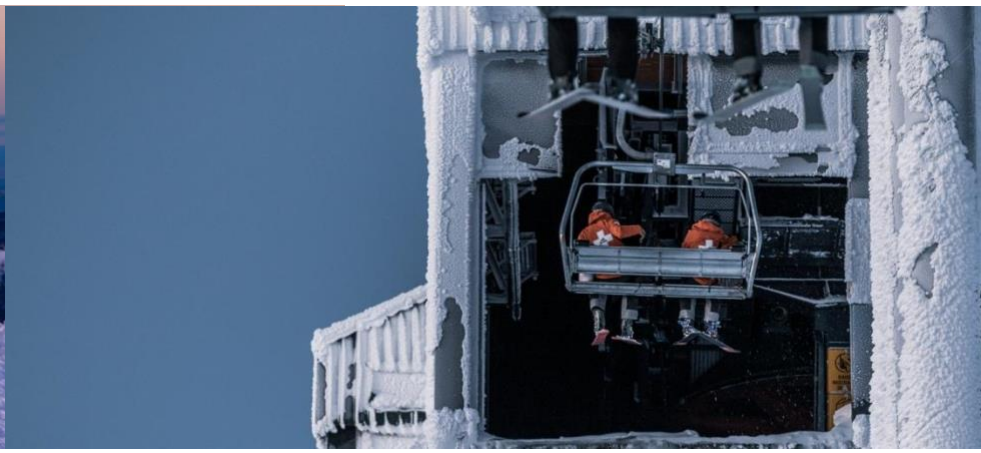
Mount Bachelor
Professional Ski Patrol
Medical Protocols, 2025



The enclosed medical protocols have been adapted from the East Cascade Emergency Medical Service Council (ECEMS) and Deschutes County Sheriff's Office Search & Rescue (DCSO SAR) protocols for Mt Bachelor Professional Ski Patrol members under the medical direction of Dr. Patrick Fink, with gratitude to Dr. Noah Harwood and Dr. Nicholas Faunce for their recent review and contribution, and to Dr. Cameron Mitchell for his direction prior to 2025.

Authority and direction come primarily from Oregon statute of ORS 404.100-135 with medical direction and use of controlled substances from OAR 847-035-0020 through 847-035-0030, & ORS 682.017.

Dr. Patrick Fink, MD FAWM DiMM, Medical Director

TABLE OF CONTENTS

OVERVIEW

These medical protocols have been adapted from ECEMS and the Deschutes County Sheriff's Office Search and Rescue (DCSO SAR) protocols to reflect the specialized needs of the Mount Bachelor Ski Patrol (MBSP). MBSP operates in an austere environment with limited equipment and resources available. MBSP also operates in proximity to fixed resources such as ski lifts and with interfaces to EMS services and the Mount Bachelor Clinic (MBC). In addition, MBSP is often faced with harsh environmental conditions and challenging patient transports by toboggan with limited access to the patient during such times. Much of the equipment that is commonly used with urban EMS agencies is simply unavailable or infeasible to use in these circumstances. Equipment and supplies (such as oxygen) are limited and must be carried by a patroller or in a toboggan, so medical providers may be limited in their use. With that in mind, additional patrol-specific protocols are included, and it is understood that not all supplies necessary for all potential medical emergencies will be immediately available.

RESPONSE

In general, it is best to consider medical calls an emergency until a patrol member is on scene and able to make an assessment to determine if there are threats to life, limb, or eyesight. It is not necessary for the ALS provider to respond to every scene, particularly those scenes which are determined to be simple orthopedic injuries. When significant or multi-system trauma, altered mental status, or an underlying medical condition are suspected to be the cause of the call, or when requested by the patroller on scene, it is encouraged to dispatch the ALS provider to the scene ASAP. When multiple calls are in progress, both the ALS provider and dispatch should attempt to triage the appropriate scene to which the ALS provider should respond first.

LOAD AND GO BIAS

All protocols in this document provide guidance which extends to potentially prolonged patient care if needed. This is to anticipate that there may be situations involving weather, infrastructure, resources, or terrain which could lead to prolonged care *in place* rather than prompt patient transport. However, though ski patrol care is austere medical care, additional resources are more often close at hand: EMS, vehicles, sheltered buildings, and the Mount Bachelor Clinic included. Environmental hazards can quickly come to pose a greater risk to our patients than their presenting complaint, and can hinder proper examination, reevaluation, and delivery of care. Accordingly, patrollers should maintain a strong bias towards the prompt packaging and transport of patients unless it is in their judgment that medical interventions are immediately necessary, or unless protocol indicates that the patient should be treated on scene for a certain period, as in the Cardiac Arrest – Atraumatic protocol.

MEDICAL LEAD

The role of a Medical Lead is crucial for any scene response. While anyone on the patrol team can fulfill this role, by default it should be assigned to the patroller with the highest level of certification. This may require transferring the role of the medical lead from the initial responding patroller to the ALS member when they arrive on scene. When it is judged by both the responding patroller and the ALS member to be appropriate, the responding patroller may remain the medical lead with ALS member acting as medical resource or backup.

Key duties include:

- Evaluate the patient on scene and determine urgency of the medical response and level of the call (Code 1-4 as below).
- Determine if any special equipment is needed.
- Provide or oversee the field medical care.
- Anticipate likely problems.
- Serve as primary contact with Online Medical Control (OLMC)
- Provide an initial scene report to dispatch with initial vital signs.
- Delegate roles and responsibilities such as ongoing communications with dispatch/EMS/MBC, patient extraction, and positioning, to focus on directing medical care.
- Documentation of run report.

TRANSPORT / CODE SYSTEM

MBSP is not a transport agency. However, it is common for MBSP equipment such as toboggans and snowmobiles to be used to transport patients to an awaiting ambulance/helicopter, to the base area, or to the Mount Bachelor Clinic.

MBSP uses unique "code" terminology to describe the level of response requested by the responding patroller or medical lead. Standard equipment response and patient dispositions by code are as follows:

Code 0: Courtesy ride, guest skis/walks/rides away, or no guest found.

Code 1: BLS response, injury requiring toboggan only. Medical supplies on patroller's person. Disposition per responder judgment.

Code 2: BLS response requiring toboggan *plus* specific requested equipment (e.g. beach chair, scoop, etc.). Disposition per responder judgment.

Code 3: BLS or ALS response, response with toboggan, backboard/scoop, trauma pack, code pack, Ground EMS dispatched.

Code 4: Life-threatening condition, ALS response preferred, response with toboggan, backboard, trauma pack, code pack, LUCAS device. Air and Ground EMS dispatched.

DOCUMENTATION

A run report will be completed on all encounters where an assessment was done, with exceptions for minor injuries (such as someone asking for a band-aid). Please include a detailed narrative in the SOAP or LCHART format. Please complete the run report as soon as possible after end of the incident. Ensure that patient name is recorded, and include details of any medications administered, including time, dose, route, and response. Code 1 and 2 responses should have documentation completed by end of shift. Code 3 and 4 responses should have documentation completed immediately after the conclusion of the call.

AGAINST MEDICAL ADVICE

Patients who refuse recommended further assistance and/or transfer to an EMS agency are going against medical advice (AMA). They should be warned against the risks and sign the AMA form in Edge Auditor. Patrollers managing a patient refusing care under an AMA should contact the medical lead or OLMC for assistance.

PROCEDURES

Please refer to ECEMS standards for any procedures not described in this document. Any protocols described in ECEMS which are not included in this protocol document are NOT PERMITTED.

https://eastcascadeems.org/protocols/

BYSTANDERS

Bystanders can be helpful or harmful to any scene response.

Patrollers may engage bystanders to assist in a good Samaritan capacity to perform basic tasks such as assisting in patient repositioning, crowd control, engagement of other bystanders, or redirecting skier traffic around a scene if such bystanders are willing to do so and the scene is safe. In general, bystanders should not be engaged to perform a task for which there is a patroller or other Mt Bachelor employee available.

Do not allow bystanders to interfere with medical care. If a bystander is interfering with care, call dispatch for additional resources immediately. Patrol leadership, medical lead, and Mt Bachelor security personnel should respond as able, and law enforcement assistance may be requested. Call OLMC if needed.

If bystanders are declaring themselves to be medical providers and offering to assist, they should not participate in patient care to any greater degree than a lay bystander. If necessary, contact dispatch, medical lead, or OLMC for guidance.

ONLINE MEDICAL CONTROL (OLMC)

Contact the below resources when needed in this order:

1) Dr. Patrick Fink (Medical Director)	**773-988-3225**
2) St. Charles Bend ED*	541-706-6940

*State that you are with Mt Bachelor Ski Patrol and looking for online medical control. This MD will not be familiar with Mt Bachelor protocols. St. Charles Bend should be used as a resource only when OLMC is needed, patient transport by EMS is delayed, and medical director cannot be contacted.

Due to weather and geographic considerations, there will be times when communication is challenging and direct contact with OLMC is not feasible. In these situations, please work through a radio relay to dispatch to facilitate OLMC contact, and if infeasible, please use your best clinical judgment on how to proceed.

IMPORTANT CONTACT INFO

AirLink Dispatch	800-621-5433
Life Flight Network	800-232-0911
St. Charles Bend ED Charge RN	541-706-6940 or via HEAR frequency
Oregon POLST Registry	877-367-7657
Oregon Poison Control Center	800-222-1222
Suicide and Crisis Hotline	988

RUN REVIEW

To ensure adherence to protocols and training standards and to further the goal of providing excellent care to our patients, cases involving severe pathology, low-frequency procedures, or uncommon conditions should be referred to the medical director for review. Any cases can be referred by the responding patrollers to the medical lead for consideration. Additionally, the presence of any of the following triggers mandates that the medical lead refer the case to the medical director for review:

- Ambulance transport;
- Air medical transport;
- Administration of fentanyl, ketamine, midazolam, naloxone, diphenhydramine, epinephrine, or DuoNeb;
- Administration of IV fluids;
- IO line placement;
- Use of tourniquet;
- Needle or finger thoracostomy;
- Cricothyroidotomy;
- Patient death, either on hill or after transport;
- CPR performed;
- Defibrillation, cardioversion, or pacing;
- Placement of airway adjuncts including OPA, NPA, LMA, or use of BVM;
- Use of medication or restraint for agitation;
- Patient released Against Medical Advice (AMA);
- Placement of traction splint for suspected femoral fracture;
- Treatment of suspected stroke;
- Any treatment-related injury of patroller involved in patient care.

MEDICAL LEVELS

BLS (Basic Life Support)

Required Cert: Wilderness First Responder (WFR), Oregon EMT, other Oregon professional licensure, or Outdoor Emergency Care (OEC) with CPR certification.

Utilization: This is the minimum level for a ski patroller. In critical patients or those that would greatly benefit from more advanced interventions or experience, an ALS member(s) should also be present if available.

ALS (Advanced Life Support)

Summary: This is an advanced level of provider on the patrol. These members may work as medical professionals outside of MBSP, in Emergency Medicine, prehospital medicine, or a related field. They have an active Oregon licensure that allows them to use more advanced interventions and administer additional medications under state guidelines and medical protocols. This person also has specific training and/or experience in prehospital care.

Utilization: This person is the ideal responder to a known medical problem, particularly ones of a more critical nature where advanced intervention and/or medications could improve patient outcomes and/or relieve severe pain. However, due to lower numbers on the patrol, this may not always be feasible.

