	6505014805678	00029152544	No	Yes
naloxone HCL (Narcan) 1mg/ml injection 2ml syringe 10s	naloxone HCL 1mg/ml injection 2ml syringe 10s	opiate antagonists	6505014070213	00548146900	No	Yes
naloxone HCL inj (Narcan) 0.4mg/ml 1ml vial 10s	naloxone hydrochloride inj 0.4 mg/ml 1ml vial 10s	opiate antagonists	6505015334126	00409121501	No	Yes
naloxone hydrochloride (Narcan) injection USP 0.4mg/ml 1ml ampul	naloxone hydrochloride injection USP 0.4mg/ml 1ml ampul 10/bx	Opiate antagonists	6505000797867	63481035810	No	Yes
nelfinavir mesylate (Viracept) tablets 300 tablets per bottle	nelfinavir mesylate tablets 300 tablets per bottle	antivirals	6505014876694	63010001030	No	No
neomycin, polymyxin B sulfate, & hydrocortisone (Cortisporin) otic	neomycin, polymyxin B sulfate, & hydrocortisone otic susp USP 10ml	antibacterials	6505010430230	24208063562	No	Yes
nifedipine (Procardia) capsules USP 10mg 100 capsules	nifedipine capsules USP 10mg 100 capsules per bottle	dihydropyridines	6505011263842	00069260066	No	No

per bottle						
norfloxacin tablets 400mg 100 tablets per bottle	norfloxacin tablets 400mg 100 tablets per bottle	quinolones	6505012589542	00006070568	No	No
ofloxacin (Floxin) in dextrose injection 4mg/ml 100ml bottle 12/package	ofloxacin in dextrose injection 4mg/ml 100ml bottle 12/package	quinolones	6505013644123	00062155201	No	No
ofloxacin (Floxin) otic soluion 0.3% 0.25ml single dose dropperette 20s	ofloxacin otic soluion 0.3% 0.25ml single dose dropperette 20s	antibiotics	6505015424952	63395010111	No	No
ofloxacin (Floxin) tablets 200mg 50 tablets per bottle	ofloxacin tablets 200mg 50 tablets per bottle	quinolones	6505013464882	00062154002	No	No
ofloxacin (Floxin) tablets 200mg I.S. 100 tablets per package	ofloxacin tablets 200mg I.S. 100 tablets per package	quinolones	6505013462056	00062154005	No	No
ofloxacin (Floxin) tablets 300mg 50 tablets per bottle	ofloxacin tablets 300mg 50 tablets per bottle	quinolones	6505013462053	00062154102	No	No
ondansetron hydrochloride (Zofran) injection 2mg/ml 20ml vial	ondansetron hydrochloride injection 2mg/ml 20ml vial	5-ht3 receptor antogonists	6505013366184	00173044200	No	Yes
ondansetron (Zofran) hydrochloride injection 2mg/ml 2ml vial 5/package	ondansetron hydrochloride injection 2mg/ml 2ml vial 5/package	5-ht3 receptor antogonists	6505013945963	00173044202	No	Yes
oxymetazoline hydrochloride (Afrin) nasal solution 15ml spray	oxymetazoline hydrochloride nasal solution 15ml spray	vasoconstrictors	6505008694177	00182144464	No	Yes

primaquine phosphate tablets USP 15mg 100s	primaquine phosphate tablets USP 15mg 100s	antimalarials	6505013482465	00024159601	No	Yes
promethazine hydrochloride (Phenergan) injection USP 25mg/ml 10ml	Promethazine hydrochloride injection USP 25mg/ml 10ml MDV 10s	antihistamine drugs	6505015401933	66758060119	No	Yes
promethazine hydrochloride (Phenergan) tablets USP 25 mg 100s	promethazine hydrochloride tablets USP 25 mg 100s	phenothiazine derivatives	6505013648557	00591530701	No	Yes
pseudoephedrine hydrochloride (Sudafed) tablets USP 30mg 24s	pseudoephedrine hydrochloride tablets USP 30mg 24s	sympathomimetic (adrenergic) agents	6505001490098	00904505324	Yes	Yes
quinine sulfate capsules USP 325mg 100 capsules per bottle	quinine sulfate capsules USP 325mg 100 capsules per bottle	antimalarials	6505009579532	00172417260	No	No
quinine sulfate capsules usp 325mg 1000 capsules per bottle	quinine sulfate capsules USP 325mg 1000 capsules per bottle	antimalarials	6505010428040	52544071610	No	No
quinine sulfate tablets 260mg 100 tablets per bottle	quinine sulfate tablets 260mg 100 tablets per bottle	antimalarials	6505011137514	00172300160	No	No
quinine sulfate tablets USP 260 mg I.S. 100 tablets per package	quinine sulfate tablets USP 260 mg I.S. 100 tablets per package	antimalarials	6505012399803	47679050735	No	No
ranitidine (Zantac) injection USP 25mg/ml 2ml single dose vial 1	ranitidine injection USP 25mg/ml 2ml single dose vial 10/package	histamine h2-antagonists	6505012085955	00173036238	No	Yes

ranitidine (Zantac) tablets USP 150mg 60 tablets per bottle	ranitidine tablets USP 150mg 60 tablets per bottle	histamine h2-antagonists	6505011607702	00781188360	No	Yes
tetracaine hydrochloride (Pontocaine) ophthalmic solution 0.5% 15 ml	tetracaine hydrochloride ophthalmic solution 0.5% 15 ml	local anesthetics	6505005824737	24208092064	No	Yes
transmucosal fentanyl (Actiq) 400mcg, 30's	transmucosal fentanyl 400mcg, 30's	Opiate agonists	6505NCM060544	63459050430	Yes	No

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Pediatric Medications		Age Kg Lbs	2m 5 11	4m 6.5 15	6m 8 17	9m 9 20	12 10 22	15 11 24	2y 13 28	3y 15 33	5y 19 42
Medication	**STR / ml**	**Freq**	**Dose (in ml)**								
Tylenol	160mg	Every 4 hrs	2.5	2.5	3.75	3.75	5	5	6.25	7.5	7.5
ibuprofen	100mg	Every 6 hrs	-	-	3.75	3.75	5	5	6.25	7.5	8.75
amoxacillin or Augmentin	200mg 250mg 400mg	Twice a day	2.5 2.5 1.25	3.75 2.5 2.5	5 3.75 2.5	5 3.75 2.5	6.25 5 3.75	6.25 5 3.75	7.5 6.25 3.75	8.75 6.25 5	11.25 8.75 5
azithromycin (5 Day Tx)	100mg 200mg	Once a day	1.25 -	2.5 1.25	2.5 1.25	2.5 1.25	2.5 1.25	2.5 1.25	3.75 2.5	3.75 2.5	5 2.5
Bactrim / Septra		Twice a day	2.5	3.75	5	5	5	6.25	7.5	7.5	2
cephalexin	125 mg 250 mg	4 times a day	- -	2.5 1.25	3.75 1.25	3.75 2.5	5 2.5	5 2.5	6.25 3.75	7.5 3.75	8.75 5
Penicillin V	250mg	2 or 3 times a day	-	5	5	5	5	5	5	5	5
Benadryl	12.5mg	Every 6 hrs	2.5	2.5	3.75	3.75	5	5	6.25	7.5	2
Prelone or prednisone	15mg 5mg	Once a day	1.25 5	2.5 6.25	2.5 7.5	3.75 8.75	3.75 10	3.75 11.2	5 12.5	5 15	6.25 18.75
Robitussin		Every 4 hrs	-	-	1.25	1.25	2.5	2.5	3.75	3.75	5
Tylenol with codeine		Every 4 hrs	-	-	-	-	-	-	-	5	5
Pediatric Emergency Medications			**Dose (in mg)**								
atropine (IV)	Mg		0.1	0.13	0.16	0.18	0.2	0.22	0.26	0.30	0.38
dextrose (IV)	Gm		5	6.5	8	9	10	11	13	15	19
epinephrine (IV)	Mg		0.05	0.07	0.08	0.09	0.10	0.11	0.13	0.15	0.19
lidocaine (IV)	Mg		5	6.5	8	9	10	11	13	15	19
morphine (IV)	Mg		0.5	0.6	0.8	0.9	1	1.1	1.3	1.5	1.9
naloxone (IV)	Mg		0.05	0.07	0.08	0.09	0.1	0.11	0.13	0.15	0.19
diazepam (IV)	Mg		1.5	2	2.5	2.7	3	3.3	3.9	4.5	5
cephtriaxone (IV)	Mg		250	325	400	450	500	550	650	750	1000

