Global Emergency Medical Registry
(gemr.org)

SAMPLE

Basic Life Support Treatment Protocols

1/2025 – Currently under review by the GEMR Medical Director Committee

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INTRODUCTION

The EMT Patient Treatment Protocols that follow are to be utilized only by medical staff members of _____ and only by those team members who have completed their annual refresher training requirements and associated self-paced testing. Qualified and approved instructors and/or the Medical Program Director (or designee) will deliver this training.

The Patient Treatment Protocols are only to be utilized by these qualified personnel during on duty medical and/or rescue incidents.

No personnel may utilize these protocols while off duty or while working for another agency or business.

Whenever these Patient Treatment Protocols are utilized, the personnel involved will complete a patient care report. A copy of this document will be submitted to the destination facility and an additional copy will be available within 24hrs to the Medical Program Director via the electronic patient care records system.

The Patient Treatment Protocols are to be viewed as guidance for the EMT, who is the hands, eyes, and ears of the Medical Program Director in regards to the care of patients; an EMT should always consider what the Medical Program Director would want done with the patient they are caring for, in every circumstance.

With the above conditions, I authorize these EMT Patient Treatment Protocols to be utilized by _____ Staff as of _____.

For these orders to remain valid, they must have an authorizing signature for the current calendar year present.

_____ _____

(_____) Date

Medical Program Director

GENERAL GUIDELINES FOR PROTOCOL USE

There are few thematic issues throughout the Patient Care Protocols; the listing which follows represents a few of those items:

1. ***Patient assessment should begin immediately upon arriving at patient side and an Early Warning Score should be obtained within two minutes.***
2. The patient history should not be obtained at the expense of the patient; life-threatening problems detected during the primary assessment must be treated first.
3. Cardiac arrest due to trauma is not treated by medical cardiac arrest protocols.
4. Trauma patients should be transported promptly with airway control, control of external hemorrhage, cervical spine immobilization, and other indicated procedures attempted enroute where possible.
5. Verbally confirm all medications, if able, with your partner, prior to administration. The standard method should be a review of the Five "R's": *Right Patient, Right Medication, Right Dose, Right Route, and Right Time*?
6. If the patient's condition does not seem to fit a single protocol, but several; adapt your care to include all protocols which apply in a simultaneous nature.
7. The following assessment is to be performed and information is to be obtained on all patients:
   - 7.1. Always assure scene stability for yourself, your fellow rescuers, and your patient.
   - 7.2. Primary survey:
     - 7.2.1. A = Airway with cervical spine control
     - 7.2.2. B = Breathing
     - 7.2.3. C = Circulation with control of bleeding
     - 7.2.4. D = Disability Determination
     - 7.2.5. E = Exposure
     - 7.2.6. A = Alert and conscious
     - 7.2.7. V = Responsive to verbal stimuli
     - 7.2.8. P = Responsive to painful stimuli
     - 7.2.9. U =Unresponsive
   - 7.3. Secondary survey:
     - 7.3.1. Obtain vital signs (minimum: respiratory rate, pulse rate, blood pressure, SpO2, EtCO2, BGL)
     - 7.3.2. Perform objective head-to-toe assessment
   - 7.4. Obtain history:
     - 7.4.1. Sex, age, and approximate weight
     - 7.4.2. Chief complaint
     - 7.4.3. Precipitating factors
     - 7.4.4. Significant past medical history
     - 7.4.5. Allergies
     - 7.4.6. Current medications
   - 7.5. Place monitoring equipment, if indicated:
     - 7.5.1. AED mode for patients at high risk for cardiac arrest.
     - 7.5.2. Pulse oximeter if available
   - 7.6. Apply appropriate protocol and standing order based on assessment.
   - 7.7. Position patient comfortably as indicated by condition or situation.
   - 7.8. Reassure and calm patient. Loosen any restrictive clothing or remove as indicated.
   - 7.9. Transport to appropriate hospital or air ambulance.
8. Preplan your care.
   - 8.1. Assure that you have performed all procedures and assessments that require a controlled

environment, prior to placing the patient in a SAR patient package, marine, high angle or HSRS environment.

9. Consider Non-Invasive Ventilatory (NIV) support, such as, continuous positive airway pressure (CPAP) for respiratory and ventilatory support.
10. All protocols assume transport to an appropriate facility or evacuation via aircraft or vessel for tertiary care; or assume patient is in a tertiary or transitional facility and the provider is providing care in that environment.
11. The lead EMT from each response apparatus will complete and submit a patient care report.

Pilot Project BLS Transport Criteria:

1. While functioning as an EMT on a Primary 911 Response BLS Ambulance during the Pilot Project, ***the EMT may slow the APP response unit if the following criteria are met***:
   - The patient requires advanced care, only for pain control.
   - The patient is not immediately available due to extrication issues, and the issues will not allow patient access in the next 12 minutes.
   - The patient was initially an EWS of 5 or higher, but on reassessment the EWS is 0-4.
2. While functioning as an EMT on a Primary 911 Response BLS Ambulance during the Pilot Project, ***the EMT may cancel the APP response unit if the following criteria are met***:
   - Patient has an Early Warning Score of 0-4 upon initial two-minute assessment.
   - Patient heart rate must be between 60 and 130 bpm.
   - Patient respiratory rate must be between 8 and 24 bpm.
   - Patient SpO2 must be 92% or greater on room air or home prescribed oxygen system.
   - Patient Systolic Blood Pressure must be 90 mmHg systolic or greater or a MAP of 65mmHg or greater without symptoms of hypotension.
   - Patient Systolic Blood Pressure must be less than 180 mmHg systolic or a MAP less than 130 without symptoms of hypertensive emergency.
   - Patient Quantitative Waveform Capnography must be greater than 25 mmHg and less than 60 mmHg.
   - Patients with saline lock may be transported BLS.
   - Patients already on home oxygen by mask or cannula may be transported BLS.
   - Patients with an isolated traumatic extremity injury with immobilization, and noninvasive pain control, may be transported BLS.
   - Use of intoxicants with clearly assessed/documented decision-making capacity may be transported by BLS.
   - Patient with SpO2 of greater than 92 mmHg after no more than two Albuterol treatments and no other therapy may be transported BLS.
   - Psychiatric and Suicidal Ideation patients with no actual suicide attempt and/or exhibiting no violent intent may be transported BLS.
   - The patient is refusing care and transport, the EMT will obtain a complete Patient Refusal Documentation and Patient Care Documentation.
   - No Patient is found.

DRUG QUICK REFERENCE GUIDE

Drug	Dose	Protocol
Albuterol	2.5 mg/3 cc, via nebulizer	Asthma/COPD
Aspirin	325 mg, PO	ACS
Epinephrine 1:1000	0.3 ml, SQ or IM (Peds 0.01 ml/kg, SQ), repeat if severe respiratory distress	Allergic Reaction & Anaphylaxis
Oral Glucose	15-25 grams PO	Hypoglycemia
Methoxyflurane	Penthrox inhaler – patient administered	Burns, Orthopedic Injury
Naloxone	0.4 mg Intra-nasal	Toxin/Overdose
Nitroglycerine Spray/Tablet	0.4 mg, SL x 3 every 5 min	ACS

ALTERED MENTAL STATUS

SPECIFIC INFORMATION NEEDED:

1. What down time has elapsed?
2. What ETOH and/or drugs was patient using?
3. Was patient in this location the entire time?
4. Any loss of consciousness?
5. History of diabetes?
6. Prior substance abuse issues?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness
3. Diagnostic devices in place?
4. ASSOCIATED trauma.

TREATMENT:

1. Assure Airway, Breathing, and Circulation.
2. Oxygen via non-rebreather mask; consider APOX or BVM ventilation (every 6 seconds with approximately 50% of the bag) with 100% oxygen in the presence of markedly decreased consciousness, inability to maintain a patient airway, or a GCS < 9.
3. Attach pulse oximeter.
4. Obtain EtCO2
5. Obtain Blood Glucose Level
6. Obtain 12 Lead ECG
7. Provide supportive measures.
8. Prepare patient for Advanced Care Transport

AMPUTATIONS

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Limb condition.
4. Associated trauma.