Certification: Due to the various types of pre-hospital medicine practiced, granting of ALS privileges will be made on an individual basis by the Medical Director. Eligibility for ALS credentials is contingent upon successful completion of a cognitive and psychomotor assessment modeled on the NREMT-P scope of practice.

ALS-C (Advanced Life Support, Critical Care)

Summary: This is the most advanced level of patroller on the team by traditional prehospital certification standards, and these patrollers may be allowed additional procedures that go above ALS at the discretion of the medical director. These procedures include *Cricothyroidotomy,* and *Simple Finger Thoracostomy*. These members work or have significant and maintained experience as medical professionals outside of MBSP in Emergency Medicine or Critical Care and have experience managing undifferentiated critical patients. They have an active Oregon licensure that allows them to use more advanced interventions and administer controlled medications under federal guidelines and MBSP medical protocols. This person also has specific training and/or experience in prehospital or emergency care and will typically be a physician, CFRN, or paramedic with sufficient ongoing experience to maintain proficiency and safety when performing higher risk interventions in an austere setting.

Utilization: This is the ideal lead medical responder to a known medical rescue or trauma with a high likelihood of injury, or any time a patient is suspected to be unstable. An ALS-C level response may not always be available due to low numbers on the patrol.

Certification: Due to the unique type of pre-hospital medicine practiced, granting of ALS-C privileges will be made on an individual basis by the Medical Director. Eligibility for ALS-C credentials is contingent upon successful completion of a cognitive and psychomotor assessment modeled on the CFRN scope of practice and adapted for the austere environment. For ALS-C, individuals should continue to regularly practice specific procedures in their work outside of MBSP, must be credentialed to perform these procedures by a recognized institution other than MBSP, and must receive Medical Director approval. ALS-C Members must be signed off on all listed procedures to gain credentialling.

RN (Registered Nurse)

Summary: While the role of a registered nurse in a hospital or clinic environment can be quite varied and may RNs will not have experience relevant to prehospital care, the clinical experience of nurses who participate in the care of patients in an emergency department, intermediate care unit, or intensive care unit may be of significant value to the patrol. Nurses employed by MBSP and granted privileges by the medical director to be able to start IV lines and administer medications per MBSP protocol under standing orders of the medical director. These medications include fentanyl, ketamine, midazolam, epinephrine, and advanced cardiac life support (ACLS) medications, as well as those medication therapies listed for ALS-C providers if they have been approved by the medical director to do so.

Utilization: RNs respond in the same manner as a patrol member with a designated ALS provider. They may be the ranking provider on the mountain at a given time, and when that is the case, they are the ideal medical responder to a known medical rescue or trauma with a high likelihood of injury, or any time a patient is suspected to be unstable. If both an RN and an ALS-C patroller are involved in a response, the ALS-C member is the ranking member and should be the medical lead unless their best clinical judgment dictates otherwise.

Certification: All authorized RNs must maintain current licensure, certifications, and training relevant to their roles and responsibilities and adhere to approved protocols and procedures. Due to the variety of RN practice environments and background/experience, granting of RN privileges will be made on an individual basis by the Medical Director. RNs not granted such privileges or those currently seeking privileges should operate at the BLS level until approval is complete.

(All Levels) Other Details:

All medical team members should have a copy of and/or access to the MBSP medical protocols and be aware of any updates that are made to them. While some levels are required to have certain certifications and experience, the ultimate determination of MBSP medical privileges is up to the Medical Director. Members are responsible for maintaining their current level of licensure or certification and to make the Medical Lead aware if expiration of their licensure or certification is approaching.

RECERTIFICATION

BLS (Basic Life Support)

Certification: 1) Maintain Oregon EMT or other Oregon professional licensure with CPR. 2) Attend annual BLS skill recertification session or meet individually with medical lead or designee to review skills.
Protocols: Review the medical protocols on an annual basis and be aware of any updates.
Trainings: Attend a minimum of patrol refresher and two on-hill trainings/simulations per year.

ALS (Advanced Life Support)

Certification: 1) Maintain Oregon advanced licensure. 2) Biannual recertification exam consisting of cognitive and psychomotor components, comparable to initial certification as detailed above.
Protocols: Review the medical protocols on an annual basis and be aware of any updates.
Trainings: Attend a minimum of patrol refresher and four on-hill trainings/simulations per year.*
Clinical: ALS members are expected to work as medical professionals outside of MBSP either concurrently or during the off-season and to plan with the Medical Director to maintain clinical proficiency if such work is outside of emergency medicine, prehospital care, or if not annually active in the care of critical patients.

ALS-C (Advanced Life Support, Critical Care)

Certification: 1) Maintain Oregon advanced licensure. Physician, CFRN or CCFP encouraged; EMT-P considered on a case-by-case basis based on practice environment outside of MBSP. 2) Biannual recertification exam consisting of cognitive and psychomotor components, comparable to initial certification as detailed above.
Protocols: Review the medical protocols on an annual basis and be aware of any updates.
Trainings: Attend a minimum of patrol refresher and four on-hill trainings/simulations per year.*
Clinical: ALS-C members are expected to work as medical professionals outside of MBSP either concurrently or during the off-season and to plan with the Medical Director to maintain clinical proficiency if such work is outside of emergency medicine, prehospital care, or if not annually active in the care of critical patients. Individuals should continue to regularly practice the specific procedures for which they are approved in their work outside of MBSP and must be credentialed to perform these procedures by a recognized institution other than MBSP medical direction.

Notes:
* Any MBSP training where direct patient care is practiced (such as on-hill mock responses) counts towards the training requirement.
** One of the days of clinical experience can be substituted by providing direct patient care on a significant number of MBSP calls at the discretion of the Medical Director.

UNIVERSAL PATIENT CARE

Management:

A. Assess scene safety and use appropriate personal protective equipment.
B. Begin initial patient assessment and determine chief complaint.
C. Manage bleeding, secure airway and start oxygen as needed per AIRWAY AND BREATHING MANAGEMENT.
D. Monitor vital signs. Use monitor if feasible for Code 3 & 4 responses.
E. Obtain CBG readings as appropriate.
F. Establish vascular access (IV/IO) as appropriate for patient's condition. ALS, ALS-C or RN only.
G. Follow appropriate Patient Care Treatment Protocol if patient's chief complaint or assessment findings change.
H. Protect patient from the environment.
I. Use only MBSP medications in patient care, except for albuterol MDI and epinephrine autoinjectors per protocol.
J. A copy of all findings, interventions, and diagnostic tests such as vital signs, CBG, medications, administered, rhythm strip, must be given to the receiving EMS agency or Mt Bachelor Clinic.
K. In stable patients, immediate transport from the mountain to a sheltered environment such as the Mt Bachelor Clinic or an EMS rendezvous is preferred, and such transport should be delayed only for critical interventions (e.g. CPR) or to appropriately package the patient for safe transport.

KEY CONSIDERATIONS:

If patient is unable to provide medical history, check for medical bracelets and necklaces that can provide critical medical information and treatment.

MOUNTAIN CLINIC ASSISTANCE REQUEST

The operations of Mt. Bachelor Ski Patrol and those of the St. Charles Mountain Clinic Urgent Care (Mount Bachelor Clinic, MBC) are separate but benefit from coordination when it is in the best interest of the patient. Under specific circumstances, it may be appropriate for the patrol to request assistance in the care of patients who have 1) have significant injuries or illnesses requiring time-sensitive interventions, 2) for whom ground or air EMS resources have been requested for transport to hospital, and 3) whose transport is expected to be delayed due to extenuating circumstances such as weather or accident.

The St. Charles Mountain Clinic is an urgent care outpatient clinic. In most cases, the clinic does not have the personnel, training, equipment, or space to care for the significantly ill or injured. When these patients to present directly to the clinic, they are transferred by EMS to hospital as quickly as possible. Accordingly, when under care of the patrol, such patients should be transferred directly to EMS services for transport to hospital without delay. If transportation is delayed, there may be patients who benefit from additional resources, manpower, or experience available through the mountain clinic.

CRITERIA:

A request for assistance from the Mountain Medical Clinic may be made if the following criteria are met:

A. Patient has been transported to the patrol aid room to await EMS arrival or;

B. Their arrival there is expected imminently;

C. The patient has significant illness or injury which is causing or is expected to imminently cause significant patient decompensation and vital sign derangement such as:

Systolic BP<90	MAP <60	HR >150, <40
RR >20	T < 32C, >39	GCS <13

Or: the patient has traumatic or medical respiratory compromise which is not responding to available interventions.

D. Patrol dispatch has been provided patient information and dispatch has requested air or ground EMS transport for the patient.

DEATH IN THE FIELD

BLS and ALS members may determine death in field by checking for signs of life. Treat all unresponsive patients without vital signs as potentially viable unless the circumstances below are present. Unattended death cases must be treated as crime scenes. Contact dispatch and medical lead / patrol leadership to ask how to proceed in unattended death cases. Contacting OLMC is recommended for determination of death, but is not required if one of the following criteria is met.

Resuscitation efforts may be withheld or stopped once started if:

A. The patient has a "DNR" order printed and present (tattoo or bracelet is insufficient).
B. The patient is pulseless and apneic in an MCI or multiple patient scene where the resources of the patrol are required for the stabilization of living patients.
C. The patient is decapitated.
D. The patient is frozen solid.
E. The patient has rigor mortis in a warm environment.
F. The patient is in the stages of decomposition.
G. The patient has skin discoloration in dependent body parts (dependent lividity), except in drownings.
H. There is a danger to rescuers.
I. Inability to provide prolonged resuscitation in a remote area. Please discuss with dispatch and contact OLMC.

NON–TRAUMATIC ABDOMINAL PAIN

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Place patient in a position of comfort.
C. If systolic blood pressure is < 90 mmHg systolic or there are S/S of poor perfusion follow SHOCK PROTOCOL and treat as urgent.
D. Use caution giving anything by mouth.

ALS

E. Treat pain per PAIN MANAGEMENT PROTOCOL and NAUSEA PROTOCOL
F. Consider obtaining 12 Lead ECG if available.

PEDIATRIC PATIENTS:

A. Consider non-accidental trauma.
B. Ensure CBG is obtained.
C. Closely monitor vital signs, blood pressure may drop quickly.

NOTES & PRECAUTIONS:

A. Abdominal pain may be the first sign of catastrophic internal bleeding (ruptured aneurysm, liver, spleen, ectopic pregnancy, perforated viscous, etc.).
B. Since the bleeding is not apparent, you must consider volume depletion and monitor the patient closely for signs of shock.

KEY CONSIDERATIONS:

Inferior myocardial infarction, ectopic pregnancy, abdominal aortic aneurysm, prior trauma, perforated viscous, emesis type and amount, last meal, bowel movements, urinary output, ruptured spleen or liver, GI bleed, abnormal vaginal bleeding.

AIRWAY & BREATHING MANAGEMENT

Indications: Maintenance and support for airway control and protection. Adequate ventilation and oxygenation of patients.