Pediatric Vital Signs	Respiratory Rate	Heart Rate	Systolic Blood Pressure	Weight in Kilograms	Weight in Pounds
Newborn	30-50	120-160	50-70	2-3	4.5-7
Infant (1-12 mos)	20-30	80-140	70-100	4-10	9-22
Toddler (1-3 yrs)	20-30	80-130	80-110	10-14	22-31
Preschooler (3-5 yrs)	20-30	80-120	80-110	14-18	31-40
School Age (6-12)	20-30	70-110	80-120	20-42	41-92
Adolescent (13+ yrs)	12-20	55-105	110-120	>50	>110

Conversions

Temperature	Liquid	Weight
F=(1.8) C + 32	1oz = 30ml	1kg = 2.2 Lbs
C=(F-32) / (1.8)	1tsp= 5ml	1oz = 30gm
	1tbsp= 15ml	1gr = 65mg

Medication chart referenced from: Tarascon Pocket Pharmacopia, 2008 Classic Edition, Copyright 1987-2008, Tarascon Publishing.

SENIOR TACTICAL MEDIC DUTIES AND RESPONSIBILITIES

The senior tactical Medic duty description will be used to define the responsibilities of the highest ranking and most experienced Medic present at any given location and time. This Medic is designated as the "Senior Medic" at that specific location and thus is responsible for the duties and responsibilities as listed below.

- **Principal medical advisor to the unit commander and senior enlisted advisor**
- **Provide and supervise advanced trauma management within protocols and sick call within scope-of-practice**
- **Lead, supervise, and train junior Medics**
  - Individual training
  - Health and welfare
  - Development and counseling
  - Troop leading procedures and pre-combat inspections (PCIs)
- **Plan, supervise, and conduct casualty response training for Unit Members and Leaders**
  - First Responder training
  - Casualty response training for tactical leaders (CRTRL)
  - Opportunity training / spot-checking
- **Maintain company level medical equipment and supplies**
  - Accountability / inventory
  - Maintenance / serviceability
  - PCI of individual first aid kits
  - PCI of squad/team casualty response kits
  - Requisition and receive medical supplies from appropriate source
- **Plan, coordinate, and execute medical planning for unit level operations**
  - On-target casualty response plan
  - Casualty evacuation from target to next higher medical capability
  - Task organization of company Medics
- **Conduct after action reviews and report and archive medical lessons learned**
- **Monitor the status of health in the unit / element**
  - Physically limiting profiles (known health histories of unit members)
  - Immunization status of unit members

MEDICAL & CASUALTY RESPONSE PLANNING

Initial Planning / WARNORD

MEDICAL THREAT ASSESSMENT

The unit medical planner must assess all the possible health and medical threats are present to the unit. This assessment includes all aspects of environmental health hazards as well as specific threats from enemy weapons

systems. Through the medical threat assessment, the medical planner will assess all possible preventive measures the unit can employ to minimize these threats. Medical planners must be prepared to make recommendations to unit commanders, leaders, and members on how to take appropriate precautions or measures prevent injuries and illnesses. The overall goal is to have healthy operators ready to perform a mission; keep them healthy during the mission; and to bring healthy operators back home.

- ☐ Identify Area of Operations (country, region, environment)
  - ✦ Host Country (Staging Base) – This is the friendly region you may be operating from as a base of operations. The threats may be the same as where the mission targets are located or can be completely different.
  - ✦ Target country – This is the area or region in which the unit will be conducting tactical missions.
- ☐ Determine known health threats & risks – one must identify through all possible sources what the known health threats and risks are. The planner can utilize many aspects of the internet, publications, country studies, or products from World Health Organization or national intelligence organizations to gain access to required information.
  - ✦ Diseases / illnesses of significance that could be a risk to unit members before, during or after the mission.
  - ✦ Environmental threats (plants, animals, climate, terrain) can be a daunting task, but must be assessed to prevent injuries and illnesses that can cause mission mishaps.
- ☐ Current Unit Medical Readiness status – the planner must have knowledge of the unit's current immunization status.
- ☐ Preventive Medicine guidelines (what is required before, during, and after) – Many organizations publish guidelines for preventive medicine measures for different regions around the world. Typically, regional command operations orders (OPORD) will contain specific guidelines on preventive medicine.
- ☐ Enemy weapons, munitions, and tactics, to include chemical and biological weapons – The medical planner must assess the types of enemy weapons and the types of injuries they can inflict on the unit. The planner must make recommendations to prevent these injuries such as the use of body armor or protective masks.
- ☐ Key questions the planner must ask to assess the unit's preparedness.
  - How ready is the unit if it encounters diseases / illnesses?
  - What preparation is needed by the unit?
  - Do unit members need special preventive medicine items issued?

HIGHER MEDICAL GUIDELINES & REQUIREMENTS

- ☐ Chemoprophylaxis – the planner must determine if unit members are required to take medications for the duration of the mission to prevent illnesses.
  - ✦ Anti-Malarial Drugs
  - ✦ Other preventive measures
- ☐ Do we need to change anything in the way we normally do business?

REQUESTS FOR INFORMATION (RFI)

- ☐ Request updates to dated information from available sources about disease or environmental threats. These sources may be within the chain of command or may be international health organization.
- ☐ Maps / Imagery
- ☐ Host Nation (ISB) Medical Capabilities – The planner must be prepared to assess the medical facilities and infrastructure of the region where missions will be staged and executed.
  - ✦ Hospitals / medical facilities
  - ✦ Nationwide medical training / competency

DETERMINE MEDICAL ASSETS

- ☐ The medical planner must have a clear understanding of the medical assets available to support the mission.
- ☐ Organic (part of the unit), Attached, Air, Ground, Theater, JTF, Host Nation, ISB, FSB, etc…
- ☐ CASEVAC / MEDEVAC Support
  - ✦ How many and what type?
  - ✦ Capabilities and Limitations?
  - ✦ Hoist and high angle extraction?
  - ✦ Medical Personnel and Equipment on board? Level of Training?
- ☐ Determine nearest surgical capability
  - ✦ Where are your casualties being evacuated to?
  - ✦ What are the capabilities / limitations?
  - ✦ What is their MASCAL or overload for their system?
- ☐ Determine Staging Base area medical support
  - ✦ Can they provide labs, x-rays, medications, preventive medicine, etc?