TREATMENT:

1. Assure Airway, Breathing, and Circulation.
2. Control bleeding, use tourniquet early in large volume blood loss.
3. Oxygen via non-rebreather mask.
4. Treat for shock, if indicated.
5. Rinse amputated part with normal saline to remove loose debris. DO NOT SCRUB.
6. Wrap amputated part in gauze moistened with saline.
7. Place wrapped part in plastic bag and seal. Label with NAME, DATE, and TIME.
8. Place sealed bag in container filled with water and several ice cubes.
9. *If partial amputation*, place in anatomical position to facilitate the best vascular status and wrap in bulky dressings. If the vascularity to the distal part is compromised, wrap the distal part and apply ice. (*Consider placing the pulse oximeter probe on a finger or toe of the affected extremity to monitor the vascular status of the injured extremity.)*
10. Prepare patient for Advanced Care Transport

ALLERGIC REACTIONS & ANAPHYLAXIS

SPECIFIC INFORMATION NEEDED:

1. What time has elapsed?
2. What was the patient exposed to? (food, insect sting, etc…)
3. Any loss of consciousness?
4. Was there any emesis?
5. Prior similar episodes?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Airway assessment.
4. Skin signs.

TREATMENT:

1. Assure Airway, Breathing, and Circulation
2. Oxygen via non-rebreather mask; consider ventilation with 100% oxygen for markedly decreased LOC, inability to maintain a patient airway, or for GCS <9.
3. Attach pulse oximeter if available.
4. If blood pressure normal, monitor patient and transport
5. If hypotensive (systolic <90 mmHg) and/or patient has moderate to severe respiratory distress:
   5.1. Administer Epinephrine
   5.2. Prepare patient for Advanced Care Transport

BURNS

SPECIFIC INFORMATION NEEDED:

1. Time elapsed since burn?
2. Was patient in a closed space with steam or smoke? For how long?
3. Any loss of consciousness?
4. Was there an accompanying explosion or toxic fumes?
5. Prior cardiac or pulmonary disease?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Extent of burns: detailed description of areas burned.
3. Depth of burns:
   3.1. Superficial - erythema only
   3.2. Significant - blistering or charred areas
4. Evidence of respiratory burns:
   4.1. Soot or erythema of mouth
   4.2. Singed nasal hairs
   4.3. Cough or hoarseness
   4.4. Respiratory distress
   4.5. Carbonaceous sputum
5. Associated trauma.

TREATMENT:

1. Give Oxygen, high flow.
2. If airway burns are suspected, consider BVM or NIV early, to maintain O_2 sat above 95%.
3. Remove clothing which is smoldering, or which is non-adherent to the patient.
4. Remove rings, bracelets, and other constricting items.
5. COOL THE BURN: apply dressings to the burned area, use moist dressing when possible. Clean burn with water or saline solution; use no creams or salves on burn.
   5.1. NOTE: be cautious of hypothermia when cooling a burned patient.
6. IF BURN IS GREATER THAN 10% OR IF THERE IS SIGNIFICANT PAIN:
   6.1. Reassessment and vitals every 10 minutes.
7. Methoxyflurane for pain
8. Prepare patient for Advanced Care Transport

SPECIFIC PRECAUTIONS:

1. Leave blisters intact and any adherent debris in the burned area undisturbed. Attempt contact with the regional burn facility for advice and notification of transport.
2. DO NOT use ointments, salves, jells, or similar items on burns.
3. With suspected respiratory burns and progression of symptoms, consider early assisted ventilation.

BURN CENTER CRITERIA:

If the patient meets any of the following criteria alert hospital to need for burn facility care:

- Burns exceed 20% of patient's body surface.

- Suspected full thickness burns, exceeding 10% of patients body surface.
- Full or partial thickness burns to hands, feet, head, face, or genitalia.
- Burns associated with respiratory distress or respiratory system.
- Electrical burns.
- Burns associated with other serious medical problems or trauma.

CARDIAC ARREST

GUIDELINES FOR CARE:

Care of cardiac arrest is based on standards established by the American Heart Association committee on emergency cardiac care and updated to the most recent science guidelines (2023).

Points to remember include:

1. Treat the patient, not the monitor.
2. Cardiac arrest due to trauma is not treated with medical causation protocols.
3. Protocols for cardiac arrest situations presumes that the condition under discussion continually persists, that the patient remains in cardiac arrest, and that CPR is always performed.
4. Adequate chest compressions, defibrillation, airway management, appropriate ventilation, and oxygenation are more important than any other BLS activities.

PULSELESS PATIENT TREATMENT:

1. Initiate and continue Chest Compressions with manual or mechanical compressions.
2. Attach Defibrillator Pads to patient and shock if Ventricular Fibrillation or Pulseless Ventricular Tachycardia (Or AED recommends Shock).
3. Place IGel Supraglottic Airway, attach EtCO2, and begin ventilating with a Bag/Valve at a rate of 10 breaths per minute.
4. Defibrillate per manufacturer recommendations when prompted and continue CPR for 2 minutes
5. Continue continuous Compressions and BV/IGel ventilation with 100% O2 every 6 seconds.
6. *CPR must be performed for 2-minute intervals prior to interrupting chest compressions for no more than 10 seconds for AED analysis and pulse check. After each 2 min interval, the crew should switch the person performing CPR.*
7. When device is ready to reanalyze, allow it to confirm ventricular fibrillation (VF) or non-perfusing ventricular tachycardia (VT).
8. Defibrillate per manufacturer recommendations when prompted and continue CPR for 2 minutes
9. Prepare for arrival of advanced care personnel and update responding unit with situation and what has been done.
10. On arrival of advanced care personnel, follow their directions and orders.
11. IF Advanced Care plans to transport, carefully plan and implement the transfer of the patient to a long backboard, then to the gurney, then into the ambulance – at all times assuring highly effective CPR is continued and the patient is shocked as indicated every two minutes.

POST CARDIAC ARREST CARE:

1. Assure Return of Spontaneous Circulation (ROSC) with EtCO2 rising above 30 mmHg and pausing compressions does not effect EtCO2 waveform.
2. Optimize Ventilation and Oxygenation:
   2.1. Retain SpO2 at 92-98%, not to exceed 98%.
   2.2. EtCO2 goal is 35-45 mmHg
   2.3. Do NOT hyperventilate the patient.
3. Optimize Circulatory Status:
   3.1. If Patient systolic BP is 90 mmHg or better – Observe and prepare for interventions if needed.
   3.2. If Patient systolic BP is less than 90 mmHg – advise responding advanced care personnel as soon as possible.
4. Assess patient ability to follow verbal command:
   4.1. If able to follow verbal command – Observe and position of comfort, LEAVE DEFIB PADS IN

PLACE.

4.2. If unable to follow verbal command – advise advanced care personnel as soon as possible.

PEDATRIC CARDIOPULMONARY ARREST CONSIDERATIONS:

1. Use AED Pediatric settings if patient is less than 25kg in size. If not available, use any pad provided and deliver energy to the patient as recommended by AED.

CHEST PAIN/ACUTE CARDIAC SYNDROME (ACS)

SPECIFIC INFORMATION NEEDED:

1. Where is the *Pain?*
2. What is the *Quality* of the pain?
3. Does the pain *Radiate* anywhere?
4. What is the *Severity* of the pain?
5. What *Time* did the pain start?
6. What was the patient doing when the pain occurred?
7. Prior similar episodes?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Airway assessment.
4. Skin signs.

TREATMENT:

1. Assure ABCs.
2. Oxygen via non-rebreather mask at 15l, attach pulse oximeter if available – maintain patient SpO2 above 92%.
3. Obtain EtCO2
4. Assure AED is immediately available.
5. Place in position of comfort.
6. Obtain 12 Lead ECG
7. Administer Aspirin tablet 300-325 mg PO; if patient has not already taken ASA today, and is not allergic to Aspirin,
8. Administer Patients Prescribed Nitroglycerin (tablet or spray) 0.4mg SL if systolic blood pressure greater than 100 mmHg. Do not administer NTG if patient has taken Viagra or similar medication. Nitroglycerin may be repeated every 5 minutes until:
   8.1. Pain is relieved.
   8.2. Systolic blood pressure falls below 100 mmHg.
9. Update Advanced Care Personnel.