BLS/ ALS

MAINTENANCE DEVICES

A. **Nasopharyngeal Airway** (NPA). For use on unconscious patients or patients with altered LOC. Do not force. If a patient removes it, leave it out. Avoid if significant facial trauma.
B. **Oropharyngeal Airway** (OPA). For patients who have altered LOC with no gag reflex
C. **Laryngeal Mask Airway (LMA/iGel)**. A supraglottic airway for patients who have an altered LOC with no gag reflex and requiring ventilatory support.

ALS-C

D. **Cricothyrotomy if authorized** for failed airway, inability to ventilate and oxygenate, imminent deterioration without alternative. For age greater than 8 years old.

DELIVERY SYSTEMS

A. **Blow-By**. Typically used in pediatric patients who cannot tolerate a nasal cannula or mask.
B. **Nasal Cannula**. Oxygen flow rates generally 1-6 liters/minute. Provides 24-40% inspired oxygen.
C. **Oxymizer (Nasal Cannula).** Preferred Method Uses about half the oxygen as a standard nasal cannula. 0.5-6 liters/minute. Provides 24-80% inspired oxygen.
D. **Non-rebreather Mask**. Oxygen flow rates generally 10-15 liter/minute. Provides up to 90% inspired oxygen.
E. **Bag Valve Mask** (BVM) Used when patient requires ventilatory assistance. Ensure proper facial seal and head position. Adequate chest rise should be continually monitored with periodic lung auscultation. Watch for vomiting, have suction device available if possible. Use with PEEP valve if available at minimum of 5 cmH2O. Can be used as field CPAP with PEEP valve. Use with two responders, if possible, to allow two-hand mask seal.

ALTERED MENTAL STATUS (AMS)

TREATMENT: Treat per UNIVERSAL PATIENT CARE.

HYPOGLYCEMIA

Determine capillary blood glucose level. If < 70 mg/dl treat with the medications below. Repeat testing 15 minutes after treatment. May repeat treatment.

BLS

A. Administer **oral glucose** if patient is alert with a gag reflex. If patient is unconscious or unable to swallow, place patient on lateral side and rub small amounts oral glucose into gums.

ALS

B. **Dextrose 50%, 12.5-25 grams slow IV/IO** if unable to tolerate oral glucose or ALOC. Administer slowly through large peripheral IV or IO, or dilute if there is any concern of IV patency.

NOTES & PRECAUTIONS:

A. Most patients with symptomatic hypoglycemia should be transported to hospital or to clinic, based on patrolled judgment. Patient may be treated and released if:
    a. Only oral glucose or food/drink was administered, and;
    b. Repeat blood glucose is in the normal range, and;
    c. All symptoms have resolved, and;
    d. Patient does not use insulin.

PEDIATRIC PATIENTS:

A. Administer **dextrose 25% 2ml/kg IV/IO** (mix 1ml/kg D50 with 1ml/kg saline) if unable to tolerate oral glucose.
B. Repeat dextrose as needed.
C. Pediatric patients with symptomatic hypoglycemia should be transported to hospital or clinic

HYPERGLYCEMIA

Defined as glucose > 350 mg/dL for the purposes of this protocol.

BLS

A. Administer oral fluids if patient is alert and upright with a gag reflex. Do not administer insulin, including that provided by the patient. Transport patient to EMS or clinic.

ALS

B. **Consider NS or LR 1,000 – 2,000 ml IV/IO bolus** if patient is suspected to bein DKA or HHS. Do not delay transport for access or administration.

OPIATE OVERDOSE

BLS

A. Assist ventilations and if unable to effectively BVM, then insert supraglottic airway as needed.
B. If opiate intoxication is suspected, administer **naloxone (Narcan) 0.4 – 2 mg IN only**.
C. If no improvement and opiate intoxication is still suspected, repeat Narcan IN every 3-5 minutes as supplies allow.

ALS

D. If opiate intoxication is suspected, administer **Narcan 0.4 – 2 mg IV/IO/IM/IN**.
E. If no improvement and opiate intoxication is still suspected, repeat Narcan every 3-5 minutes as supplies allow.

PEDIATRIC PATIENTS:

A. **Narcan 0.1 mg/kg IV/IO/IM/IN** to a maximum of 2 mg.

COMBATIVE PATIENT

BLS

A. Consider medical causes for behavior (hypoxia, head injury, hypoglycemia, seizure, stroke, poisoning).
B. Request law enforcement assistance if needed/feasible.
C. Leave the scene if you think you/your team's safety is at risk.
D. Consider physical restraint. Physical restraint is used to protect the safety of patients and responders. Patient restraints should be utilized only when necessary and, in those situations where the patient is exhibiting behavior that presents a danger to themself and/or others.

PHYSICAL RESTRAINT GUIDELINES

A. Use the minimum level of physical restraints required to accomplish patient care and ensure safe transportation (soft restraints may be sufficient). If law enforcement or additional manpower is needed, call for it prior to attempting restraint procedures. Do not endanger yourself, your team, or bystanders.
B. Avoid placing restraints in such a way as to preclude evaluation of the patient's medical status.

PHYSICAL RESTRAINT PROCEDURE

A. Place patient face up or in lateral position in litter or toboggan (NOT PRONE). Closely monitor the patient's respiratory status.
B. Secure ALL extremities to litter/toboggan.
C. If necessary, utilize cervical spine precautions (C-collar, tape, vacuum mattress, foam, bags, etc.) to control violent head movements.
D. Secure the patient with litter straps.
E. Evaluate the patient's respiratory and cardiac status continually to ensure that no respiratory compromise exists. Monitor SpO_2 if possible.
F. Do not tighten chest straps to the point where they restrict breathing.

G. Have suction available.
H. Remove restraints as soon as safe to do so.

SEDATION PROCEDURE

A. Evaluate the personnel needed to safely attempt restraining the patient.
B. Attempt to determine if the patient's agitation is related to a drug/alcohol intoxication or withdrawal, medical or psychiatric problem.
C. Consider and treat medical causes of combativeness (hypoxia, head injury, hypoglycemia).
D. Vital signs should be assessed within the first 5 minutes and thereafter as appropriate (at least every 15 minutes and before additional medication) if possible.
E. Use CO2 monitoring if available.

ALS

A. For moderate/severe agitation: **Versed 2.5mg IV/IO/IM/IN,** may repeat once after 5min. Contact OLMC if more needed.

ALS-C

Consider sedation if clinically appropriate. Contact OLMC prior to sedation.

B. For severe agitation**: ketamine 2-4mg/kg IM** or **1mg-2mg/kg IV/IO.** Establish IV when safe to do so. Repeat Q20 minutes as needed. Ideally start with 1mg/kg.

SEDATION GUIDELINES

Sedative agents may be needed to restrain the violently combative patient. These patients may include alcohol and/or drug-intoxicated, combative, or head injury patients.

NOTES & PRECAUTIONS:

B. If patient is disoriented, think of medical causes. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL if safe to do so. Look for Medical Alert tags.
C. If patient is suicidal, do not leave alone unless your safety is at risk.
D. All patients in restraints must be monitored closely.
E. Observe for decreased LOC, focal neurological findings, and hypothermia.

ALTITUDE CONDITIONS

ACUTE MOUNTAIN SICKNESS

Acute Mountain Sickness (AMS) is a term applied to a group of unpleasant and sometimes debilitating symptoms related to high altitude. Their primary cause is likely the direct effect of low oxygen to the brain. However, changes in the circulation of the blood to the brain may also be important. Occurrence of AMS depends on the elevation, rate of ascent, and individual susceptibility. No physiologic tests can determine if a person is susceptible to altitude related conditions prior to the onset of severe symptoms.

Symptoms may start anytime from **1-24 hours** after arrival at altitude and have been recorded as low as 7600 feet. The most common symptoms are headache, dizziness, fatigue, shortness of breath, loss of appetite, nausea, vomiting, and malaise. Drowsiness, anxiety, hyperventilation, and hypovolemia may also occur. Children may be more susceptible to altitude related conditions. Patients with symptoms severe enough to require toboggan transport must be seen at MBC or transported to hospital for evaluation and continued treatment. Mild AMS can progress to fatal high altitude cerebral edema (HACE) or high-altitude pulmonary edema (HAPE), and descent to lower elevation is the only treatment.

TREATMENT:

BLS

A. ASSURE AIRWAY, BREATHING, AND CIRCULATION.
B. Protect patient from the environment.
C. Monitor oxygen saturation.
D. Supplemental **oxygen**, with goal $SpO_2 \geq 92\%$.
E. **ibuprofen 600mg PO** may be used for headache.
F. **Acetaminophen 1000mg PO** may be used for headache.
G. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
H. **TRANSPORT TO LOWER ELEVATION IS THE TREATMENT FOR ALL ALTITUDE RELATED CONDITIONS.**

ALS

A. IV/IO, per SHOCK PROTOCOL.
B. **ondansetron 4 mg IV/IO/IM/ODT** as needed for nausea and vomiting.
C. **Limit IV/IO fluids unless you suspect hypovolemia.**

Consider High Altitude Pulmonary Edema (HAPE) and High-Altitude Cerebral Edema (HACE).

HIGH ALTITUDE PULMONARY EDEMA (HAPE)

HAPE can be life threatening, occurring when the small airspaces of the lungs fill with fluid that has crossed through the walls of the pulmonary vasculature. As more alveoli fill with fluid, oxygen transfer from air to pulmonary capillaries is reduced. A drop in the concentration of oxygen in the blood results in dyspnea, cyanosis, impaired cerebral function, and ultimately death.

The disorder may occur at 8000 feet and above, with symptoms generally occurring after 1 to 4 days at altitude. This is unlikely to be observed on Mt Bachelor except in individuals with predisposing medical problems, such as pulmonary hypertension.

Symptoms include: shortness of breath, a feeling of chest tightness, weakness, fatigue, cough productive of white, frothy sputum, and in some cases, bloody sputum. HAPE can occur independent of AMS and/or HACE.

TREATMENT:

BLS

A. ASSURE AIRWAY, BREATHING, AND CIRCULATION.
B. Protect patient from the environment.
C. Monitor oxygen saturation.
D. Supplemental **oxygen**, with goal $SpO_2 \geq 92\%$.
E. Evacuate ASAP, using the most effective means at your disposal.
F. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
G. Consider LMA as needed for airway management.

ALS

A. USE BVM with PEEP valve set to 10 mmHg as CPAP in severe cases.

NOTES & PRECAUTIONS:

With descent, dramatic clinical improvement is typically observed even though other findings of pulmonary edema may persist. Even patients who improve should be transported to hospital for evaluation.

ANAPHYLAXIS & ALLERGY

Anaphylaxis is a severe, rapid-onset, systemic allergic reaction that can be life-threatening without prompt intervention, most commonly triggered by foods, medications, or insect stings. It typically involves multiple organ systems, with symptoms such as respiratory compromise (dyspnea, wheezing, stridor), mucosal or skin changes (urticaria, angioedema), hypotension, and gastrointestinal symptoms (vomiting, diarrhea). Diagnosis is clinical, based on rapid onset of symptoms after exposure to a likely allergen. Immediate intramuscular epinephrine is the first-line treatment and should be administered as soon as anaphylaxis is suspected.

In contrast, an allergic reaction is usually mild, gradual in onset, and affects a single body system, such as causing hives, itching, or nasal congestion. Epinephrine is not indicated for simple allergy, and diphenhydramine alone may be given for symptomatic relief.