FAMILIARIZATION WITH MEDICAL ASSETS

- ☐ Published References (Look it up in the appropriate reference manual to gain understanding of capabilities and organization)
  - ✦ What is a Combat Support Hospital?
  - ✦ What is a Forward Surgical Team?
  - ✦ What is an Area Support Medical Company?
- ☐ Can you see their layout / equipment?
- ☐ Can you conduct familiarization training as required?
- ☐ What are their capabilities and limitations?
- ☐ Can you talk to them and what can <u>they</u> know about you and your mission?

Tactical Operation Development

CASUALTY ESTIMATION

- ☐ Look at the target and the template of enemy positions
- ☐ Look at the commander's assault plan
- ☐ The medical planner must determine where casualties are likely to occur and ensure there is a management and evacuation plan in place for all phases of the operation.
- ☐ **Plan to take casualties during every phase of the operation (infiltration, assault, clear/secure, consolidate, defend, exfiltration).**

- Where do you foresee taking casualties?
- Where is it most critical for the Medics to be located?
- Do you need to task organize your medical team?
- Where does the unit need to establish casualty collection points (CCP)?
- What evacuation methods need to be considered?
- Where is the closest helicopter landing zone (HLZ) or ambulance exchange point (AXP)?
- Where do you emplace and preposition medical assets/augmentation?

☐ Review Preventive Medicine issues and anticipate Disease Non-Battle Injuries (DNBI)
- What are the health threats?
- What actions will prevent or decrease disease and non-battle injuries?

DETERMINE KEY LOCATIONS

☐ Based on your casualty estimation and the tactical assault plan…
- Where should the CCP be located?
- Where should patient exchanges be located? (CCP, HLZ, AXP)
- Where are the projected blocking positions, fighting positions, etc…?
- Where is the Command & Control going to be located?
- Who is in charge of each key location?
- Establish both Primary and Alternate Locations for all medical points of the plan?
- What are the ground movement routes? Evacuation channels must flow with the flow of the unit's tactical plan.

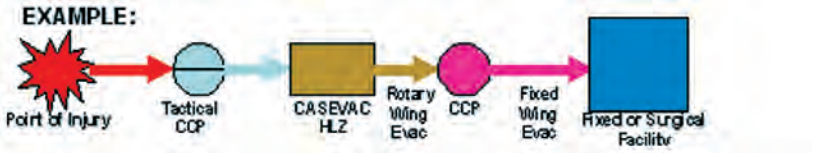
DETERMINE CASUALTY FLOW

☐ The medical planner must always plan evacuation from Point-of-Injury to a Fixed Facility and all of the steps in between.

☐ Where are your casualties being evacuated to?
- Are you evacuating by ground or air to a casualty collection point?
- Are you evacuating by ground or air to an casualty transload point?
- What are the distances and time of travel?
- Can your patients make it that far? What needs to be corrected?
- Who is evacuating your casualties?
- Do you need to modify the placement of medical assets to ensure a continuity of care?

AIR TACEVAC PLAN

☐ What is the type of Air TACEVAC mission?
- Dedicated – an air asset whose purpose after infiltration is casualty evacuation. It is outfitted and manned for casualty management
- Designated – an air asset that will be the aircraft instructed to evacuate casualties. May be equipped for casualties if requested.



- ✦ On-Call – air assets that are held in reserve or must be launched to respond to casualty evacuation. May also apply to MEDEVAC covering the area.
- ☐ Aircraft type?
- ☐ Maximum casualty load?
- ☐ How are casualties to be loaded?
  - ✦ Packaging requirements: Litters, Skedcos, etc..?
  - ✦ Is the aircraft equipped with litter stanchions?
  - ✦ Loading procedures? Approach procedures?
- ☐ What medical capability is on the aircraft?
  - ✦ Flight medic, paramedic, nurse, physician?
  - ✦ Are there any special casualty management equipment required?
  - ✦ Medical resupply bundles?
- ☐ Request Procedures?
  - ✦ Procedures for requesting CASEVAC? What are the channels for requesting evacuation assets?
  - ✦ 9-Line MEDEVAC request versus modified format?
  - ✦ Communication requirements? How do you talk with evacuation assets?
- ☐ Launch Authority?
  - ✦ Who is the launch authority for the aircraft?
  - ✦ What are the impacts on unit's TACEVAC operations?
- ☐ Landing requirements?
  - ✦ Special HLZ considerations?
  - ✦ Special markings required?
  - ✦ Special equipment required?

GROUND CASEVAC PLAN---TWO PHASES:

1. **Actions required on the target.**
2. **Actions required for evacuation away from the target.**
   - ☐ How should unit members move casualties on the target to the CCP?
     - ✦ Aid & Litter Teams
     - ✦ Skedco, Litter, etc…
     - ✦ Ground Mobility Vehicles(Quad, HMMWV, Truck)
   - ☐ What is the type of Ground CASEVAC mission?
     - ✦ Dedicated – a ground asset whose purpose after infiltration is casualty evacuation. It is outfitted and manned for casualty management
     - ✦ Designated – a ground asset that will be the vehicles instructed to evacuate casualties. May be equipped for casualties if requested.
     - ✦ On-Call – ground assets that are held in reserve or must be launched to respond to casualty evacuation. This may be vehicles of opportunity (tactical or captured).
   - ☐ Vehicle type and maximum casualty load?
   - ☐ How are casualties to be loaded?
     - ✦ Packaging requirements: Litters, Skedcos, etc..?
     - ✦ Is the vehicle equipped with a carrying configuration?
     - ✦ Loading procedures?
   - ☐ What medical capability is on the vehicle?

- ✦ Medics? Advanced providers?
- ✦ Casualty management equipment?
- ☐ Request Procedures?
  - ✦ Procedures for requesting ground CASEVAC?
  - ✦ 9-Line MEDEVAC request versus modified format?
  - ✦ Communication requirements?
- ☐ Launch Authority?
  - ✦ Who is the launch authority for the vehicles?
- ☐ Link-up Requirements
  - ✦ At your CCP or an AXP?
  - ✦ Marking / signaling procedures?

COMMUNICATIONS REQUIREMENTS

- ☐ Do all Medics have radios?
- ☐ Can a Medic contact a higher care provider for guidance?
- ☐ Types of radios / communications security requirements?
- ☐ Medical Command & Control Delineation
- ☐ Callsigns / Frequencies / SOI
- ☐ Evacuation request frequencies?
- ☐ Evacuation asset frequencies?
- ☐ Casualty reporting/accountability?
- ☐ Re-Supply requests

MEDICAL RE-SUPPLY REQUIREMENTS & METHODS

- ☐ How do you request re-supply?
- ☐ What are the re-supply methods?
  - ✦ Drop Bundles?
  - ✦ Drag-off bundles?
- ☐ Medical packing lists? Do you need to reconfigure/repack (aidbag, cases)?
- ☐ How do you request specific line items?