CHEST TRAUMA

INDICATIONS:

1. This protocol assumes TRAUMA ASSESSMENT PROTOCOL was initiated and will be completed.
2. Signs of tension pneumothorax include:
   2.1. Unilateral decreased breath sounds.
   2.2. Tracheal deviation.
   2.3. Jugular-venous distention.
   2.4. Respiratory distress.
3. Other chest injuries including open chest wound, pulmonary contusion, and flail chest.

TREATMENT:

1. Maintain patent airway and administer supplemental oxygen via non-rebreather mask or APOX.
2. Consider ventilation assistance with BV/IGel/EtCO2 if, restrictive chest wall injury or severe respiratory distress.
3. Maintain spinal immobilization, control external bleeding, and expose chest.
4. If signs of tension pneumothorax are noted along with hypotension and/or decreased oxygen saturation, notify Advanced Personnel of situation
5. If evidence of a penetrating or sucking chest wound, apply a loose dressing but DO NOT SEAL OPENING
   5.1. Remove immediately if patient develops tension pneumothorax.
6. Prepare for Transport with Advanced Care arrival.

CHILD BIRTH EMERGENCIES

SPECIFIC INFORMATION NEEDED:

1. How many pregnancies and live births has the patient had?
2. What is the Quality of the pain?
3. How often does the pain occur?
4. How often are the contractions?
5. What Time did this start?
6. History of problems with pregnancy vaginal bleeding, prior cesarean sections, high blood pressure, premature labor, premature rupture of membranes.
7. Last menstrual period and due date if known.
8. Current complaints; onset of labor, timing of contractions, rupture of membranes, or urge to push.

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Level of fundus.
4. Crowning and effacement.
5. Airway assessment.
6. Skin signs.

TREATMENT:

1. Assure ABCs.
2. Obtain Fetal Heart Tones (FHT) if possible, consider fetus in distress is FHT outside of 140-180bpm.
3. Oxygen via non-rebreather mask.
4. Perineal examination:
   4.1. Vaginal bleeding or leakage of fluid.
   4.2. Presence of meconium.
   4.3. Crowning during a contraction.
   4.4. Presenting part, head, face, foot, arm, cord.
5. Vaginal Examination:
   5.1. Identify presenting part(s)
   5.2. Identify cord prolapse and rectify.
6. If active labor, and no vaginal bleeding or crowning:
   6.1. Check for fetal heart tones.
   6.2. O_2 via non-rebreather mask at 12 L or APOX.
   6.3. Transport patient immediately in left lateral recumbent position with Advanced Care
   6.4. Monitor SaO2
7. If vaginal bleeding:
   7.1. Transport with patient in left lateral recumbent position with Advanced Care
   7.2. O_2 via non-rebreather mask at 12 L or APOX.
   7.3. Monitor SaO2
8. If imminent delivery:
   8.1. Place mother in lithotomy position.
   8.2. O_2 via non-rebreather mask at 12 L or APOX.

8.3. Drape mother.
8.4. Prepare for neonatal resuscitation.
8.5. Assist delivery.
8.6. Suction baby's mouth, then nose with bulb suction; if meconium-stained fluid, suction baby's airway until clear before stimulating first breath.
8.7. Warm, dry, and stimulate infant.
8.8. Clamp cord in two places, six inches from infant, and cut cord between clamps.
8.9. Wrap infant in sterile drape or dry blanket.
8.10. Transport with Advanced Care

9. If prolapsed cord:
   9.1. Place mother in knee/chest position.
   9.2. O_2 via non-rebreather mask at 12 L.
   9.3. Place gloved index and middle fingers into the vagina and push the infant up to relieve pressure on the cord; remove cord from infant if able.
   9.4. Check cord for pulse.
   9.5. If no pulse for thirty seconds following maneuver, and greater than 10 minutes to hospital, place mother into lithotomy position and attempt delivery of baby.
10. If abnormal fetal presentation or decreased fetal heart tones:
   10.1. Place patient in left lateral recumbent position.
   10.2. O_2 via non-rebreather mask at 12 L.
   10.3. If infant in footling breech and compressing cord, place reverse pressure on infant to recover pulse in cord, if ineffective, consider manually assisted deliver if more than 5 minutes from hospital.
   10.4. Transport with Advanced Care
11. If delivery completed before arrival, or in-field:
   11.1. Protect infant from fall and temperature loss.
   11.2. Check infant's vital signs.
   11.3. Clamp cord in two places, six inches from infant, and cut cord between clamps.
   11.4. Suction, warm, dry, and stimulate infant.
   11.5. Give infant to mother if both are without complications.
   11.6. Massage uterus gently following delivery.
   11.7. Do not pull on cord or attempt to deliver placenta.
   11.8. Watch for external bleeding; begin fundal massage after placenta delivers for bleeding.
12. If significant post-partum hemorrhage (estimated at greater than 1000 ml):
   12.1. Transport with Advanced Care

CEREBRAL VASCULAR ACCIDENT

SPECIFIC INFORMATION NEEDED:

1. How long have symptoms been present?
2. Any pain present?
3. Nature of illness?
4. Cincinnati Stroke Scale;
   4.1. Facial Droop (smile/show teeth) = Normal (*equal movement*) or Abnormal *(unequal movement*)?
   4.2. Arm Drift = Normal (*equal or no movement in both arms*) or Abnormal (*movement or drifting of one arm*)?
   4.3. Abnormal Speech ("You can't teach old dogs' new tricks") = Normal (*correct words/no slurring*) or Abnormal (*incorrect words, slurred speech, no speech*)?
5. If symptoms < 4.5 hours; then facilitating transport for possible immediate thrombolytic therapy within one hour.

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Stroke scale
3. Level of consciousness
4. Airway assessment
5. Skin signs.

TREATMENT:

1. Assure ABCs.
2. Oxygen via non-rebreather mask.
3. Consider BVM or BV/IGEL/EtCO2 ventilation with 100% oxygen for markedly decreased LOC, inability to maintain a patient airway, or for GCS < 8.
4. Attach pulse oximeter.
5. Elevate head of bed, if possible.
6. Determine serum glucose level with Glucometer.
   6.1. If glucose < 80 mg/dl – notify Advanced Care as soon as possible.
7. Place in recovery position (unless spinal injury suspected).
8. Prepare to suction and manage airway.
9. Repeat vital signs frequently.
10. Treat seizures per Seizure Protocol.
11. Transport any patient with altered mentation with Advanced Care.

DEATH IN THE FIELD PROTOCOL

MAY WITHHOLD RESUSCITATION OF PATIENT IF:

1. There is an obvious sign of death, e.g., rigor mortis, decomposition, decapitation, dependent lividity, evisceration of heart or brain, or incineration.
2. The patient is a pulseless, apneic victim of a multiple casualty incident where resources of the EMS system are required for stabilization of other patients.
3. In addition to the conditions listed under withholding resuscitative efforts, a victim of trauma should be determined dead and *should not be transported* if:
   3.1. The patient is a victim of blunt trauma or penetrating trauma to the head and has no vital signs in the field (pulseless, apneic, fixed and dilated pupils).
   3.2. In instances prior to transport where the patient declines to the point that no vital signs (i.e. pulse/respiration) are present, the patient should receive resuscitative efforts for at least ten minutes prior to any declaration of death in the field
4. In traumatic deaths, a cardiac monitor should *not* be used in initial assessment of the patient unless the EMS provider doubts death has occurred.
5. The patient has advanced directives which indicate the patient would not want resuscitation.

MAY DISCONTINUE RESUSCITATION OF PATIENT IF:

1. It becomes obvious one of the withholding issues above is present.
2. Transport to a receiving facility is not feasible in the next 20 minutes, AND the AED is no longer recommending shocks, AND there is no pulse present, AND EtCO2 is 10mmHg or less for the last 20 minutes.
3. Advanced Life Support provider(s) arrive at the scene and judge the patient non-salvageable.
4. If online medical consultation results in the physician ordering termination of efforts.

DIABETIC EMERGENCIES – HYPOGLYCEMIA/HYPERGLYCEMIA

SPECIFIC INFORMATION NEEDED:

1. How long have symptoms been present?
2. History of previous medical conditions?
3. Nature of present illness?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Airway assessment.
4. Skin signs.