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Remove stinger or source of allergen.
C. If respiratory distress, supplemental **oxygen** with goal of $SpO_2 \geq 92\%$ and assist with BVM PRN.
D. **epinephrine 0.5 mg IM (0.5 ml of 1mg/ml concentration)** if signs of anaphylaxis. If no improvement noted, repeat epinephrine as needed every 5-15 min.
E. **diphenhydramine 50 mg PO** if patient can swallow.
F. **DuoNeb 2.5-0.5 mg nebulized** if known history of asthma or COPD, or for wheezing.

ALS

G. **diphenhydramine 50 mg IV/IO/IM**.
H. Treat with fluid challenge per SHOCK PROTOCOL.

ALS-C (OR ALS With OLMC)

I. With diminished perfusion or shock symptoms, consider **epinephrine IV infusion (1mg in 1000 ml or 0.5mg in 500 ml)** to titrate SBP>90. Start at 2mcg/min (120ml/hr *If using 10 drops/min tubing these equals 1 drop every 3 seconds, best to count 10 drops in 30 seconds to reduce error).*

PEDIATRIC PATIENTS:

If patient exhibits signs of anaphylaxis and/or allergy with significant respiratory distress:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Remove stinger or source of allergen.
C. If respiratory distress, supplemental **oxygen** with goal SpO2≥92% and assist with BVM PRN.
D. May administer **pediatric epinephrine auto-injector (epi pen) 0.15 mg IM** if available.
E. If trained/approved, may administer **epinephrine 0.15 mg IM (0.15 mg 1mg/ml)**.
F. If a pediatric device is not available, **adult epinephrine auto-injector (epi-pen) 0.3 mg** may be administered if available.
G. If no signs of improvement, epinephrine was me repeated every 5-15 minutes as needed.

ALS

A. With diminished perfusion or shock symptoms administer (in place of epi pen above):
   a. **0.01 mg/kg epinephrine IM (1mg/ml concentration)** to a maximum single dose of 0.5 mg (0.5 ml of 1mg/ml concentration). If unable to calculate weight use 0.15 mg (0.15 ml of 1mg/ml concentration).

B. Treat with fluid challenge per SHOCK PROTOCOL.
   1. **(Peds fluid bolus 20 ml/kg)**
   2. Lower limit of normal systolic BP = 70 +(2 x age)
   3. Use caution if more than 2 boluses needed****
C. If no improvement noted, repeat epinephrine every 5 minutes.
D. **diphenhydramine 1 mg/kg IV/IO/IM**.

NOTES & PRECAUTIONS:

A. Allergic reactions are not necessarily anaphylaxis. Treatment may not be indicated if only hives and itching are present. In combination with skin rash, the following signs should be treated as anaphylaxis: syncope, abdominal cramps/vomiting, dyspnea, altered mental status, or oropharyngeal edema.
B. Epinephrine increases cardiac workload and may cause angina or acute myocardial infarction in at-risk individuals. This caution should not preclude its use in life-threatening anaphylaxis.
C. It is acceptable and safe to use an expired epinephrine auto-injector in a life-threatening emergency if no in-date device or alternative epinephrine is available and the solution visible in the auto-injector is clear. Check that the solution is not discolored, cloudy, or containing particulates, and do not administer if these are present.

KEY CONSIDERATIONS:

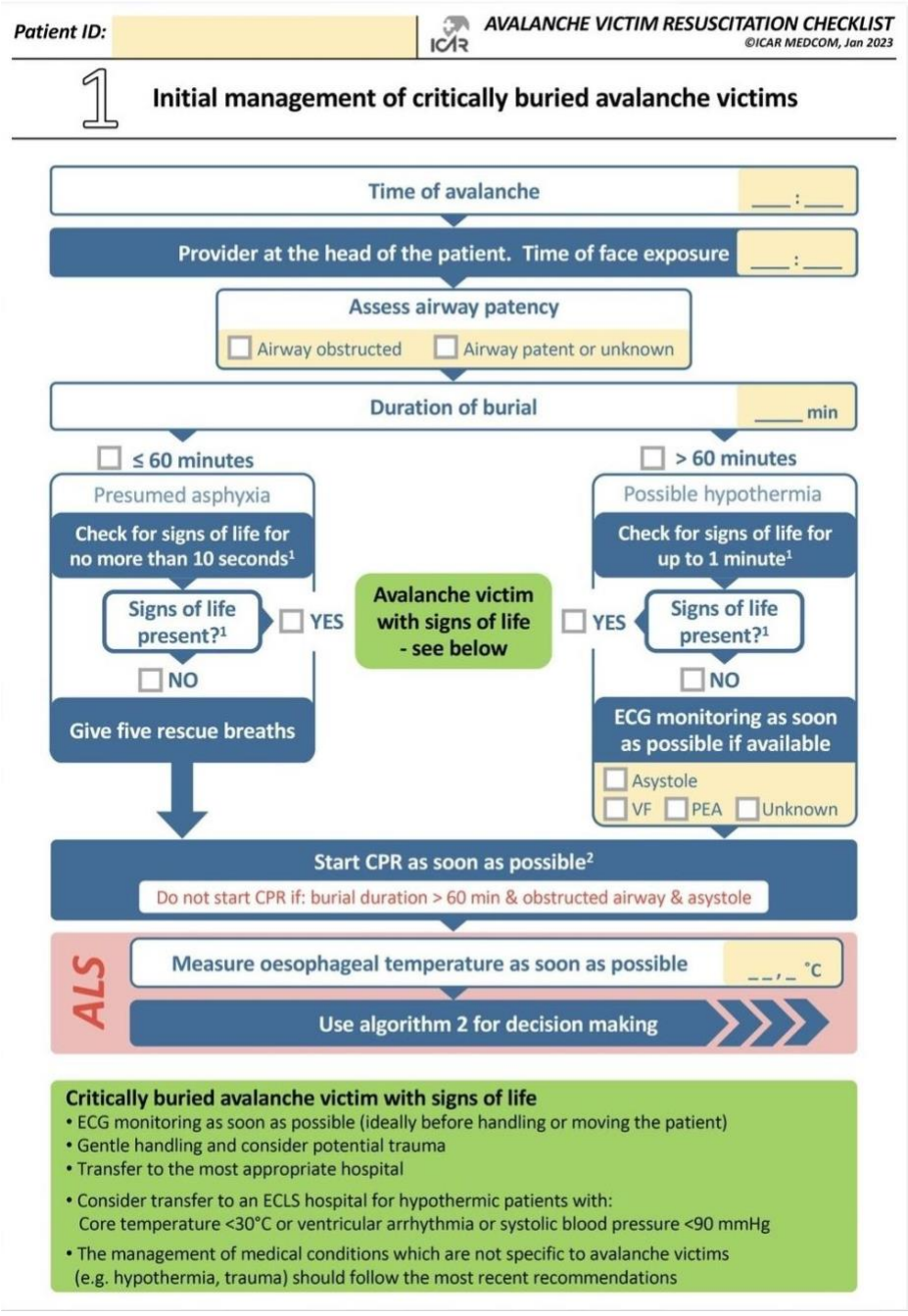
Toxin exposure, insect bites/stings, recent exposure to allergen, dyspnea or hives, abdominal cramps, vomiting, syncope, chest or throat tightness, swelling, numbness.

AVALANCHE VICTIM

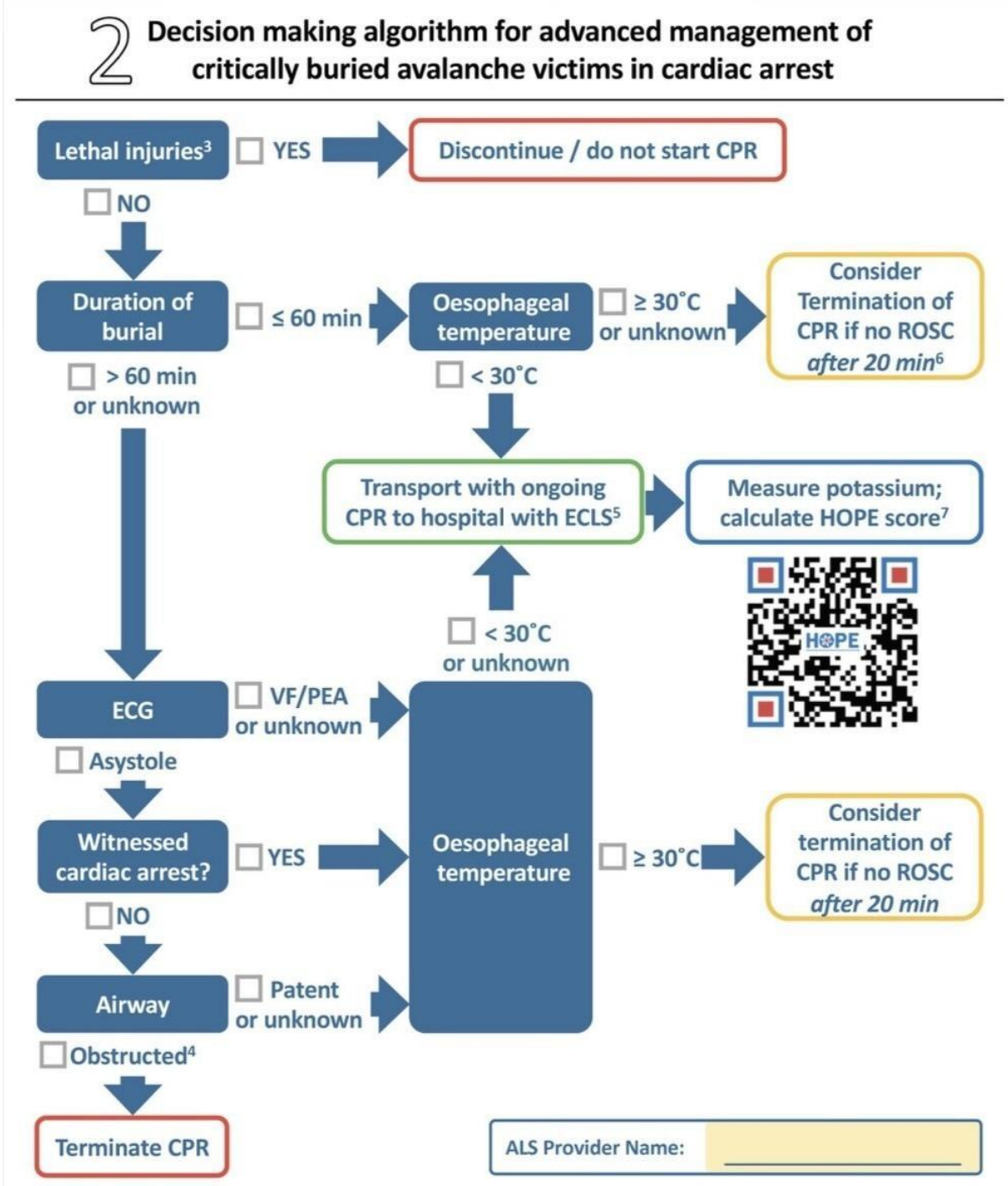
Resuscitation of buried avalanche victims should follow the ICAR Avalanche Victim Resuscitation Checklist. Patients who are not buried should be treated based on UNIVERSAL PATIENT CARE and relevant TRAUMA protocols.