Coordination & Synchronization

PLANNING INTERACTION (WHO TO TALK & COORDINATE WITH)

- ☐ Commander & Operations Officer (Tactical Plan)
- ☐ Executive Officer (Support & Resources)
- ☐ First Sergeant (CCP Operations, Manifests, Aid & Litter Teams)
- ☐ Battalion Medical Planner (Medical Aspects)
- ☐ Platoon Sergeants (Squad Casualty Response & CCPs)
- ☐ Junior Medics (Understanding of the Plan)
- ☐ Battalion Staff Planners
  - ✦ S1 Personnel (Casualty Tracking and Accountability)
  - ✦ S2 Intel (Health Threat/Intelligence Information)
  - ✦ S3 Air (Air TACEVAC Operations)
  - ✦ S4 Logistics (Ground TACEVAC & Re-Supply)
  - ✦ S6 Commo (Radios, Freqs, Callsigns)

Briefs, Rehearsals, and Inspections

MEDICAL & CASUALTY RESPONSE OPORD BRIEFING AGENDA

- ☐ Health Threat
- ☐ Casualty Response Concept of the Operation
- ☐ Casualty Flow
- ☐ Key Locations (CCPs, HLZs, AXPs, etc)
- ☐ Requesting Procedures (tacEVAC, MEDEVAC, Assistance, Re-Supply)
- ☐ Medic callsigns / frequencies
- ☐ Casualty Accountability

BACK-BRIEF WITH JUNIOR MEDICS

- ☐ Ensure junior Medics understand tactical plan AND casualty response plan
- ☐ Understand packaging requirements
- ☐ Understand casualty marking procedures
- ☐ Understand communications methods

REHEARSALS

- ☐ First Responder Drills
- ☐ Squad Casualty Response Drills (care under fire, TACEVAC request/loading)
- ☐ Aid & Litter Team Drills
- ☐ CCP Operations (Assembly, security & movement, casualty movement, CCP markings, vehicle parking, link-up procedures, casualty tracking & recording, triage, treatment and management of casualties)
- ☐ Evacuation Request and Loading Procedures
- ☐ COMMEX – communications exercise/radio test
- ☐ Casualty Tracking / Accountability

PRE-COMBAT INSPECTIONS

- ☐ Individual Unit Members
  - ✦ First Aid Kits
  - ✦ Preventive Medicine (Iodine Tabs, Doxycycline, Diamox, etc…)
- ☐ Squad Casualty Response Kit
  - ✦ Team First Responder Bags
  - ✦ Evacuation Equipment (Skedco, Litters, etc…)
  - ✦ Vehicle mounted aidbags
- ☐ Medic Aidbags (Pack and/or reconfigure as required)
  - ✦ Select appropriate aidbag system per mission requirements
  - ✦ Ensure packing list in accordance with recommended stockage
- ☐ Re-Supply Packages (Pack and/or reconfigure per mission requirements)
  - ✦ Reconfigure per mission specifics (ground, air, etc…)
  - ✦ Utilize bundles, or pull-off configured as required
  - ✦ Pre-position as required with aircraft and vehicles or at staging base with logistics teams
- ☐ Medic Individual Equipment (weapon, Night-vision, radio, packing list, mission specific)
- ☐ Evacuation Assets (Quads, Vehicles, etc…)

After Action Review in Training or Combat

- ☐ Was the mission executed as planned?
- ☐ What went right?
- ☐ What went wrong?
- ☐ What could have been done better?
- ☐ What could be fixed by planning / preparation?
- ☐ What could be fixed by training?
- ☐ What could be fixed by equipment modification?
- ☐ Identify and record Sustains & Improves by Phase of the Operation.

CASUALTY COLLECTION POINT (CCP) OPERATIONS

Duties and Responsibilities

UNIT MEDICS

- **Planning Phase**
  - Provide recommendations and advise to leadership on medical support
  - Medical Support Planning by phase of the operation
  - Casualty Response & Evacuation Plan by phase of the operation
  - Recommend to the Unit Leadership & Coordinate as required:
    - CCP Locations by phase
    - Medical Task Organization & Distribution
    - Ground (on the target) Evacuation Plan & Assets
    - Air/Ground (off the target) Evacuation Plan & Assets
    - CCP, HLZ, and Evacuation Asset Security
  - Pre-Combat Inspections of junior Medics, squad casualty response kits, and individual first aid tasks
- **Execution Phase**
  - Triage, Treatment, Monitoring, and Packaging
  - Delegation of Treatment
  - Request Assistance from other medical or unit assets
  - Provide guidance and recommendations to leadership on casualty management & evacuation

UNIT MEDICAL PERSONNEL & MEDICAL PLANNERS

- **Planning Phase**
  - Provide recommendations and advise to leadership on medical support
  - Recommend to the Unit Leadership & Coordinate as required:
    - CCP Locations of subordinate units by phase
    - Medical Task Organization & Distribution
    - Ground (on the target) Evacuation Plan & Assets for all targets
    - Air/Ground (off the target) Evacuation Plan & Assets for all targets
    - CCP, HLZ, and Evacuation Asset Security for all targets
  - Augmentation requirements of subordinate units
  - Link-in with tactical operations

- **Execution Phase**
  - Triage, Treatment, Monitoring, and Packaging
  - Delegation of Treatment
  - Request Assistance from other medical or platoon assets
  - Provide guidance and recommendations to leadership on casualty management

UNIT LEADERSHIP

- **Planning Phase**
  - Evacuation Plan by phase of the operation
  - CCP locations, HLZ/AXP locations,
  - Security of CCP, Security of HLZ/AXP
  - Allocate Aid & Litter teams and carry evacuation equipment
  - Accountability / Reporting Plan
  - Distribution/Task Organization of Medical Personnel
  - Pre-Combat Inspections of Junior Medics, Squad Casualty Response Kits, and Individual First Aid Tasks
  - Conduct Casualty Response Rehearsals
- **Execution Phase**
  - Establish and Secure Casualty Collection Point (CCP)
  - Provide assistance to Medics with augmentation and directing aid & litter teams
  - Gather and Distribute casualty equipment and sensitive items
  - Accountability and Reporting to Higher
  - Request Evacuation and Establish TACEVAC link-up point
  - Manage KIA remains

Casualty Response Rehearsals

- Critical in pre-mission planning and overall unit rehearsals
- Each element should rehearse alerting aid & litter team and movement of a casualty
  - Alert and movement
  - Evacuation equipment prep
  - Clearing / securing weapons
- CCP members rehearse the following:
  - Clear and Secure CCP Location
  - Choke Point / Triage
  - Marking & Tagging
  - Accountability & Reporting
  - Equipment removal tagging/consolidation

CCP Site Selection

- Reasonably close to the fight
- Near templated areas of expected high casualties
- Cover and Concealment from the enemy
- In building or on hardstand (an exclusive CCP building limits confusion)

- Access to evacuation routes (foot, vehicle, aircraft)
- Proximity to Lines of Drift on the objective
- Adjacent to Tactical Choke Points (breeches, HLZ's, etc…)
- Avoid natural or enemy choke points
- Area allowing passive security (inside the perimeter)
- Good Drainage
- Trafficable to evacuation assets
- Expandable if casualty load increases