TREATMENT - HYPOGLYCEMIA:

1. Assure ABCs.
2. Oxygen via non-rebreather mask.
3. Attach cardiac monitor and pulse oximeter.
4. Determine serum glucose level with Glucometer.
   4.1. If glucose < 80 mg/dl, and the patient is CA&O x name and place, administer 15-25 grams Oral Glucose into buccal space
5. Repeat glucose determination in 5 minutes:
   5.1. If glucose remains < 80 mg/dl, and no significant change in mental status, administer 15-25 grams Oral Glucose into buccal space
6. Provide supportive measures.
7. Prepare for Advanced Care Personnel

DIVING EMERGENCIES – DECOMPRESSION SICKNESS

SPECIFIC INFORMATION NEEDED:

1. How long have symptoms been present?
2. What depth was patient diving at and dive timeline?
3. What rate of ascent was used?
4. History of previous medical conditions?

SPECIFIC PHYSICAL FINDINGS:

1. Vital signs.
2. Level of consciousness.
3. Airway assessment.
4. DAN Diver Neurological Assessment
   - 4.1. Orientation
     - 4.1.1. Does the diver know his/her own name and age?
     - 4.1.2. Does the diver know the present location?
     - 4.1.3. Does the diver know what time, day, year it is?
     - 4.1.4. Note: Even though a diver appears alert, the answers to these questions may reveal confusion. *Do not omit them*.
   - 4.2. Eyes
     - 4.2.1. Have the diver count the number of fingers you display, using two or three different numbers.
     - 4.2.2. Check each eye separately and then together.
     - 4.2.3. Have the diver identify a distant object.
     - 4.2.4. Tell the diver to hold head still, or you gently hold it still, while placing your other hand about 18 inches/0.5 meters in front of the face. Ask the diver to follow your hand. Now move your hand up and down, then side to side. The diver's eyes should follow your hand and should not jerk to one side and return.
     - 4.2.5. Check that the pupils are equal in size.
   - 4.3. Face
     - 4.3.1. Ask the diver to purse the lips. Look carefully to see that both sides of the face have the same expression.
     - 4.3.2. Ask the diver to grit the teeth. Feel the jaw muscles to confirm that they are contracted equally.
     - 4.3.3. Instruct the diver to close the eyes while you lightly touch your fingertips across the forehead and face to be sure sensation is present and the same everywhere.
   - 4.4. Hearing
     - 4.4.1. Hearing can be evaluated by holding your hand about 2 feet/0.6 meters from the diver's ear and rubbing your thumb and finger together.
     - 4.4.2. Check both ears moving your hand closer until the diver hears it.
     - 4.4.3. Check several times and compare with your own hearing.
     - 4.4.4. Note: If the surroundings are noisy, the test is difficult to evaluate. Ask bystanders to be quiet and to turn off unneeded machinery.
   - 4.5. Swallowing Reflex
     - 4.5.1. Instruct the diver to swallow while you watch the "Adam's apple" to be sure it moves up

and down.

4.6. Tongue

4.6.1. Instruct the diver to stick out the tongue. It should come out straight in the middle of the mouth without deviating to either side.

4.7. Muscle Strength

4.7.1. Instruct the diver to shrug shoulders while you bear down on them to observe for equal muscle strength.

4.7.2. Check diver's arms by bringing the elbows up level with the shoulders, hands level with the arms and touching the chest. Instruct the diver to resist while you pull the arms away, push them back, up and down. The strength should be approximately equal in both arms in each direction.

4.7.3. Check leg strength by having the diver lie flat and raise and lower the legs while you resist the movement.

4.8. Sensory Perception

4.8.1. Check on both sides by touching lightly as was done on the face. Start at the top of the body and compare sides while moving downwards to cover the entire body.

4.8.2. Note: The diver's eyes should be closed during this procedure. The diver should confirm the sensation in each area before you move to another area.

TREATMENT:

1. Assure ABCs and perform dive injury neurologic exam
2. Administer oxygen via non-rebreather mask at 15L or to SaO2 of 95% or greater.
3. Place the patient in a supine head-down left lateral decubitus position.
4. Attach pulse oximeter.
5. Obtain 12 Lead ECG
6. Obtain EtCO2
7. Assure AED is ready for use
8. Protect against hypothermia and hyperthermia.
9. Monitor closely for complications (pneumothorax, shock, seizures) and treat per specific protocols.
10. If more than 20 minutes from advanced care - Contact DAN or U.S. Navy Dive Locker for advice (see below).
11. Assess vital signs, including temperature, every 10 minutes.
12. Prepare for arrival of Advanced Care Personnel

Contacting the Diver's Alert Network – Medical Advice Lines:

1. North America Diving Emergencies:
   1.1. 1-919-684-8111
   1.2. 1-919-684-4DAN (collect)
   1.3. 1-800-446-2671 (toll-free)

HEAD TRAUMA/TRAUMATIC BRAIN INJURY

SPECIFIC INFORMATION NEEDED:

1. History: mechanism of injury, mental status changes.
2. Protective devices worn: helmet, shield, etc.
3. Past medical history

SPECIFIC PHYSICAL FINDINGS:

1. EVALUATE: airway, breathing, and gross injuries to trunk and extremities.
2. Mental Status Exam: use descriptive terms and Glasgow scale.
3. Neurological Assessment
4. External evidence of head trauma.
5. EtCO2, SpO2, and NIBP immediately.

TREATMENT:

1. Oxygen via APOX technique.
2. If GCS less than 9, begin BVM or BV/IGel/EtCO2 ventilation at 10 breaths per minute.
   2.1. The goal is normal ventilation, NOT hyperventilation.
3. PROTECT patient from the environment and protect spine.
4. Use direct pressure to control bleeding wounds on head.
5. Monitor vital signs, mental status, and note any changes. Document all changes in GCS.
6. Determine serum glucose level with Glucometer.
7. IF PATIENT'S BP RISES ABOVE 140 SYSTOLIC, AND PATIENT EXAM REVEALS PUPIL DILATION AND/OR SIGNS OF POSTURING, OR THE PATIENT HAS A SUDDEN AND DRAMATIC CHANGE IN CONSCIOUSNESS (i.e., patient becomes unconscious, obtunded):
   7.1. Consider use of adjunct airway of patient, if not already done.
   7.2. Consider hyperventilation at 20 bpm or to EtCO2 of 30 if decompensation continues.
   7.3. Transport with Advanced Care aboard by the most rapid means available for neurosurgical intervention.

SPECIFIC PRECAUTIONS:

1. Restlessness and/or agitation can be due to hypoxemia and/or hypoglycemia.

HYPERTHERMIA

TYPES OF HEAT ILLNESS:

1. **Heat Stroke:** The signs of heat stroke include elevated body temperature and altered mental status. The patient may or may not be sweating. These patients may not be volume depleted. Heat stroke is a medical emergency with a 30% mortality rate.
2. **Heat Exhaustion:** Presents as volume depletion with normal mental status and normal body temperature. These patients are markedly fluid short and may require as much as three liters of BSS over the first 4 hours. These people should avoid heat and exercise for 24-36 hours.
3. **Heat Cramps:** Are a benign condition caused by electrolyte imbalance. Allow the person to rest in a cool environment and drinking oral fluids with electrolytes (not plain water). After rest and rehydration, these people can usually return to moderate activity.

SPECIFIC INFORMATION NEEDED:

1. Sudden collapse or gradual onset?
2. Exercise induced?
3. Previous history of hyperthermia?
4. Recent food/fluid intake?
5. Ambient temperature?

SPECIFIC PHYSICAL FINDINGS:

1. Vital Signs including temperature, if possible.
2. Mental status-APVU or Glasgow Coma Scale.
3. Skin color and presence or absence of sweating.
4. Lung examination.

TREATMENT:

1. Remove patient to a cool environment as soon as possible.
2. O2 via non-rebreather mask or APOX; ventilate as needed.
3. Remove all clothing from patient and begin cooling measures that maximize evaporation/convection.
   3.1. A spray bottle with cool water is one of the best cooling measures.
   3.2. Avoid shivering during the cooling process.
4. Be prepared for seizure activity.
5. Monitor vital signs.
6. Continue cooling throughout transport with Advanced Care.
7. Avoid wet blankets or other covering that obstructs air flow.
8. Special care should be taken to avoid seizures in aircraft.