Patients should be treated on scene for the BLS portion of the algorithm. Patient should be transported to the aid room or EMS rendezvous to facilitate ALS decision-making unless they have injuries incompatible with life. Transport patient per CARDIAC ARREST protocol.
All critical burials with signs of life should be transported to hospital.

BLS:



ALS:



1. Signs of life include any of the following: A, V or P from AVPU (alert, responsive to verbal stimuli, responsive to pain, unresponsive) or Glasgow Coma Scale >3, any visible movement, respirations, or a palpable carotid or femoral pulse (for experienced ALS providers).
2. Standard compression / ventilation rates. Drug dose and defibrillation depending on core temperature or, if not available, burial duration. If ventricular fibrillation persists after three shocks, delay further attempts until the core temperature is ≥30°C. Withhold adrenaline if the core temperature is <30°C.
3. Assess for lethal injuries: decapitation; truncal transection; whole body decomposed. If present, do not start CPR.
4. An "obstructed" or "blocked" airway requires both the nose and mouth to be completely filled with compact snow or debris.
5. With a deeply hypothermic patient (<28°C), if rescue is too dangerous consider delayed CPR and if transport is difficult consider intermittent CPR.
6. If core temperature measurement is not available, hypothermic CA may be considered, at the rescuer's discretion, despite a burial duration of ≤60 minutes in a victim with a patent airway and no signs of life where there is the possibility of very rapid cooling (e.g. burial during ascent, thin or small person, minimally dressed, sweating before burial).
7. In-hospital prognostication of successful rewarming in an avalanche victim should include the estimation of the survival probability using the HOPE score. If any doubt exists whether the avalanche victim may have been asphyxiated despite critical burial, the HOPE score should be calculated using the NON-ASPHYXIA option. This will reduce the risk of undertreatment. If the HOPE score cannot be determined, the combination of a potassium <7 mmol/L and a temperature <30°C may be used instead to help indicate ECLS rewarming.

BURNS

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Establish ABCs.
    A. Consider CO poisoning if patient was in a confined space.
    B. If in respiratory distress, administer **oxygen** with goal $SpO_2 \geq 92\%$, assist ventilations as needed, and intubate with LMA as needed.
    C. Remove constricting/obstructing clothing and jewelry.
    D. If shock is present, consider underlying causes.
C. Stop the burning process.
    A. Remove clothes, flood with water ONLY if flames or smoldering is present.
D. Transport ASAP to the most appropriate receiving facility.
E. Cool burned areas if small (<10% total body surface area (TBSA)) and superficial then cover with dry sterile dressings. Discontinue cooling if patient begins to shiver. Attempt to leave unbroken blisters intact. If >10% TBSA apply bacitracin ointment and cover with nonadherent dressing.
F. Treat pain per PAIN MANAGEMENT PROTOCOL.
G. Evaluate degree of burn and percentage of body surface area.
    A. Use patient's palm as reference for 1% body surface area. Do not include superficial burned areas.
        i. Superficial – looks like sunburn, blistering with blanching tissue
        ii. Deep – non-blanching dermis, exposed fat, muscle or bone
H. Critical burns are defined as:
    A. Any degree 25% or more of body surface area.
    B. Full thickness burns greater than 10% of TBSA.
    C. Burns with inhalation injuries such as singed nose hairs, intraoral soot, stridor.
    D. Electrical burns.
    E. Burns to hands, feet, genitalia, face or circumferential burns.
    F. Burns in high-risk patients (pediatrics, elderly, significant cardiac or respiratory problems).
I. Dress burns with dry sterile dressings, ideally non-stick gauze or xeroform if <10% TBSA
J. If chemical burn:
    A. Consider HazMat response.
    B. Protect yourself from contamination.
    C. If chemical is dry, carefully brush off prior to flushing.
    D. Flush contaminated areas with copious amounts of water.
K. If electrical burn:
    A. Make sure that victim is de-energized prior to making contact.
    B. Apply sterile dressings to entry and exit wounds. Suspect internal injuries.
    C. Obtain EKG or rhythm strip

ALS

L. Start large bore IVs in unburned areas if possible and administer **500ml/hr LR or NS** for >20% TBSA deep burns until patient reaches burn center, may consider bolus if hypotensive.

PEDIATRIC PATIENTS:

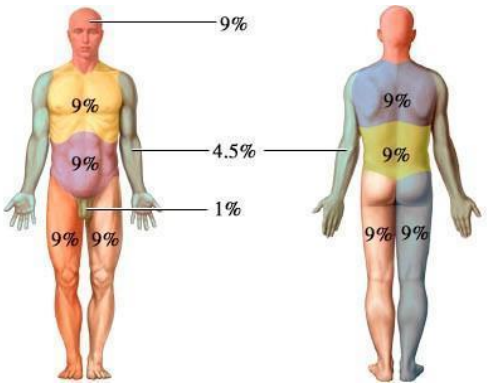
A. Treat pain per PAIN MANAGEMENT PROTOCOL.
B. Consider possibility of non-accidental cause in children.

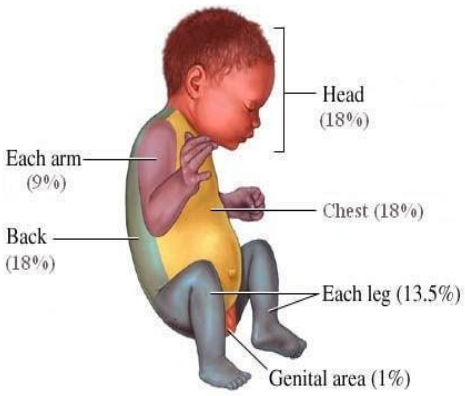
KEY CONSIDERATIONS:

Enclosed space, airway sounds, possibility of inhaled toxins, past medical history, CO/cyanide poisoning, evidence of respiratory burns, extent of burns, explosion or trauma injuries. If airway burns are suspected, aggressively manage airway EARLY!

Body Surface Area:

In adults, the area of the patient's own palm and fingers is about 1% total body surface area.





CARDIAC CONDITIONS

GENERAL CPR GUIDELINES			
Maneuver	Adult Adolescent and Older	Child 1 Year to Adolescent	Infant Under 1 Year of Age
Airway	Head tilt-chin lift. Jaw thrust if suspected trauma. Adjuncts as needed.		
Breaths: Without compression	10 to 12 breaths/min (Approximate)	12 to 20 breaths/min (Approximate)	
Breaths with compressions	One breath every 6 – 8 seconds (8 to 10 breaths/min) synchronous with chest compressions. About 1 sec/breath. Visible chest rise.		
Foreign Body – Conscious Pt	Abdominal thrusts (*use chest thrusts in pregnant and obese patients or if abdominal thrusts are not effective*)		Back blows and chest thrusts
Compression Landmarks	Lower half of sternum between nipples		Just below nipple line (lower half of sternum)
Compression Method	Heel of one hand, other hand on top	Heel of one hand, as for adults	2-3 fingers or 2 thumb- encircling hands
Compression Depth	At least 2 inches	Approximately one-third anterior/posterior depth of chest. (Approx. 2” in child and 1 ½” in infant)	
Compression Rate	100-120 per minute *Stayin’ Alive* or *Another One Bites the Dust*		
Compression-Ventilation Ratio	30:2 without supraglottic airway. Continuous after supraglottic airway.		
AED GUIDELINES			
AED Defibrillation	Use adult pads, do not use child pads.	Use pediatric dose-attenuator system for children and infants if available.	
NEONATE GUIDELINES			
Assisted ventilation should be delivered at a rate of 40-60 breaths/minute to achieve or maintain a heart rate > 100 bpm. The ratio of compressions to ventilations should be 3:1, with 90 compressions and 30 breaths to achieve approximately 120 events per minute.			

CARDIAC ARREST - ATRAUMATIC

This protocol does not refer to the care of patients with a suspected traumatic cause of cardiac arrest. Refer to the following protocol (CARDIAC ARREST - TRAUMATIC) for care of such patients.

The first minutes of basic life support following an atraumatic cardiac arrest have a significant impact on patient survival. High quality CPR and early defibrillation are the two life-saving measures that we can deliver to these patients. For this reason, unless there is a concern for the safety of the patient or responders, transport of the patient should be delayed in favor of performing 20-30 minutes of high-quality CPR on scene.

The protocol differentiates between *scene treatment* and *treatment during transport* below.

SCENE TREATMENT:

BLS

A. Call for additional resources.
B. Move the patient to a firm flat surface if immediately available.
C. Initiate CPR.
D. Use AED when available. Follow manufacturer's recommended energy/escalation.
E. Consider an LMA, but do not cease CPR for insertion.
F. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
G. Consider and treat possible causes.
H. Establish access: If IV cannot be established after 2 attempts, place I/O.

ALS

I. Consider **epinephrine 1 mg IV/IO** every 3-5 minutes. Administer epinephrine as soon as possible for non-shockable rhythms or pediatric patients.
J. Follow AHA, ACLS, and PALS guidelines as equipment, medications, and resources allow.

KEY CONSIDERATIONS:

When performing CPR, the focus should be on deep and fast compression with **limited to no interruptions in compressions.** Allow for full chest recoil. Compressions: respirations should be 30:2 until an LMA is in place. After LMA placement, compressions should be continuous, and respirations 10/min.

TRANSPORT DURING CPR

After 20-30 minutes of on-scene resuscitative efforts the patient should be prepared for transport to EMS rendezvous. Providing high quality, continuous manual CPR and ventilation during toboggan transport is infeasible and poses a significant risk to the rescuer with a low probability of providing benefit to the patient. Accordingly, it is best to use a mechanical CPR device to provide compressions and to make intermittent stops for ventilation and rhythm checks.

Oxygen is effectively circulated by compression-only CPR for 4-6 minutes after arrest. Blood oxygen saturation can be restored to near-normal levels after 2 minutes of effective ventilation. The transport protocol aims to make use of these timeframes to intermittently ventilate and transport the patient.

A. Place the mechanical CPR device during a rhythm check, minimizing interruptions to CPR.
B. Transition patient to toboggan by beaming the patient with CPR ongoing.
C. Prior to starting transport, ensure that the patient has received uninterrupted BVM respirations with high flow supplemental O2 at a rate of 10 breaths per minute (every 6 seconds) for 1 minute.
D. Leave defibrillator pads attached to the patient, AED/monitor should accompany the patient in the toboggan.
E. Transport patient by toboggan with compressions ongoing and no breaths. Move as fast as is safe for the patient and team.
F. At a minimum of every 4 minutes:
    a. Stop moving in a safe location.
    b. Provide one minute of breaths by BVM with high flow O2.
    c. Check the position of the mechanical compression device and prepare to reposition it as needed.
    d. Pause compressions and breaths for a rhythm check and defibrillate if indicated.
    e. Resume compressions, provide one minute of breaths by BVM with high flow O2.
    f. Resume transport.
G. When arrived at the EMS rendezvous location, continue resuscitation per Scene Treatment protocol above.

Return of Spontaneous Circulation (ROSC)

ROSC is defined by the restoration of a perfusing heart rhythm with adequate circulation, evidenced by the presence of a palpable pulse or measurable blood pressure, and the absence of ongoing chest compressions.

If there is any doubt as to whether the patient has a pulse or has sufficient circulation (e.g. organized electrical activity on the monitor but no palpable pulse) it is better to continue CPR.