CCP Operational Guidelines

- 1SG / PSG is responsible for casualty flow and everything outside the CCP
  - Provides for CCP structure and organization (color coded with chemlights)
  - Maintains command & control and battlefield situational awareness
  - Controls aid & litter teams, and provides security
  - Strips, bags, tags, organizes, and maintains casualty equipment outside of treatment area as possible
  - Accountable for tracking casualties and equipment into and out of CCP and provides reports to higher
  - Casualties move through CCP entrance / exit choke point which should be marked with an IR Chemlight
- Medical personnel are responsible for everything inside the CCP
  - Triage officer sorts and organizes casualties at choke point into appropriate treatment categories
  - Medical officers and Medics organize medical equipment and supplies and render treatment to casualties
  - EMTs, RFRs, A&L Teams assist with treatment and packaging of casualties
- Minimal casualties should remain with original element or assist with CCP security if possible
- KIAs should remain with original element

CCP Building Guidelines

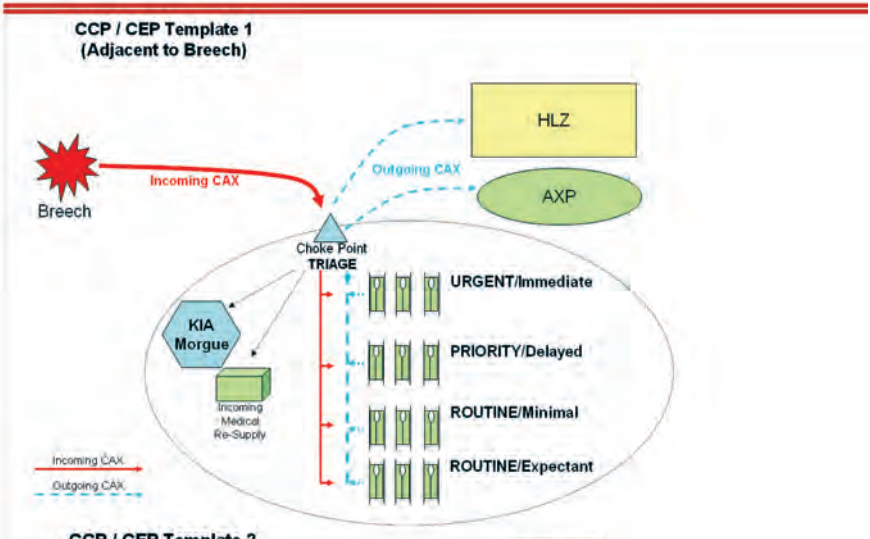
- Ensure building is cleared and secured
- Enter and assess the building prior to receiving casualties
  - Use largest rooms
  - Consider litter / skedco movement (can you do it in the area?)
  - Separate rooms for treatment categories?
  - Determine location of choke point / triage
  - Minimize congestion
- Remove / re-locate furniture or obstructions
- Color-code rooms to treatment categories (mark doors, etc…)

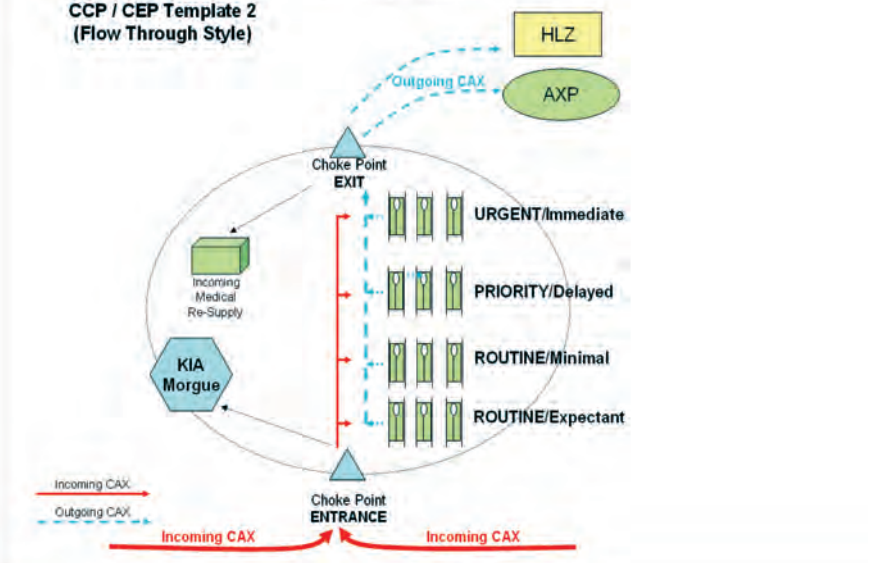
Evacuation Guidelines

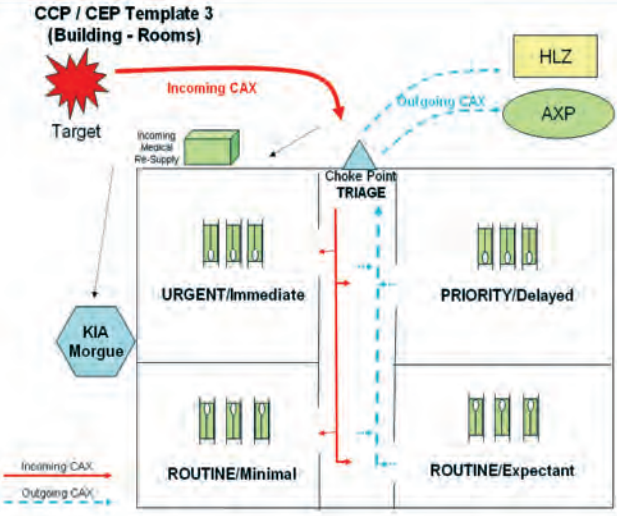
- Know the Evacuation Asset
  - Medical provider on board?
  - Monitoring equipment on board?
  - How many CAX can evacuate on asset?
- Packaging requirements for asset
  - Type litters?
  - Are there stirrups? Floor-Loading?
- Determine flow of casualties to the asset
  - Large Asset (Multiple CAX)
    - Routine on first
    - Priority on next
    - Critical (Urgent) on last, so they are first off at destination
  - Small Asset
    - Critical (Urgent) and Priority evacuated first

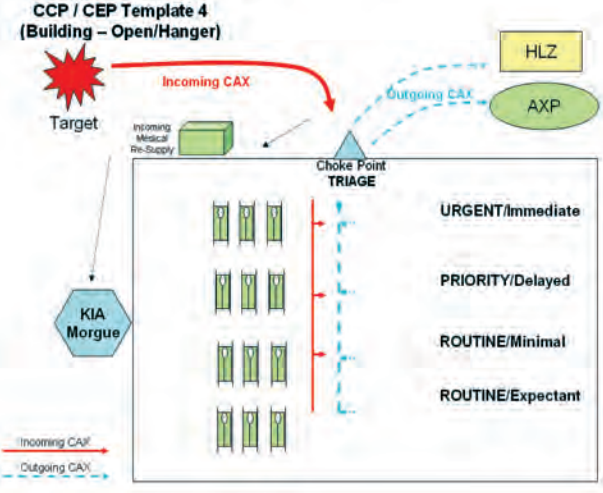
CCP Layout Templates (next page)