HYPOTHERMIA

SPECIFIC INFORMATION NEEDED:

1. Length of exposure.
2. Hypothermia patients are categorized by the lowest physical variable, which they display.
3. Following are the physical variables of hypothermia:
   3.1. Apnea: Put metal or glass shined object under nostrils for 1 minute.
   3.2. Pulse: Palpate carotid pulse for 1 minute.
   3.3. ECG: Attach ECG and interpret rhythm.
   3.4. LOC: Determine Level of Consciousness (LOC) by verbal and motor responses.
4. Which "Category of Hypothermia" does patient go into (see chart).

CATEGORIES OF HYPOTHERMIA:

CATEGORY	PHYSICAL FINDINGS	TREATMENT	PUMP REWARM
FROZEN, LIFELESS Category 1	If major trauma present, or head/trunk frozen – determine patient dead in field. Apneic, pulseless, frozen.	Declare dead in the field	N/A
COLD, LIFELESS Category 2	Apneic, pulseless, disorganized ECG rhythm*, unconscious. If obvious, major trauma present - pt. may be declared dead in the field.	Warm Oxygen*** Compressions and BV/IGel/EtCO2 ventilations at 10/bpm Transport with Advanced Care	Yes, if no major trauma is present.
COLD, ALIVE Category 3	Respirations are 12 or less, no pulse may be palpable, organized ECG rhythm**, may respond to stimulus.	NO CPR, Warm Oxygen Transport with Advanced Care	Yes
MODERATE HYPOTHERMIA Category 4	Respirations above 12/minute, pulses are palpable, organized ECG rhythm**, responds to commands.	Supportive care and Transport no CPR, Warm Oxygen*** Protect from further cooling	No, unless patient is deteriorating.

MILD HYPOTHERMIA Category 5	Near normal vital signs, organized ECG rhythm**, obeys commands, cool to touch, may have some loss of coordination and mental ability.	Supportive care and BLS Transport No CPR, Warm Oxygen***	No, unless the patient is deteriorating.

NOTE:

* Disorganized ECG rhythm is incompatible with life (ie asystole, V-Fib)

** Organized ECG rhythm is compatible with life (ie V-Tach, PEA, Bradycardia, etc...)

*** If available

SPECIFIC PRECAUTIONS AND CONSIDERATIONS:

1. Handle patient gently, try not to jostle.
2. Cardiopulmonary bypass offers rapid rewarming in profoundly cold patients who have suffered cardiac failure (category 1, 2, and 3), consider air transport to appropriate facility.
3. Consider other protocols as appropriate.
4. Do chest compressions only if the patient's chest is compressible.
5. It is rarely possible to re-warm a person in a cold environment. Transport ASAP.

INHALATION OF TOXIC FUMES

CAUTION:

1. **Protect yourself from exposure.**
2. **Patient should be removed from area of toxic substance by personnel equipped with proper safety gear.**

INITIAL INTERVENTION/DRUG THERAPY:

1. Establish and maintain airway
   1.1. Assist ventilations as necessary
   1.2. 100% O_2.
   1.3. Adjunct Airway, as needed.
2. Monitor vital signs.
3. SpO2 and EtCO2
4. Albuterol by nebulizer for wheezing.
5. Prepare for Advanced Care Personnel

SPECIFIC THERAPIES:

1. ***Carbon monoxide:***
   1.1. Oxygenate and ventilate as needed with BVM or BV/IGel/EtCO2 with 100% O_2.
   1.2. Consider possible diversion to hyperbaric chamber
2. ***Chlorine gas or dust:***
   2.1. Humidified 100% O_2.
   2.2. Treat severe pulmonary edema or bronchospasm per protocol
3. ***Cyanide Inhalation:***
   3.1. Hyperventilate with 100% O_2 / assist ventilations
   3.2. Assure providers will be safe when ambulance is closed for transport
4. ***Hydrogen Sulfide:***
   4.1. Respiratory depression, assist ventilations.
   4.2. Expect seizures

ORTHOPEDIC INJURIES

SPECIFIC INFORMATION NEEDED:

1. History of Trauma, mechanism of injury.

SPECIFIC PHYSICAL FINDINGS:

1. Localized pain and/or tenderness.
2. Swelling and/or discoloration.
3. Angulation, deep lacerations, exposed bone.
4. Crepitus
5. Loss of function and/or limitation of motion.
6. Guarding and/or rigidity in closed spaces.
7. Quality of distal pulses, sensation, and capillary refill.

TREATMENT OF ORTHOPEDIC INJURIES:

1. Assure ABCs
2. Immobilize cervical spine if appropriate.
3. Examine for additional injuries, evaluate and treat injuries with higher priority than fractures and dislocations.
4. Apply sterile dressing to any wounds and secure in place.
5. Methoxyflurane for pain control
6. Splint as appropriate, axial traction as needed to facilitate splinting.
   6.1. A traction splint may be applied to femur fractures; additionally, any foot wear should be removed prior to splinting.
   6.2. Elevate fractures where possible, apply cold packs or ice if injuries permit.
7. If no circulation is present in an extremity, attempt to regain a pulse by repositioning the limb; if repositioning is not effective, consider reduction of injury or light traction. If an extremity must be repositioned for packaging and/or evacuation - do so.
8. Monitor vital signs, sensation, distal circulation, and motor function. If no circulation can be established in an extremity, consider the fastest means of transport available.

SPECIFIC PRECAUTIONS AND NOTES:

1. Fractures do not necessarily lead to loss of function; for instance, impacted fractures may cause extreme pain, but little or no loss of function.
2. Extremity injuries benefit from appropriate care, but are of low priority in multiply injured patients.
3. Hip dislocations are an orthopedic emergency, transport with Advanced Care.
4. Severely angulated extremity fractures may need alignment and splinting to evacuate the patient, package the patient, and/or transport the patient, if necessary - do it.
   4.1. Reassess the distal circulation and sensation after each movement.
5. Ligament injuries are a serious injury and deserve the same treatment as any fracture or dislocation. There is a high incidence of torn ACL knee ligaments in the knee injury that was initially very painful, then got better or "feels fine now"; be careful that knee injury is treated as if a tear or rupture has occurred.

PELVIC WRAP

INDICATIONS:
This protocol assumes the TRAUMA ASSESSMENT PROTOCOL was initiated and will be completed.
To be applied in all blunt trauma patients with either severe pelvic pain or pelvic instability.
The pelvic wrap is not indicated for suspected isolated hip fractures, i.e., ground level falls.

PROCEDURE:
1. Apply approved pelvic wrap device. If patient is not yet packaged consider advanced placement of the device on backboard.
2. Before tightening the wrap around the pelvis, ensure all the objects are removed from the patient's pockets so that the pressure of the pelvic wrap doesn't press on items causing additional pain.
3. If using a standard patient sheet:
4. Fold the sheet smoothly several times lengthwise (do not roll it) until it is about 9 inches wide, and apply underneath the pelvis, centered on the greater trochanters of the femurs.
5. Tighten the sheet around the pelvis, adjusting the tension to try to return the pelvis to the normal anatomic position based on the initial assessment of instability.
6. Secure the sheet with a knot or cross the sheet in the middle, twist it, and secure it laterally with a clamp. The sheet should feel tightly wrapped around the pelvis allowing for two fingers to be inserted between sheet and pelvis.
7. Re-check the position of the wrap.
8. You should still be able to feel the anterior superior iliac spines after placement. If not, the sheet may be too high on the pelvis and must be repositioned.
9. If the pelvis is unstable on initial exam, do not repeat the exam.

PATIENT PACKAGING

PURPOSE OF ORDERS:

The purpose of this order is to give personnel a guideline for packaging patients for evacuation. Patients who are secured into a litter can become hypothermic or be placed in positions where their circulation is impaired. Repeated assessment is required every 15-20 minutes.