Patients with ROSC after cardiac arrest frequently rearrest unless the cause for the arrest (e.g. hypoxia) has been addressed. Monitor these patients closely, immediately investigate any change in clinical status, and be prepared to resume CPR at any time.

If patient has return of spontaneous circulation:

BLS

A. Optimize ventilation and oxygenation.
B. Determine capillary blood glucose level.
C. Place LMA as needed.
D. Titrate oxygen to the lowest level required to achieve an $SpO_2 \geq 92\%$ but <100%.
E. Do not hyperventilate (ideal rate is 8- 12 breaths/minute).
F. Protect patient from the environment.
G. Carefully transport the patient to EMS rendezvous, stopping frequently to check patient condition, respirations, and pulse. Keep Lucas device attached to patient in standby mode when transporting.

ALS

H. If hypotensive (systolic BP < 90 mmHg) consider **NS or LR fluid bolus 1,000ml**.

ALS-C (OR ALS With OLMC)

I. With diminished perfusion or shock symptoms, consider **epinephrine IV infusion (1mg in 1000 ml or 0.5mg in 500 ml)** to titrate SBP>90. Start at 2mcg/min (120ml/hr, *if using 10 drops/min tubing this equals 1 drop every 3 seconds, best to count 10 drops in 30 seconds to reduce error).*

CARDIAC ARREST - TRAUMATIC

In contrast to medical causes of cardiac arrest, cardiac arrest resulting from blunt traumatic injury has a very low survival rate, as causes of traumatic arrest such as massive head injury or internal bleeding are not readily reversible. Resuscitation efforts focus on immediate performance of potentially lifesaving procedures, and CPR is a lower priority.

Life-saving interventions include critical hemorrhage control, airway management, and treatment of pneumo-/hemothorax. BLS providers should focus on delivery of quality CPR with emphasis on airway management, but must also be aware that CPR may be paused for procedures. ALS providers should address reversible causes of arrest, pausing CPR if needed to perform procedures.

Treatment:

BLS

A. Call for additional resources.
B. Move the patient to a firm flat surface if immediately available.
C. Address causes of life-threatening bleeding.
D. Initiate CPR.
E. Place LMA if facial trauma permits. May pause CPR if needed to facilitate airway management.
F. Use AED when available.
G. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
H. Consider and treat possible causes.

ALS

A. Perform bilateral **needle decompression.**
B. Establish IV/IO access, give IV fluid bolus 500-1000ml.
C. Consider **epinephrine 1 mg IV/IO** every 3-5 minutes.
D. Follow AHA, ACLS, and PALS guidelines as equipment, medications, and resources allow.

ALS-C

E. Perform bilateral **Finger Thoracostomy** instead of **Needle Thoracostomy**, or if **Needle Thoracostomy** has already been performed and patient remains in arrest.
F. Consider **Cricothyroidotomy** if head/neck trauma is preventing adequate ventilation despite OPA/NPA, LMA.

ROSC: If return of spontaneous circulation is achieved, treat as per “ROSC” protocol above.

Transport: Initiate transport using continuous mechanical CPR as per TRANSPORT DURING CPR protocol above after initial airway, hemorrhage control, and thoracostomy interventions have been made. Do not delay transport to perform additional rounds of CPR on scene.

CHEST PAIN/ACUTE CORONARY SYNDROME

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Obtain vital signs including SpO_2 and obtain a medical history.
C. Consider **oxygen** to maintain $SpO_2 \geq 92\%$.
D. Assess circulation and consider causes.
E. Transport ASAP.
F. **Aspirin 324mg PO (chew)** (refer to relative contraindications on med sheet).
G. Monitor cardiac rhythm if available.
H. Obtain 12 lead ECG if trained; transmit to ALS or OLMC when/if able. All ECGs should be given to the transporting agency so that they can be given to the receiving provider.

ALS

A. Establish IV/IO access. Avoid placement in right wrist.
B. Analysis of 3 or 12 Lead ECG if available.
C. **fentanyl 25-50 mcg IV/IO/IM/IN** q15' PRN if BP allows.
D. Fluid Bolus if suspect R sided MI.
E. Rapid transport to PCI capable hospital (SCMC-Bend) if suspect MI based on ECG and/or symptoms.
F. Follow ACLS protocols if equipment/meds available.

PEDIATRIC PATIENTS:

A. Consider pulmonary causes or trauma.
B. Contact OLMC for advice as needed.

CRUSH INJURY/ENTRAPMENT

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE; treat life threatening injuries prior to addressing extremities.
B. Protect patient from environment (rain, snow, direct sun, etc.). If applicable, begin warming methods to prevent hypothermia (warm blankets).
C. Contact Bend Fire through EMS dispatch for heavy rescue assistance as needed.
D. Plan extrication activities to allow for periodic patient assessment. Plan for occasional extrication equipment "shut down" to assess vital signs/heart rhythm.
E. Consider tourniquet proximal to injury just prior to extraction if there is a deep laceration or concern for partial amputation.
F. Carefully track vitals, IV/IO fluids (ALS), and medications during extrication.
G. Evaluate degree of entrapment and viability of extremities (absent pulse, blanched skin, capillary refill, diminished sensation, extremely cold to the touch). Contact OLMC for direction if the duration of entrapment is greater than four hours prior to rescuer arrival.
H. If extrication of a limb will be prolonged, direct mechanical crush injuries are present (tissue is crushed), or patient's condition is deteriorating, call OLMC immediately on-scene amputation by physician.
I. Carefully assess collateral injuries that may have occurred during event.
J. If patient is trapped in a heavy dust environment, consider methods to provide filtered **oxygen** to the patient. If patient is in respiratory distress, consider dust impaction injuries and prepare to administer **nebulized albuterol-ipratropium (DuoNeb)**.
K. Consider early activation of air-transport as medical crew will have additional medications to treat Crush Syndrome. Contact OLMC for additional directions.

ALS

L. During extrication of a severely trapped patient who is at risk for crush syndrome, administer **NS or LR 1,000 – 2,000 ml IV/IO bolus**. Normal saline preferred.
M. PAIN MANAGEMENT PROTOCOL.
N. If deep laceration, partial or full amputation or severe, hemorrhage, consider tourniquet a hand breadth proximal to injury.
O. Consider **calcium 500mg and sodium bicarbonate 50mEq** administration if able, particularly if signs or symptoms of hyperkalemia such as peaked T waves.

NOTES & PRECAUTIONS:

A. Do not allow any personnel into extrication area (inner circle) without proper protective equipment and thorough briefing to include evacuation signal.
B. Keep patient well-hydrated and warm during extrication efforts.
C. Constantly evaluate the risks associated with your position, and the possibility of complicating factors (hazardous materials, wind, rain or runoff, gas leaks, etc.).

KEY CONSIDERATIONS: Previous medical history, current medications, length and degree of entrapment, use of technical rescue, length of extrication, alternate treatment plans.

EYE EMERGENCIES

TREATMENT:

A. Treat per UNIVERSAL PATIENT CARE.
B. To decrease intraocular pressure, patients should be transported in a sitting position of at least 30 degrees unless contraindicated.
C. Treat specific injuries as follows:
    a. Chemical Burns
        i. Irrigate with **LR** (preferred), **saline, sterile water, or tap water** for at least 30 minutes.
        ii. Do not attempt to neutralize acids or bases.

    b. Direct Trauma to Eye (Suspected Rupture/Penetration of Globe)
        i. Protect the affected eye and its contents with a hard shield or similar device and cover the other eye.
        ii. Follow PAIN MANAGEMENT PROTOCOL as indicated. ALS consider **ondansetron** to prevent nausea and vomiting.

    c. Foreign body on Outer Eye
        i. Do not wipe eye.
        ii. Consider irrigation.

NOTES & PRECAUTIONS:

A. Document new onset of blurring, double vision, perceived flashes of light or other visual changes.
B. Contact lenses should be removed, if possible.
C. Consider covering both eyes to reduce eye movement, if tolerated by the patient and does not impede evacuation.

HEAT ILLNESS

TYPES:

Heat cramps are a benign condition caused by electrolyte imbalance. The conditions can generally be treated by allowing 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 activity.

Heat exhaustion presents as volume depletion with normal mental status and normal body temperature. These patients are typically hypovolemic and may require up to three liters of **LR or NS IV** over the first 4 hours. These people should avoid heat and exercise for 24-36 hours.

Heat stroke signs include elevated body temperature and altered mental status. The patient may or may not be sweating. These patients may or may not be volume depleted. Give fluids cautiously or pulmonary edema may result. Heat stroke is a critical medical emergency with high mortality rates.

TREATMENT:

BLS

A. Treat per Universal Patient Care.
B. Move patient to a cool environment.
C. If you suspect abnormally elevated body temperature, remove outer clothing and begin cooling measures that maximize evaporation (spray bottle with tepid water, cool wipes, fans). Cold water immersion Is the gold standard in heat stroke.
D. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
E. Give PO fluids with oral rehydration salts if alert and able to manage their own airway.

ALS

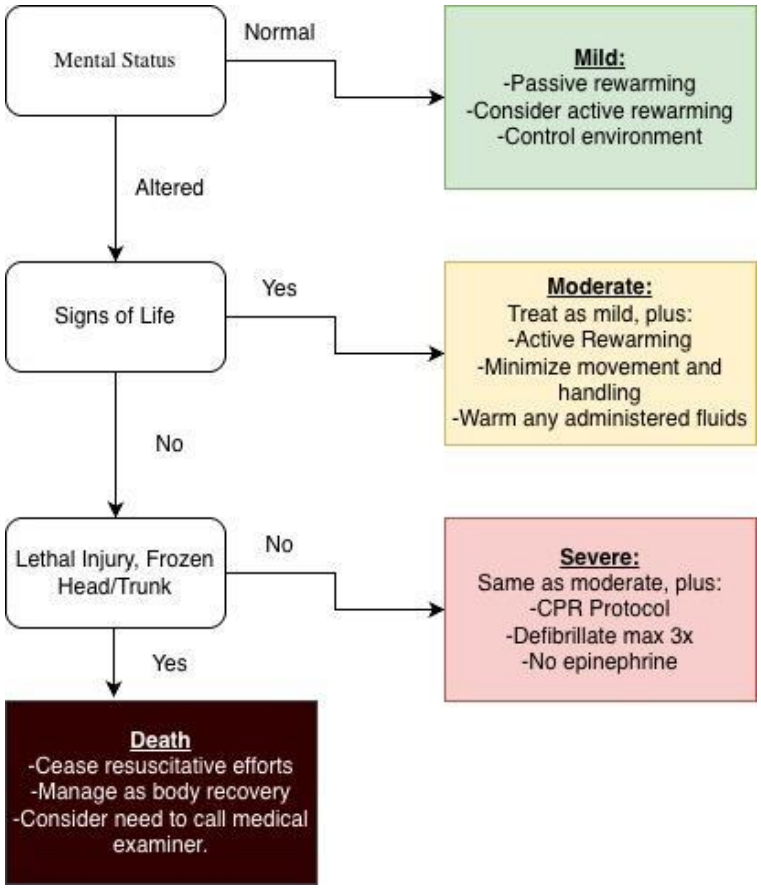
F. Start IV/IO **NS or LR** and adjust rate as needed if you suspect hypovolemia.
G. If blood pressure is less than 90 mmHg systolic, treat per SHOCK PROTOCOL.