- Use as a TEMPLATE
- Use as a Guideline
- Modify based on the objective and circumstances

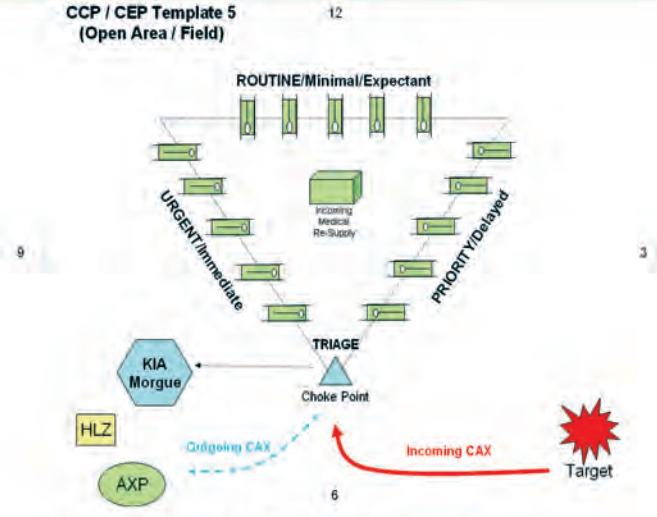

CCP / CEP Template 1
(Adjacent to Breech)
HLZ
Outgoing CAX
AXP
Incoming CAX
Breech
Choke Point
TRIAGE
URGENT/Immediate
KIA
Morgue
PRIORITY/Delayed
Incoming
Medical
Re-Supply
ROUTINE/Minimal
ROUTINE/Expectant
Incoming CAX
Outgoing CAX


CCP / CEP Template 2
(Flow Through Style)
HLZ
Outgoing CAX
AXP
Choke Point
EXIT
URGENT/Immediate
Incoming
Medical
Re-Supply
PRIORITY/Delayed
KIA
Morgue
ROUTINE/Minimal
ROUTINE/Expectant
Incoming CAX
Outgoing CAX
Choke Point
ENTRANCE
Incoming CAX
Incoming CAX

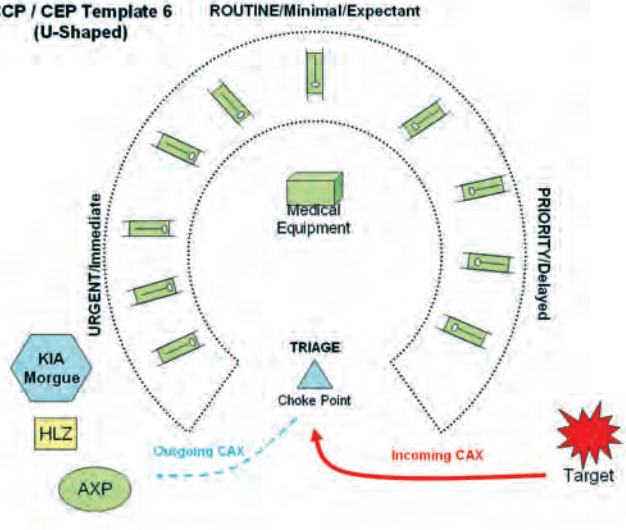

CCP / CEP Template 3
(Building - Rooms)
Target
Incoming CAX
HLZ
Outgoing CAX
AXP
Incoming Medical Re-Supply
Choke Point
TRIAGE
URGENT/Immediate
PRIORITY/Delayed
KIA Morgue
ROUTINE/Minimal
ROUTINE/Expectant
Incoming CAX
Outgoing CAX


CCP / CEP Template 4
(Building – Open/Hanger)
Target
Incoming CAX
HLZ
Outgoing CAX
AXP
Incoming Medical Re-Supply
Choke Point
TRIAGE
URGENT/Immediate
PRIORITY/Delayed
KIA Morgue
ROUTINE/Minimal
ROUTINE/Expectant
Incoming CAX
Outgoing CAX

CCP / CEP Template 5
(Open Area / Field)



CCP / CEP Template 6
(U-Shaped)



General Guidelines for CCP Personnel

- Maintain Security
- Maintain Command & Control
- Maintain Adequate Treatment
- Maintain Situational Awareness
- Maintain Organization
- Maintain Control of Equipment & Supplies
- Maintain Accountability

Casualty Marking and Tagging

- **COLOR CODING FOR TRIAGE & EVACUATION**
  - Chemlights, colored engineer tape, or triage tags, will be used to color code as follows:

RED	Immediate / Critical (Urgent & Urgent-Surgical)
GREEN	Delayed / Priority
BLUE	Expectant / Routine
NONE	Minimal / Convenience

Hazardous Training Medical Coverage Checklist

- **DEFINITION**
  - Planning, coordination, and execution of backside administrative medical coverage for high-risk or hazardous training events conducted by SOF units
- **TYPICAL EVENTS REQUIRING MEDICAL COVERAGE**
  - Airborne operations
  - Fast-rope operations (FRIES)
  - Road Marches (greater than 12 miles)
  - Maneuver Live Fires
  - Demolitions/Explosives
  - Other events deemed hazardous / dangerous on risk assesment
- **MEDICAL COVERAGE DUTIES & RESPONSIBILITIES**

1. **Senior Coverage Medic**
   - Plan & coordinate medical support requirements & considerations
   - Identify Hospitals and evacuation routes
     - Conduct Hospital Site Survey as required
     - Conduct face-to-face with hospital ER
     - Conduct route recon from target to hospital
   - Establish target medical coverage plan and casualty flow
   - Brief OIC/NCOIC medical support plan
     - Clarify OIC/NCOIC responsibilities and guidance
     - Clarify Medical responsibilities and guidance
   - EXECUTION Duties:

- Patient Treatment & Monitoring on target and en route
- Advise OIC/NCOIC as required
- Update OIC/NCOIC/Higher HQ on condition of evacuated casualties
- Inform unit medical officer of all casualties

2. OIC / NCOIC of Event

- Overall responsible for administrative coverage (including medical)
- Request / track external medical support requirements
- Ensure appropriate type and number of vehicles with assigned drivers are dedicated to medical coverage
- Ensure appropriate communications equipment is allocated to medical personnel
- Link medical coverage plan with overall administrative coverage plan
- EXECUTION duties
  - Collect casualty data and report to higher HQs
  - Request MEDEVAC
  - Identify and establish MEDEVAC HLZ

➢ **DETERMINE COVERAGE REQUIREMENTS**

- Determine medical support requirements based on type of training and appropriate SOP/Regulation.
  - Your element's 350-2 Airborne SOP (ASOP)
  - Your element's 350-6 FRIESSOP
  - Local Installation and Range Control Regulations / Guidelines
  - Training Area specific requirements
- Coordinate and request appropriate equipment, vehicles, personnel, and support assets

DROP ZONE REQUIREMENTS

Total Number Of Jumpers / Medical Support Requirements	1 to 60	61 to 120	121 to 240	241 to 360	361 to 480	481 to 600	601 to 720	Airland
Medical Officer	**N/A**	**N/A**	**N/A**	**N/A**	**1**	**1**	**1**	**N/A**
Senior Medic	**1**	**1**	**1**	**1**	**1**	**1**	**1**	**1**
Aidman	**N/A**	**1**	**2**	**2**	**3**	**3**	**4**	**1**
Ambulance w/commo	**1**	**1**	**2**	**3**	**4**	**4**	**4**	**1**
Communications	**1**	**2**	**3**	**3**	**5**	**5**	**6**	**2**
5% Jump Injuries	3	6	12	18	24	30	36	**N/A**