PACKAGING CONSIDERATIONS:

1. Patients who are immobilized can have significant heat loss even in warm weather while strapped into the litter due to immobility and injury.
2. The patient must be protected from the environment at all stages of the treatment and evacuation. This can be as simple as a tarp over the patient, or constructing a shelter and using multiple warming techniques.
3. Provide sunscreen and protection from the sun.
4. All medical care items should be packaged within the litter, with the exception of the Bag/Valve, if the patient is being ventilated. IV lines should be in pressure infusers, with Dial-A-Flow devices in line. Oxygen bottles should be in the litter and if the patient is being ventilated, plan on endotracheal tube placement prior to placing the patient in the litter.
5. Patients who are at risk for losing body temperature should be packaged in spinal precautions, if necessary, then placed in a sleeping bag, on an insulating pad, in the litter, with a tarp or other waterproof material over the patient.
6. Consider preheating the sleeping bag with several chemical heat packs. Then place 3-10 chemical heat packs into the sleeping bag with the patient.
7. Place any extra insulating materials available around patient.
8. Stop the litter every 15-20 minutes to monitor patient's condition and rest the litter team.
9. Consider Patient Restraint early for the safety of the patient, crew and aircraft.

PEDATRIC CONSIDERATIONS:

Do not utilize KED’s for immobilization of pediatric patients.

Use a long back board with blanket rolls as lateral space fillers or a pediatric spine board.

PATIENT REFUSAL PROCESS

PURPOSE OF ORDERS:

The purpose of this order is to give personnel a guideline for patient refusal situations; while patients may refuse all or part of their treatment, interventions, and disposition, providers must assure the patient is medically competent, take aggressive steps to assure medical care is provided, and gain information about the situation prior to a patient refusal being executed.

A patient is considered such upon provider contact with the patient.

A *no patient* contact is only considered valid if the person has all of the following:

- No significant mechanism of injury
- No visible signs of injury
- No known acute medical condition
- No identifiable behavior problems
- Not less than 18 years of age
- No impaired decision making capacity
- Did not request assistance themselves.

PROCESS:

1. Utilize General Guidelines for Protocol Use.
2. Assess Ability to Make Decisions; if any of the following assume impaired decision making capacity:
   - Head Injury Present
   - Drug or Alcohol Intoxication
   - Medical conditions resulting in impairment (i.e.; hypoglycemia)
   - Toxic exposure
   - Psychiatric problems
   - Language barrier
3. Able to make medical decisions, but refusing care:
   - **Explain risks of refusal, including long term disability and any potential for death**
   - If serious medical need exists, contact OLMC
   - Enlist family, friends, police to help convince patient
   - Complete Patient Care Form and Refusal Signature
   - Follow documentation guidelines.
4. Unable to make decisions (impaired capacity):
   - Treat and transport.
     - If patient altered - use patient restraint if necessary
   - Make all reasonable efforts to assure patient received medical care
   - Consult OLMC
   - Contact law enforcement for hold, if hold refused document reason why and officer's name and badge number.
   - DO NOT have patient sign the refusal form/box on the PCR.
5. Minimum Documentation Required:
   - General appearance and level of consciousness
   - History, vital signs, and physical exam

- Presence of any intoxicants
- Assessment of patient's decision making capacity
- All risks explained to the patient
- All communications with family, police, and/or OLMC

6. Any of the following require On Line Medical Control (OLMC):
   - Impaired decision making capacity
   - Suspected serious medical condition
   - Suspected abuse
   - First time seizures
   - Scene conflict regarding medical care

PEDATRIC CONSIDERATIONS:

No pediatric patient may refuse care or transport without the parent or designated legal guardian doing so on their behalf.

Pediatric patients should be treated and transported absent that parental or legal guardian input.

MILITARY PERSONNEL CONSIDERATIONS:

Active-duty U.S. Military personnel do not have a right to refuse care, in the event this issue arises, contact their superior officer and inform them an order to comply is necessary.

POISONING AND OVERDOSES

SPECIFIC INFORMATION NEEDED:

1. History of incident.
2. Nature of substance patient has taken in or been exposed to.
3. Type and amount of poison.
4. How poisoned, ingested, inhaled, injected, surface contamination?
5. Time poisoned.
6. Has patient vomited? if so, when?
7. History of drug or ETOH usage.
8. Pre-existing medical problems.

SPECIFIC PHYSICAL FINDINGS:

1. Mental status.
2. Mental health issues.
3. Respiratory assessment.

TREATMENT:

1. Assure ABCs.
2. Oxygen via non-rebreather mask, prepare to take over airway as needed.
3. Attach pulse oximeter.
4. Determine serum glucose level with Glucometer if glucose < 80 mg/dl, administer oral glucose 25 gms PO in buccal cavity.
5. If inadequate air exchange, initiate and maintain mechanical ventilation with 100% oxygen.
6. If apneic:
   6.1. Initiate and maintain ventilation with BV/IGel/EtCO2 and 100% oxygen.
   6.2. Emergent transport with Advanced Care
7. If inhaled poison:
   7.1. Assure personal safety.
   7.2. Remove patient to fresh air.
   7.3. Administer 100% oxygen via non-rebreather mask.
   7.4. See INHALATION OF TOXIC FUMES PROTOCOL.
8. If skin or eye contamination:
   8.1. Assure personal safety.
   8.2. Remove contaminated clothes.
   8.3. Irrigate with water or normal saline, for 15 minutes or 3 liters.

RESPIRATORY CONDITIONS

PURPOSE OF ORDERS:

In many situations, personnel must manage patients with respiratory conditions for extended time periods both in the field and in the transport vehicle. The following protocol is designed to assist them in the care issues related to the respiratory patient. Assure Advanced Care remains enroute.

RESPIRATORY DISTRESS

HISTORY:

1. Fever, chills, speed of onset.
2. Cough with sputum production, including recent changes.
3. Recent illness and past medical history:
   - 3.1. Asthma, CHF, and/or COPD.
   - 3.2. Pneumonia.
   - 3.3. Medications/allergies.
   - 3.4. Chest pain.
   - 3.5. Parenthesis.

PHYSICAL FINDINGS:

1. Vital signs, including level of consciousness.
2. Skin color, rashes, and hives.
3. Stridor, wheezing or rhonchi.
4. Distended neck veins.
5. Breath sounds.
6. Peripheral edema.
7. Signs of trauma.

TREATMENT:

1. Start O_2 and assure ventilation with BVM or NIV (*if patient has regular rate of inspiration*).
2. Use pulse oximeter and EtCO2.
3. Treat underlying cause, as follows:
   - 3.1. Upper Airway (croup, epiglottis, anaphylaxis, foreign body).
     - 3.1.1. Obstructed airway procedures for complete obstruction.
     - 3.1.2. Treat anaphylaxis per ANAPHYLAXIS PROTOCOL, if appropriate.
     - 3.1.3. If audible strider at rest, epinephrine 1:1000 0.5mg via nebulizer, (If Epinephrine is given, then patient must be transported for further observation
   - 3.2. Pulmonary Edema, (not secondary to HAPE):
     - 3.2.1. Sit patient upright, if possible.
     - 3.2.2. Consider use of CPAP for ventilatory support, use with significant respiratory distress.
   - 3.3. Asthma/COPD:
     - 3.3.1. Consider use of CPAP for ventilatory support, use with significant respiratory distress.
     - 3.3.2. Nebulized Albuterol 2.5 mg in 3 ml NS; may repeat as needed until respiratory distress resolves.
     - 3.3.3. Stop treatment if heart rate increases by 20 beats per minute or more, above initial heart rate; or ventricular ectopy occurs.
     - 3.3.4. If patient is deteriorating and less than 40 years old, give Epinephrine via EpiPen.
       - 3.3.4.1. Give Epi with caution to anyone with cardiac disease or hypertension.
       - 3.3.4.2. In life threatening anaphylaxis, the benefit of Epi will outweigh the risk.