NOTES & PRECAUTIONS:

A. Heat stroke is a medical emergency. Differentiate from heat cramps or heat exhaustion. Be aware that heat exhaustion can progress to heat stroke.
B. Wet sheets over a patient without good airflow will increase temperature and should be avoided.
C. Suspect hyperthermia in patients with altered mental status or seizures on a hot, humid day, and in elderly patients on multiple medications.
D. Consider sepsis and/or contagious disease. Examine patient for rashes or blotches on the skin or nuchal rigidity.
E. Many psychiatric medications alter the body's heat regulation.
F. Avoid diphenhydramine

HYPOTHERMIA AND FROSTBITE

HYPOTHERMIA



A. Treat per UNIVERSAL PATIENT CARE.
B. ABCs; check for up to 60 seconds to confirm respiratory arrest, pulseless cardiac arrest.
C. Gently remove wet clothing. Prevent further heat loss/wind chill, especially during transport.
D. Passive rewarming includes dry clothes & insulation/packaging.
E. Active rewarming includes chemical heat blankets or hot packs around the axillae and groin. Patients undergoing active rewarming should also receive passive rewarming.
F. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
G. ALS avoid unwarmed IV fluids if possible.
H. If the patient is in suspected hypothermic cardiac arrest, defibrillate a maximum of 3 times and do not administer **epinephrine**.

NOTES & PRECAUTIONS:

A. Hypothermia may be preceded by other disorders (alcohol, trauma, overdose). Look for and treat any underlying conditions while treating the hypothermia.
B. In absence of vital signs/signs of life in the setting of hypothermia, clinical judgment must be used weighing the risks to rescuers against the likelihood of successful resuscitation of the patient. Consider contacting OLMC for guidance.

FROSTBITE

A. Protect injured tissue. Replace wet or inadequate clothing.
B. Dry dressings and splinting are preferred, but walking on a frozen foot is permissible if it facilitates rescue.
C. In general, field rewarming is not recommended. Contact OLMC if there is a significant delay in transport.
D. BLS**: ibuprofen 600 mg PO.**

INTRAOSSEOUS ACCESS

ALS

DEFINITION

Intraosseous (IO) cannulation is an alternative technique for trained ALS providers to establish access in critical adult and pediatric patients when peripheral IV access is difficult or delayed.

INDICATIONS

A. When life-saving fluids or medications should be administered and IV cannulation is difficult, impossible, or too time-consuming to perform.
B. If peripheral IV access cannot be established in a critical patient.
    a. In adult or pediatric patients with one or more of the following clinical conditions: cardiac arrest, hemodynamic instability, imminent respiratory failure, or prolonged seizures that are not responsive to IM anticonvulsants.
C. IO placement may be considered prior to IV in CPR.

PROCEDURE

Determine Site:

- Tibia: Palpate landmarks at the proximal tibia. Insertion site should be approximately 3-4cm distal to the joint line and 1-2cm medial to the tibial tuberosity.
- Proximal Humerus: Insertion site is located on the most prominent aspect of the greater tubercle. Ensure arm is adducted with patient's hand resting on abdomen. Immobilize the arm after IO placement.

Insertion:

A. Activate IO device according to manufacturer's instructions.
B. Firmly flush with 20 mL NS.
C. Consider pressure bag or using a BP cuff to add pressure to infusion bag. Continue to monitor site for signs and symptoms of infiltration.

CONTRAINDICATIONS

A. Fracture of the selected bone.
B. Previous significant orthopedic injuries/procedures at the selected site.
C. Infection at the insertion site.
D. Excessive tissue swelling or absence of landmarks.
E. Failed IO attempt of same bone.

NOTES & PRECAUTIONS

- Osteomyelitis, growth plate injury (in pediatric patients) and extravasation of fluid with compression of popliteal vessels or the tibial nerve may occur.
- Do not perform more than one attempt at each anatomic site.
- Any ALS medication may be administered IO.

MASS CASUALTY INCIDENT

A Mass Casualty Incident (MCI) is a situation where the number of patients outnumber the available resources (such as a multiple burial avalanche, large scale chairlift or infrastructure accident, etc.). The Central Oregon Mass Casualty Incident, Area-7 Trauma Advisory Board is a tool that guides the interagency response:

http://www.centraloregonfireservices.org/ECEMS/MCI-MPI/MCI%20Field%20Guide%202016.pdf

The patrol medical lead and patrol leadership should be familiar with the mass casualty protocol and develop plans to address most-likely scenarios, such as multiple avalanche burials or chairlift accident.

OVERVIEW

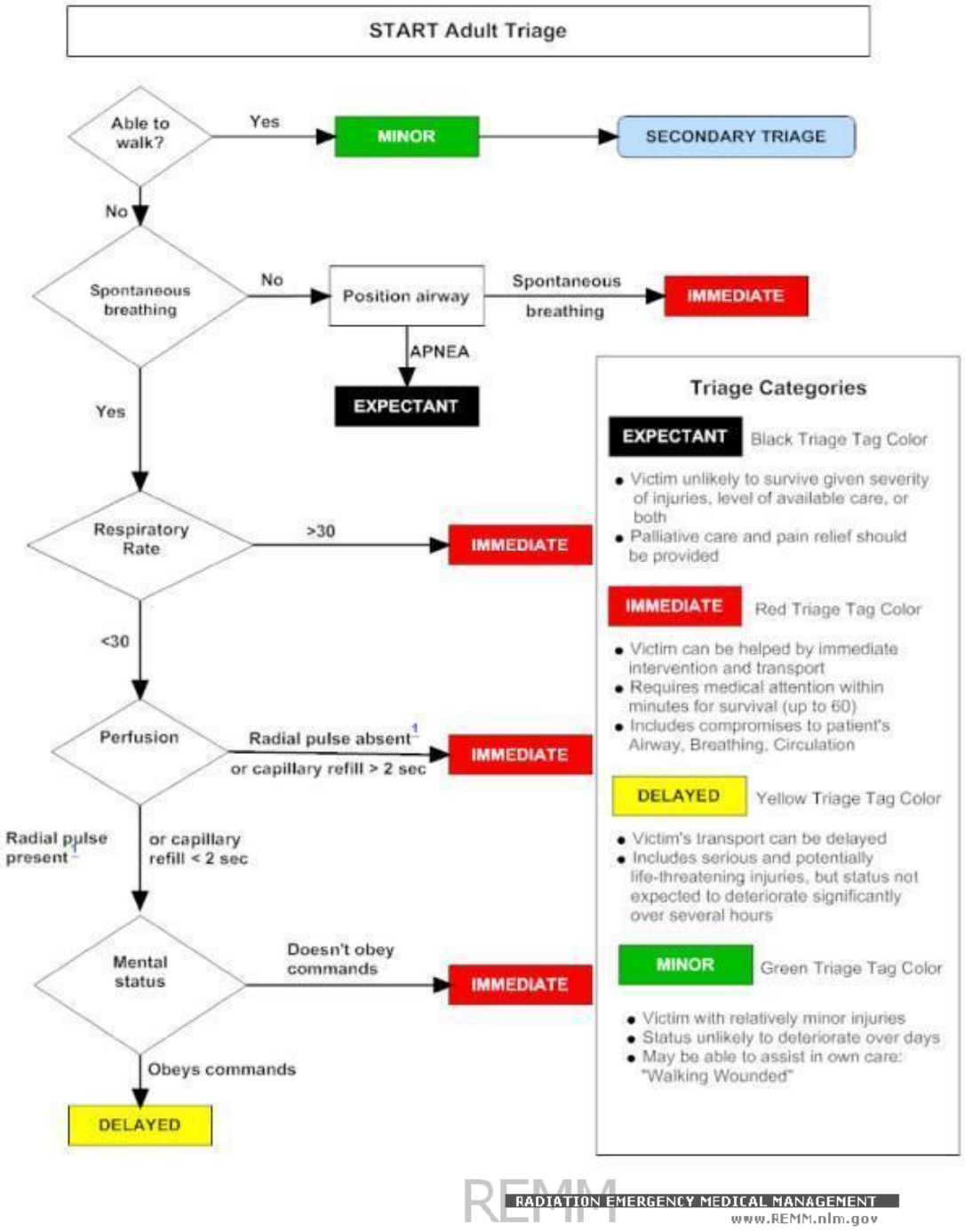
A. There is no set number of patients that will automatically initiate this protocol.
B. If the responding or senior patroller on scene determines that additional resources or incident structure is needed to better manage the complexity of the incident, he/she shall announce to dispatch that they recommend an MCI be declared. This may be done upon arrival or at any time during the incident.
C. Senior patrol leadership, medical lead, or OLMC should confirm situation and declare MCI.
D. If MCI is declared, dispatch should contact EMS dispatch / 911 to announce situation and request additional resources.
E. Dispatch should notify MBC of MCI and request assistance.
F. The EMS service has the power to declare an MCI under the ECEMS protocols. Once this is completed:
    a. During declared MCI, the Trauma System is not in effect.
    b. Licensed ambulances are not required for transport.
    c. More than one critical patient may be placed in an ambulance.
    d. Due to familiarity with Incident Command System, EMS/Fire command should be given command of ICS once on scene if appropriate as below.
G. The following START and JUMP START (Pediatrics) triage process should be implemented.

INCIDENT COMMAND

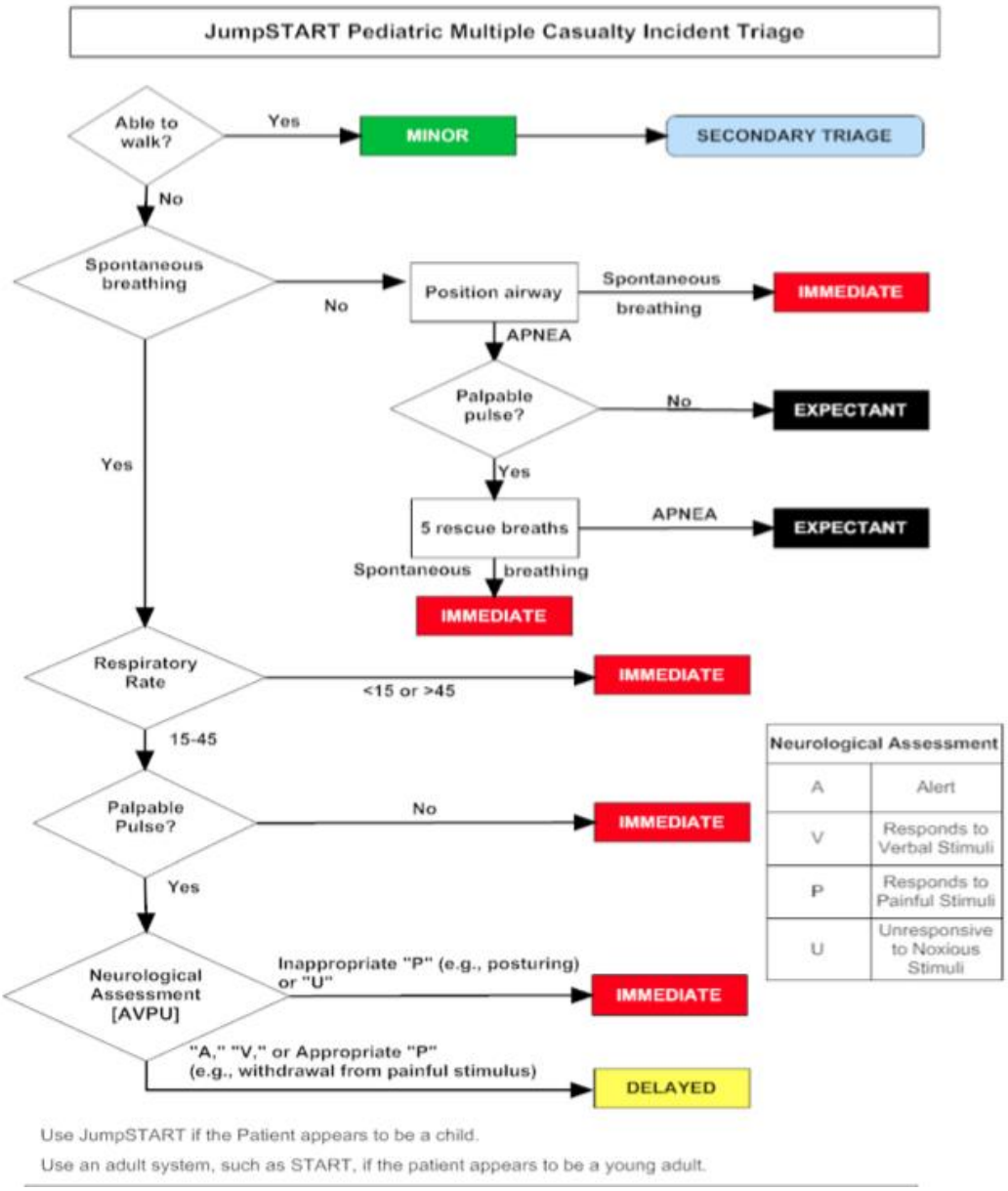
The National Incident Management System (NIMS) will be used to manage all incidents.