➢

- Request/Purchase/Acquire appropriate maps of training areas, adjacent military installations, and cities
  - Military Grid Reference System (MGRS)
  - Civilian Maps (Rand McNally, DeLorme, etc…)
  - Strip Maps / Site Published Maps
- Conduct map and ground recon of training areas (specifically key entrance & exit points).
- Note map problems/errors
- Identify hospitals/fire/EMS locations

➢ **IDENTIFY SPECIAL COVERAGE CONSIDERATIONS**
- Weather
- Animals
- Plants
- Terrain hazards (high angle or high altitude)

➢ **IDENTIFY HOSPITALS**
- Primary and Alternate evacuation hospital
- One should be a Level 1 Trauma Center
- Conduct hospital site survey and face-to-face
- Determine Hospital Communications:
  - ER Phone Line
  - ER Ambulance Line
  - Patient Admin Phone Line
  - Security Line Phone Line
- Determine Routes and Directions to hospitals
- Where are special injuries evacuated?
  - Neurosurgical
  - Burns
  - Trauma Centers
    - Level 1
      - Neurosurgeon on staff 24 hours
    - Level 2
      - Neurosurgeon on call, but not on site 24/7

➢ **VEHICLE REQUIREMENTS**
- **Driver:** A dedicated driver – NOT the Medic covering the event. Must be familiar with training area and evacuation routes.
- **Ambulance:** A covered vehicle capable of carrying <u>at least 1 litter</u> with spine-board attached. The vehicle must provide <u>environmental control</u> and <u>adequate space</u> for medical equipment. Mark vehicle as appropriate (ambulance symbols or lights).
  - Optimal Vehicles:
    - Van (15PAX only)
    - Large SUV (Expedition, Tahoe, etc…)
    - FLA (M996/M997)
  - Suboptimal Vehicles

        - Open HMMWV / GMV
        - Unit specific assault vehicles(tactical operations only – not for admin coverage)
        - Small SUV (Explorer, Durango, Cherokee, etc…)
        - Small Van (7PAX)

- **EQUIPMENT REQUIREMENTS**
  - Standard Medical Equipment
    - Spinal Immobilization/Stabilization
    - Splint Sets (Quick Splints)
    - O2/Masks/BVM
    - Suction, Electric
    - KED/Oregon Spine Splints
    - Traction Splint
    - Vital Signs Monitor (Propaq, PIC, LifePak)
    - Litters (Raven/Skedco/Talon)
    - Blankets
    - MAST
    - Pain Control
  - Special Equipment Considerations
    - Cold Weather
      - REPS (Rescue Wrap & Patient Heaters)
      - Thermal Angels
    - Hot Weather
      - Fans (battery operated)
      - Cold Packs
    - Burns
- **COMMUNICATION REQUIREMENTS**
  - Equipment
    - FM & MX frequency capable radios
    - Cell Phone
  - Radio Nets
    - Administrative Coverage (DZSO Net)
    - Exercise Target Control (O/C Net)
    - Tactical Nets
  - En route Communications
    - Cell phone to notify receiving facilities
- **MEDEVAC REQUEST PROCEDURES**
  - Military Installation
    - MEDEVAC unit and location
    - Request Procedures
      - Range Control?
      - MEDEVAC Freq?
      - Request format (other than 9-Line)
      - Aircraft / HLZ requirements/considerations

- Civilian Life Flight
  - Contact Numbers & Procedures
    - Direct Line and Alternate Contacts (State Police)
  - Special Aircraft Considerations
    - Aircraft Capabilities / Limitations
    - Aircraft / HLZ requirements/considerations
- HLZ Marking Requirements

➢ **ADMIN CASUALTY FLOW**

- Point-of-Injury to Home Station
- Casualty Flow on the Target / DZ to CCP or HLZ
  - Tactical to admin link-up and patient turnover
- From the target to hospital
- From hospital to home station

*General Rule: All casualties go through tactical medical channels unless life, limb, or eyesight is threatened.

➢ **TACTICAL DROP ZONE COVERAGE FOR EXERCISES**

- All casualties go through tactical evacuation channels unless life, limb or eyesight is threatened.
- No vehicles enter the drop zone without DZSO permission and tactical commanders notification
- Minimize white lights
- Minimize impact on tactical operations remaining off the DZ unless directed otherwise
- If possible, use tactical vehicles/assets to transport to admin CCP sites

➢ **PRE-COVERAGE INSPECTIONS**

- ALWAYS CHECK YOURSELF AND INSPECT SUBORDINATES
- Inspect / Inventory Medical equipment
  - Inventory against Hazardous Coverage Checklist
  - Function check mechanical devices & Monitors
  - Check Batteries
  - Aidbags
- Check Vehicle(s)
  - PMCS
  - Fuel Level
  - Dispatch
  - Map/Routes
- Support Equipment
  - Communications Equipment
  - Strobe lights / flashlights / head lamps
  - Night vision
  - GPS

- **REHEARSALS**
  - Drive routes to hospitals
    - During daytime and nighttime
    - Determine time from target to hospital
    - Consider civilian traffic interference
  - Conduct target casualty flow to CCP
  - Conduct CCP rehearsal
  - Conduct COMMEX when all sites established
- **TREATMENT DURING EXERCISES**
  - On target
    - U.S. Standard of Care per unit protocols (there is no excuse)
    - Package casualties for evacuation
  - En route
    - Patient Monitoring and re-evaluation of treatment and interventions
    - Notify receiving hospital
  - Inform unit medical officer of casualties

Keep OIC/NCOIC informed of patient status with routine updates

Reference

75th Ranger Regiment, Ranger Medic Handbook. Point of Contact: MSG Harold Montgomery, 75th Ranger Regiment Senior Medic.

BURN QUICK REFERENCE GUIDE

TYPE OF INJURY

- **First Degree:** superficial, involving only epidermal damage
  - erythematous and painful due to intact nerve endings
  - heal in 5 to10 days; pain resolves within 3 days
  - no residual scarring
- **Second Degree:** partial thickness, involving the epidermis and dermis
  - more superficial burns are moist and blister; deeper burns are white and dry, blanch with pressure, and have reduced pain
  - heal in 10 to14 days
  - can develop into third degree burns with infection, edema, inflammation and ischemia
  - treatment varies with degree of involvement - grafting is indicated for deep burns
- **Third Degree:** full-thickness, most severe of burns
  - results in necrosis and avascular areas
  - tough, waxy, brownish leathery surface with eschar, numb to touch
  - grafting required
  - usually have permanent impairment
- **Fourth Degree:** full-thickness as well as adjacent structures such as fat, fascia, muscle or bone
  - reconstructive surgery is indicated
  - severe disfigurement is common

BODY SURFACE AREA (BSA)

- **Adult**
  - "rule of nines": each arm is 9% of BSA, leg is 18%, anterior trunk is 18%, posterior trunk is 18%, head is 9%, and perineum is 1% (see chart)
- **Children**
  - BSA varies with age (children have a larger percentage of body surface area which exaggerates fluid losses)
  - children under 10 years old should be evaluated by the Lund-Browder burn chart (see chart)
  - quick method : the patient's palm is 1% of the total body surface area