3.4. Unable to adequately ventilate & oxygenate patient:
    3.4.1. Unprotected airway, with decreasing level of consciousness.
    3.4.2. Ventilate with BVM and 100% O2

Non-Invasive Ventilation

USE OF CONTINUOUS POSITIVE AIRWAY PRESSURE (CPAP)

INDICATIONS

1. Any patient who is in respiratory distress with signs and symptoms consistent with:
   a. Congestive Heart Failure (CHF);
   b. Pulmonary Edema;
   c. Asthma;
   d. COPD; or
   e. Pneumonia
2. Other measures to improve oxygenation and decrease the work of breathing have failed (i.e., 100% O2 via NRBM)
3. **And** who is:
   a. Awake and able to follow commands;
   b. Is over 12 years of age and is able to fit the CPAP mask;
   c. Has the ability to maintain an open airway;
4. **And**, exhibits two or more:
   a. RR > 25 BPM
   b. SpO2 <94% at any time
   c. Use of accessory muscles of breathing

CONTRAINDICATIONS

1. Patient is apneic
2. Patient is suspected of having a pneumothorax
3. Patient is a trauma patient with injury to the chest
4. Patient has a tracheostomy
5. Patient is actively vomiting or has upper GI bleeding

PROCEDURE

1. EXPLAIN THE PROCEDURE TO THE PATIENT
2. Ensure adequate oxygen supply to the CPAP device
3. Place patient on continuous pulse oximetry
4. Position head of bed at 45 degrees or patient position of comfort
5. Place CPAP mask over mouth and nose, hold with hand for a few patient breaths, and then secure with straps provided
6. Start with 5-7 cmH2O of PEEP, increase in 3 cmH2O every 10-12 minutes until ventilatory effort normalizes and SpO2 is greater than 92%
7. Check for air leaks
8. Monitor and document the patient's respiratory response to treatment
9. Check and document vital signs every 5 minutes
10. Coach patient to keep mask in place, readjust as needed
11. Contact receiving facility to advise of CPAP initiation
12. If respiratory status deteriorates, remove device and consider IPPV via BVM

REMOVAL PROCEDURE

1. CPAP needs to be continuous and should not be removed unless the patient cannot tolerate the mask or experiences respiratory arrest and/or begins to vomit
2. Intermittent positive pressure ventilation (IPPV) with a BVM should be considered if CPAP is removed

SPECIAL CONSIDERATIONS

1. Do not remove CPAP until hospital therapy is ready
2. Watch for gastric distention which can cause vomiting
3. CPAP may be used with patients who have POLST forms or DNR orders

SEIZURES

INITIAL INTERVENTION:

1. Primary Survey.
2. Establish airway patency.
3. Do not force teeth apart.
4. Nasopharyngeal airways useful and well tolerated.
5. 100% O_2 and Suction, as needed.

TREATMENT:

1. If seizure has persisted more than 5-10 minutes or if repetitive:
   1.1. Determine serum glucose level
   1.2. Maintain SaO2 above 95%
   1.3. Consider use of BVM Ventilation with 100% O2 early if Altered Level Of Consciousness
   1.4. Assure Advanced Care is enroute

OTHER CONSIDERATIONS:

1. **BE PREPARED TO MANAGE RESPIRATORY DEPRESSION**
2. Status epilepticus definition: > 5 minutes seizure or recurrent seizures without return to consciousness; be aggressive with patient care, it is associated with a high mortality rate.
3. Seizure activity without end, although minor in nature, should be treated under this protocol; in addition, seizure patients with limited motor seizure history, or febrile seizure history
4. Causes of status epilepticus:
   4.1. <16yrs: Fever/Infection 36%, Med Change 20%, Metabolic 8%, Cerebrovascular Disease 3%, EtOH/Drugs 2%.
   4.2. >16yrs: Metabolic 29%, Cerebrovascular Disease 25%, Med Change 19%, EtOH/Drugs13% , Fever/infection 8%
5. Consider non-convulsive/minimally convulsive status in unexplained coma and hx of seizures
   5.1. May represent 33% of status epilepticus
6. Seizures that self-terminate in a known epileptic may not require treatment or transport.
7. Only 25% of status epilepticus have epilepsy
8. Seizures may be a sign of cerebral hypoxia from cardiac arrest.
9. Seizures may be caused by dysrhythmias.
10. Seizures may be caused by head trauma or central neurologic injury
11. Febrile seizures in children are usually brief in nature, if extended or partial motor, patient requires emergent transport.

SHOCK

SHOCK SYNDROME:

Shock syndrome is inadequate organ perfusion. Signs and symptoms may include, but are not limited to the following:

1. Pulse over 120 with a Systolic Blood Pressure less than 90.
2. Cold and clammy skin (may be absent with septic shock).
3. Mental status: confused, restless, apathy.

CLASSIFICATION and TREATMENT:

1. **HYPOVOLEMIC SHOCK**: Loss of circulating blood volume due to hemorrhage or loss of fluid from vomiting, diarrhea, burns, dehydration, heat exhaustion, heat stroke
   1.1. ABCs, secure airway, and STOP hemorrhage.
   1.2. Avoid hyperventilation, generally ventilate at q 5-6 seconds with approximately 5-10ml/kg of ideal body weight volume without PEEP; with pre-existing metabolic acidosis documented, ventilatory rates may be increased to manage that pre-existing issue.

2. **DISTRIBUTIVE SHOCK:** Abnormal vascular tone including anaphylaxis, early sepsis, and neurogenic shock.
   2.1. ABCs, vitals, secure airway as necessary, and consider etiology of the event.
   2.2. For anaphylaxis – GO TO ANAPHYLAXIS PROTOCOL.

3. **OBSTRUCTIVE SHOCK:** Mechanical obstruction to blood flow, to or from the heart including cardiac tamponade, tension pneumothorax, dissecting aneurysm, and massive pulmonary embolism.
   3.1. ABCs, secure airway, and STOP hemorrhage.
   3.2. Tension Pneumothorax – rapid transport.

4. **CARDIOGENIC SHOCK**: Heart pump failure to circulate the blood volume through the system.
   4.1. Assure ABCs and monitor vitals q 5min
   4.2. Oxygen via non-rebreather mask if no history of COPD.
      4.2.1. If history of COPD, titrate oxygen delivery to maintain SpO2 at 90-92%.
   4.3. Consider CPAP use for ventilatory support.
   4.4. Attach pulse oximeter.
   4.5. If signs of severe hypoventilation occur:
      4.5.1. Assist ventilations with BVM with 100% oxygen.
      4.5.2. Consider adjunct airway placement.

PEDATRIC CONSIDERATIONS:

1. Blood pressure is an unreliable sign of circulatory status in pediatric patients; utilize the rapid cardiopulmonary assessment to evaluate end organ perfusion.

SPINAL INJURY

HISTORY:

1. Mechanism of injury.
2. Past medical history.

SPECIFIC PHYSICAL FINDINGS:

1. Level of consciousness/Glasgow Coma Scale.
2. Vital signs.
3. Other trauma.
4. Paralysis, weakness, numbness, and/or tingling.
5. Point tenderness, deformity, and/or guarding along spinal column.
6. Lung examination.

TREATMENT:

1. Immobilize cervical spine with rigid extrication collar and maintain with manual in-line support, then immobilize patient to long spine board and utilize a tape/head support combination to secure head. Alternatively, if the patient is in a setting which is not conducive to use of a long board, the patient may be immobilized with a combination of rigid cervical collar, spinal immobilization device (i.e. KED, OSS, etc...), and then place patient in a litter and strap into place.
2. Manage airway as indicated.

SPECIFIC PRECAUTIONS AND CONSIDERATIONS:

1. Vomiting should be expected in head injury patients; therefore the patient must be securely immobilized to long board for the purposes of rolling the board during emesis.
2. Chin straps and tape should be avoided, as well as removing any leg loops after use.
3. All geriatric patients should have a high suspicion of possible spinal injury.

CRITERIA TO WITHHOLD SPINAL IMMOBILIZATION AFTER TRAUMA:

(Patient must have all of the following!)

1. Minor mechanism of injury.
2. Entirely normal mental status.
3. No evidence of intoxicants.
4. No neck pain or tenderness.
5. No neurological deficits.
6. No competing injuries such as a long bone fracture.

TRAUMA ASSESSMENT

This protocol is to serve as the basis of evaluation and management of all trauma patients. The other trauma protocols in this section assume that this protocol was initiated. After following another trauma protocol, return to this protocol for continued evaluation/management.