SEVERITY

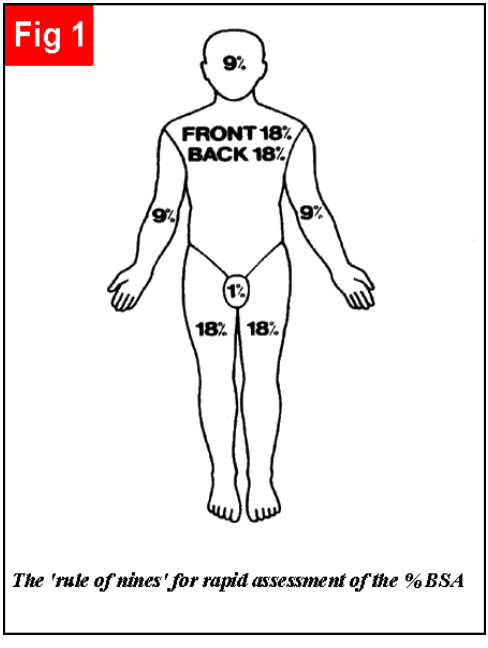
- **Minor:**
  - partial thickness: < 15% BSA in adults, < 10% BSA in children
  - full thickness: < 2% BSA
- **Moderate:**
  - partial thickness: 15%-25% BSA in adults, 10%-20% BSA in children
  - full thickness: 2%-10% BSA
- **Major:**
  - partial thickness: > 25% BSA in adults, > 20% BSA in children
  - full thickness: > 10% BSA
  - burns of hands, face, eyes, ears, feet or perineum
  - associated injuries, such as inhalation injury, fractures, other trauma
  - poor risk patients with underlying disease or suspicion of child abuse

(http://www.peds.umn.edu/divisions/pccm/teaching/acp/burns.html)

Modified Brooke formula for adults: 2cc/kg/%TBSA. Plan to give ½ of the estimated fluid in the first 8 hrs.

In children weighing less than 30kg the infusion rate is estimated at 3cc/kg/%TBSA. Plan to give ½ of the estimated fluid over the first 8 hr. Children will also need maintenance fluids of 5% dextrose in ½ normal saline. This should be given using a rule such as the 4-2-1 rule: 4cc/kg/hr for the first 10 kg, 2cc/kg/h for the next 10 kg, and 1cc/kg/h for the next 10 kg. If a patient's resuscitation has been delayed by a few hours, then give fluid more rapidly.

Adjust the initial fluid infusion rate to the urine output. Failure to monitor and record the urine output (catheter or bedpan) and adjust the fluid rate hourly may result in death or in severe complications. Adequate urine output is 30–50cc/hr in an adult and 1cc/kg/hr in a child who weighs less than 30kg. If the output is greater, or less than, the target for 2 consecutive hours, decrease, or increase, the IV rate by 20% respectively until the rate is satisfactory.
(*Special Operations Forces Medical Handbook, 2nd Edition*)

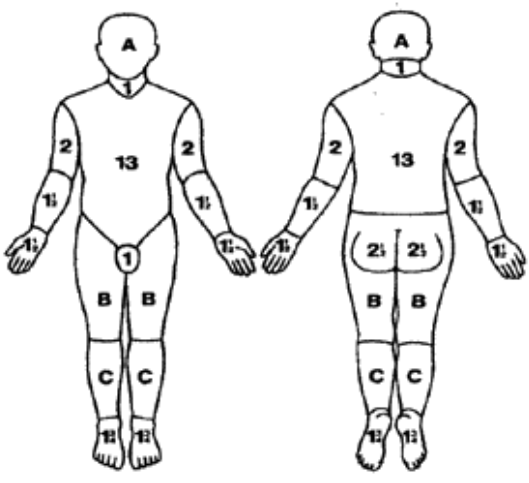


(Retrieved from http://www.nda.ox.ac.uk/wfsa/html/u10/u1010p02.htm)

CHART FOR ESTIMATING SEVERITY OF BURN WOUND

NAME_____ WARD_____ NUMBER_____ DATE_____
AGE_____ ADMISSION WEIGHT_____

LUND AND BROWDER CHARTS



IGNORE SIMPLE ERYTHEMA

Partial thickness loss (PTL)
Full thickness loss (FTL)

REGION	% PTL	% FTL
HEAD		
NECK		
ANT.TRUNK		
POST.TRUNK		
RIGHT ARM		
LEFT ARM		
BUTTOCKS		
GENITALIA		
RIGHT LEG		
LEFT LEG		
TOTAL BURN		

RELATIVE PERCENTAGE OF BODY SURFACE AREA AFFECTED BY GROWTH

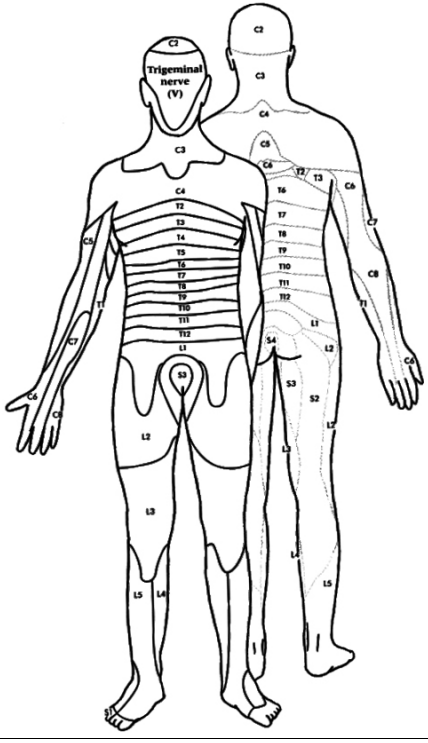
AREA	AGE 0	1	5	10	15	ADULT
A=½ OF HEAD	9½	8½	6½	5½	4½	3½
B=½ OF ONE THIGH	2¾	3¼	4	4½	4½	4¾
C=½ OF ONE LEG	2½	2½	2¾	3	3¼	3½

The Lund and Browder chart for accurate assessment of the % BSA

Fig 2

(Retrieved from http://www.nda.ox.ac.uk/wfsa/html/u10/u1010p02.htm)

DERMATOMES (Retrieved from http://web1.d25.k12.id.us/home/hhs/sportsmed/dermatomes.htm)



LUMBOSACRAL NERVE ROOT COMPRESSION			
ROOT	***MOTOR***	***SENSORY***	***REFLEX***
L4	Quadriceps	Medial foot	Knee jerk
L5	Dorsiflexors	Dorsum of foot	Medial hamstring
S1	Plantarflexors	Lateral foot	Ankle jerk

GLASGOW COMA SCALE		
EYE OPENING	***VERBAL ACTIVITY***	***MOTOR ACTIVITY***
1 None	**1** None	**1** None
2 To pain	**2** Incomprehensible	**2** Extension to pain
3 To command	**3** Inapropriate	**3** Flexion to pain
4 Spontaneous	**4** Confused	**4** Withdraws to pain
	5 Oriented	**5** Localizes pain
		6 Obeys commands

NOTES:

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