Emphasis at scene should be to perform rapid primary survey. After gaining access to the patient, scene time should not exceed 10 minutes, except for extended extrication times, transport by ambulance to LZ or procedures. Plan to obtain vascular access and lower priority treatments once enroute to the hospital. Assure Advanced Care enroute.

For interfacility trauma transfer, the emphasis should still be minimizing time at the referral facility, as these patients may have a time-dependent injury.

HISTORY:

1. Obtain details surrounding incident.
   1.1. Time of incident.
   1.2. Nature of incident.
   1.3. Loss of Consciousness.
   1.4. Apparent Injuries.
2. Receive report of patient condition and interventions prior to crew arrival.
3. Obtain information concerning past medical history, allergies, medications and last meal.
4. Obtain copies of record, x-ray and laboratory studies.

PRIMARY SURVEY/INTERVENTION:

1. Airway (includes cervical spine control):
   1.1. Evaluate patency; remove gross blood and objects from mouth, position for clear airway.
   1.2. Assess the patient for potential airway problems prior to transport.
   1.3. All trauma patients should have oxygen with an FIO2 of 100% via NRB mask.
   1.4. For patients with inadequate airway after suction/position.
2. Breathing:
   2.1. Expose neck/chest.
   2.2. Rate/depth of respirations.
   2.3. Inspect/palpate for signs of tension pneumothorax.
   2.4. Auscultate lung fields.
   2.5. Seal open pneumothorax with tape on three sides.
3. Circulation with control of hemorrhage:
   3.1. Assess for pulses.
   3.2. Evaluate perfusion/capillary refill.
   3.3. Apply direct pressure to bleeders.
4. Neurological exam with GCS or AVPU.

SECONDARY SURVEY:

The following secondary survey is to be performed as time, patient condition, and flight duration permits.

1. HEAD:

1.1. Assess for signs of trauma, including scalp lacerations/bleeding and skull deformities.
1.2. Assess for rhino/otorrhea.
1.3. Assess pupillary size and reactivity.

2. MAXILLOFACIAL:
   2.1. Reassess adequacy of airway.
   2.2. Assess for instability of facial bones.
   2.3. Assess for nasal, eye, and oral injuries.
      2.3.1. Definitive Care:
         2.3.1.1. Protect and maintain airway.
         2.3.1.2. Control nasal bleeding by packing with gauze if necessary.

3. NECK:
   3.1. Assess for wounds, swelling, deformity, subcutaneous emphysema, tracheal deviation, and jugular venous distention.
   3.2. Assess quality of carotid pulses.
      3.2.1. Definitive Care:
         3.2.1.1. **Apply cervical collar and cervical immobilization device for any blunt trauma ≤ 24 hours from time of injury.**
         3.2.1.2. Control bleeding by direct pressure.
         3.2.1.3. Protect airway.

4. CHEST:
   4.1. Assess/palpate chest wall for wounds, deformities, and symmetrical excursion.
   4.2. Auscultate breath sounds.
   4.3. Auscultate heart tones with regard to rate and quality.
      4.3.1. Definitive Care:
         4.3.1.1. Assist ventilation as needed
         4.3.1.2. If evidence of injury follow CHEST TRAUMA PROTOCOL

5. ABDOMEN
   5.1. Assess abdomen for contusions, wounds or eviscerated organs.
   5.2. Gently palpate abdomen to assess tenderness or rigidity.
      5.2.1. Definitive Care:
         5.2.1.1. Cover open wounds with dry sterile dressing.
         5.2.1.2. Cover any eviscerated organs with sterile moist dressing.

6. GU/PELVIC:
   6.1. Assess for swelling, discoloration, bleeding or blood at urethral meatus.
      6.1.1. Definitive Care:
         6.1.1.1. Control bleeding, by direct pressure.
         6.1.1.2. Place Pelvic Wrap is suspected trauma to pelvis

7. EXTREMITIES:
   7.1. Assess for bleeding, contusions, deformities, or swelling in all extremities.
   7.2. Assess neurovascular status of all extremities by noting presence of pulses, skin color and gross motor and sensory function.
      7.2.1. Definitive Care:
         7.2.1.1. Control bleeding by direct pressure and cover all open wounds with dry sterile dressings.
         7.2.1.2. Treat all injuries per ORTHOPEDIC INJURIES PROTOCOL

8. NEUROLOGIC:
   8.1. Assess mental status and note Glasgow Coma Scale.
   8.2. Assess gross motor and sensory function.
      8.2.1. Definitive Care:
         8.2.1.1. Treat per HEAD INJURY PROTOCOL.
         8.2.1.2. Monitor and treat potentially reversible causes of altered level of consciousness (i.e.., hypoxia, hypovolemia, and hypoglycemia).

TREATMENT:

1. Continually reassess patient for changes or new findings.
2. Record vital signs and pulse oximeter at least every 5 minutes if patient is unstable and every 10-15 minutes if patient is stable.
3. Monitor and document response to all interventions.
4. Perform and document serial neurologic, cardiac, respiratory and abdominal exams.

TRANSPORT FROM HOSPITAL TO HOME, CARE CENTER, OR AIRPORT

PURPOSE OF ORDERS:

EMS is sometimes required to assist with transport of patients from a tertiary facility to the patient's home, a care facility, or airport for evacuation. In these circumstances the EMS provider should assure the following items are documented.

HISTORY:

1. Patient medical history
2. Patient medications recently given.
3. Allergies
4. Reason for transport.
5. Any patient complaints at time of transport

PHYSICAL FINDINGS:

1. Vital signs, including level of consciousness at initiation of transport and every 15 minutes or at termination of transport if less than 15 minutes.
2. Results of primary survey
3. Notation of any patient care items retained in patient from hospital (i.e.; IV line, Foley catheter, G tube, etc…).

WOUND CARE

GENERAL PRINCIPLES:

Wounds are rarely life threatening. **Treat all life threatening injuries first, and then treat wounds only if time permits.**

Goals of wound Care:

1. Stop blood loss.
2. Prevent infection.
3. Promote healing and reduce discomfort.
4. Minimize loss of function.

Wound closure in the field with sutures or steri-strips is not recommended because, of the risk of infection.

TREATMENT:

1. ***Shallow wounds: Injury that disrupts the skin but does not extend through the full thickness of the skin.***
   - **1.1. Abrasions and minor, superficial burns:**
     - 1.1.1. If transport time is greater than 2 hours, cleanse wound by washing thoroughly with soap and water.
     - 1.1.2. Apply non-adherent dressing.
2. ***Open wounds: Injury that extends through the full thickness of the skin.***
   - **2.1. Lacerations, avulsions, amputations)**
     - 2.1.1. Stop bleeding:
       - 2.1.1.1. Direct pressure for at least 15 minutes, as indicated.
       - 2.1.1.2. Elevation and cool compresses.
       - 2.1.1.3. Immobilization.
       - 2.1.1.4. Use tourniquet early with arterial bleeding!
     - 2.1.2. If bleeding is easily controlled and transport time is greater than 2 hours cleanse wound as follows:
       - 2.1.2.1. Remove foreign material.
       - 2.1.2.2. Wash skin around wound with soap and clean water.
     - 2.1.3. If bleeding is easily controlled, irrigate wound with clean, sterile (if possible) water or BSS (a large syringe works well).
     - 2.1.4. Cover with dry, sterile dressing.
3. ***High risk wounds: Wounds with high potential for infection.***
   - **3.1. Bite wounds; very dirty, contaminated wounds; crushing, contused, ragged wounds; compound fractures or wounds into joints; puncture wounds)**
     - 3.1.1. Stop bleeding.
     - 3.1.2. Remove foreign material.
     - 3.1.3. Wash skin around wound with soap and clean water.
     - 3.1.4. If bleeding is easily controlled, irrigate wound with clean, sterile (if possible) water or BSS (a large syringe works well).
     - 3.1.5. Splint any wound over a joint or involving a possible fracture.
     - 3.1.6. Rapid evacuation is indicated.

Impaled objects:

Impaled objects should be removed if they cannot be effectively stabilized for packaging and transport. The objective is to cause the least tissue damage.

Wet environment:

If evacuation may require moving the patient through a wet environment (water crossing, boating accidents) consider covering wounds with impermeable dressing. Replace dressing if wound becomes wet, and re-clean wound if it becomes contaminated.