A. Incident Command (IC) is the responsibility of the agency having jurisdiction.
B. MBSP will initiate the incident command structure but will transfer command to Fire/EMS Unified Incident Command once on scene if this is deemed appropriate to manage the full scope of needed resources.
C. Each assisting agency shall retain full authority to operate within the scope of its agency operational and administrative protocols and procedures.
D. Agencies that are assisting in the support of a single jurisdiction will function under the direction of that jurisdiction's designated Unified Incident Command.

START TRIAGE



JUMPSTART PEDIATRIC TRIAGE



MUSCULOSKELETAL INJURY

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Spinal Motion Restriction as indicated in SPINAL MOTION RESTRICTION PROTOCOL.
C. Treat for shock as needed per SHOCK PROTOCOL.
D. Control external bleeding with direct pressure, elevation, hemostatic dressings, and/or tourniquet (record time applied).

ALS

A. Treat per ALS PAIN PROTOCOL.

FRACTURE OR SPRAIN

A. Check for circulation, sensation, and movement distal to the injury site before and after immobilization.
B. BLS/ALS: If no circulation is present in an extremity, attempt to regain pulses by reduction of injury into normal anatomical position using gentle axial traction. If an extremity must be repositioned for packaging and/or evacuation, do so.
C. If fracture/dislocation is open, remove debris and flush with sterile saline prior to reduction.
   Place a moist sterile dressing over wound and cover with a dry dressing.
D. Elevate extremity for transport if time/injuries allow.
E. Apply traction splint to mid-shaft femur fractures.
F. For pelvic fractures, utilize pelvic sling and secure patient to the litter to minimize movement and blood loss.

NOTES & PRECAUTIONS:

A. Use of Slishman traction device for suspected mid-shaft femur fracture is appropriate if it improves patient comfort or splints patient for transport. Application is not required if pain is increased by application. Avoid us in patients with concurrent lower leg or hip injury.
B. The Slishman may be used concurrently with a pelvic binder. The pelvic binder should be applied first, and the Slishman should not interfere with its positioning or maintenance. The pelvic binder is a more important intervention.

AMPUTATION

A. Cover stump or partial amputation with moist sterile dressing.
B. May use a tourniquet to control bleeding.
C. Splint partial amputations in anatomical position to avoid torsion and angulation.
D. Wrap amputated part in a sterile dressing and place in a plastic bag to keep dry. Do not use ice on the amputated part.
E. Keep the amputated part with the patient.
F. Treat pain per PAIN MANAGEMENT PROTOCOL.
G. Keep patient warm.

PEDIATRIC PATIENTS:

A. Treat pain per PAIN MANAGEMENT PROTOCOL.
B. Consider non-accidental trauma as a cause of injury.

DISLOCATIONS

BLS or ALS

A. Treat per PAIN MANAGEMENT PROTOCOL.
B. Splint in position of comfort and transport, do not attempt to reduce.
C. If compromise of circulation is suspected (absent peripheral pulses) contact OLMC for direction if transport is expected to be prolonged.

ALS-C

A. In rare, severe cases with extreme pain and neurovascular compromise, with anticipated difficult or prolonged transport, ALS-C members with OLMC approval may perform procedural sedation, may Consider **ketamine 1mg/kg IV/IO**.

   See Notes and Precautions under the pain control protocol, specifically have airway & suction equipment ready, pre-oxygenate patient for 5 min and leave on during sedation. Have dedicated person monitor the airway while patient sedated. Vital signs Q 5 min with CO2 capnography if available.

NAUSEA & VOMITING

TREATMENT:

A. Treat per UNIVERSAL PATIENT CARE.

BLS

B. If shock syndrome is present, follow SHOCK PROTOCOL.
C. Administer **isopropyl alcohol swab** by inhalation. Open alcohol swab and allow patient to control its position. Repeat as needed. No maximum dose or contraindications.
D. Position in a seated position or left lateral decubitus position for transport.

ALS

E. Give **ondansetron 4 mg IM/IV/IO/ODT.** If nausea inadequately controlled after 10 minutes, may repeat **ondansetron** once for a **max dose of 8mg**.

PAIN MANAGEMENT

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. For acute pain:
   a) Determine location of pain and severity using numeric scale (1-10) or Faces scale.
   b) Consider and treat underlying cause of pain.
   c) Use non-pharmacological pain management (i.e., position of comfort, cold pack, elevation, splinting, padding, wound care, therapeutic calming and communication).
   d) Administer pain medication: Adults (& children over 60lbs), **ibuprofen 600 mg PO** and/or **acetaminophen 1000 mg PO** if patient alert, oriented, able to swallow, and without contraindications.

ALS

A. **fentanyl 50 mcg IV/IO/IM/IN**. Repeat with 25-50 mcg every 3-5 minutes as needed to a maximum of 200 mcg.
B. **ketamine 20 mg IV/IO OR 50 mg IM**. Repeat every 20-30 minutes as needed for pain control or until nystagmus develops. Ketamine is preferred in polytrauma patients or those with hypotension or respiratory depression. Establish IV after IM use. Consider **ketamine 15 mg IV/IO** instead for smaller adults**.** Ketamine may be administered in conjunction with fentanyl for severe pain.
C. **ondansetron 4 mg IV/IO/IM/ODT** can be considered prophylactically for nausea.

ALS-C

A. In rare, severe cases with extreme pain and the need for procedural sedation, ALS members with OLMC authorization from the medical director to perform procedural sedation, may Consider **ketamine 1mg/kg IV/IO**. See Notes and Precautions, specifically have airway & suction equipment ready, pre-oxygenate patient for 5 min and leave on during sedation. Have dedicated person monitor the airway while patient sedated. Vital signs Q 5 min with CO2 capnography if available.

NOTES & PRECAUTIONS:

(Use of ibuprofen & acetaminophen)

A. Provide these medications only to guests who are evaluated and treated as patients, not by casual request alone.
B. Avoid in patients with suspected head injury or with slurred speech.
C. Review contraindications listed on medication protocol pages.
D. Patients with mild musculoskeletal complaints who receive only these medications may be permitted private vehicle transport. EMS transport or clinic evaluation are not mandated.

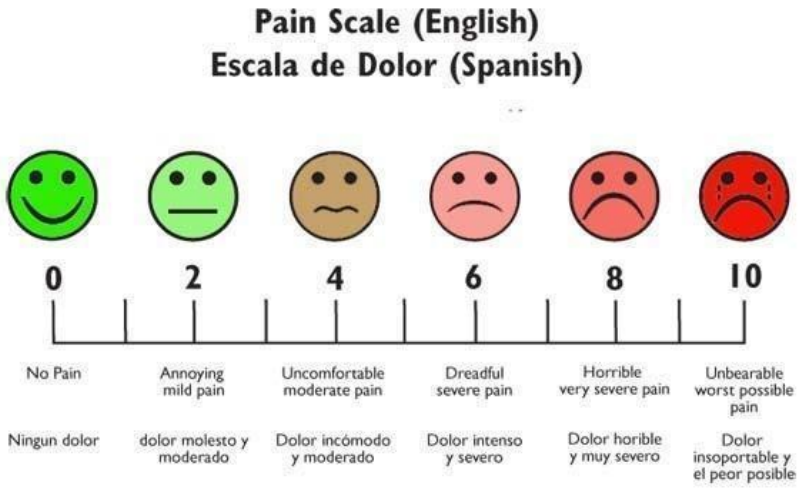
(Use of fentanyl, ketamine, midazolam)

A. ALS must have equipment available to support respirations and perform LMA insertion with continuous SpO_2 monitoring.
B. Hypotension due to these medications will usually respond to 300-500ml fluid administration.

C. **Naloxone 0.4-2 mg** must be immediately available to reverse respiratory depression or hypotension not responsive to 500ml fluid challenges when administering fentanyl.
D. Do not administer pain medications without OLMC if any of the following are present:
   a) Respiratory distress or O2 saturation of < 90% that does not respond to oxygen therapy when using fentanyl.
   b) Known allergy to that pain medication.
   c) Altered mental status.
   d) Systolic blood pressure of < 90 mm/Hg when using fentanyl or midazolam.
E. Pain relief is more than just reduction in pain level; it also provides for relaxation of muscle spasm around injuries, eases the discomfort of evacuation, and provides for pre-medication for anticipated rough evacuations. Additionally, pain control has been shown to benefit a patient's long-term outcome and shorten healing time.
F. Additional doses can be considered if evacuation is significantly delayed or prolonged (such as overnight).
G. **ALL PATIENTS WHO RECEIVE IV/IO/IM FENTANYL, KETAMINE, OR MIDAZOLAM MUST BE TRANSPORTED TO AN EMS AGENCY OR MT. BACHELOR CLINIC.**

PEDIATRIC PATIENTS:

A. **fentanyl 1 mcg/kg IV/IO/IM/IN.** May repeat with 0.5 -1 microgram/kg every 3-5 minutes as needed for a maximum of 4 micrograms/kg. Do not exceed adult dosing.
B. **ketamine 0.1 mg/kg IV/IO, 0.5mg/kg IM/IN,** for > 3 months old.
C. Contact OLMC if maximum dose of either medication is reached without adequate pain management.



Age Group	Resp	Heart Rate	SBP	Weight (kg)	Weight (lb)
Newborn	30 - 60	100 - 180	50 - 70	2 - 3	4.5 - 7
Infant 1-12 months	20 - 50	80 - 160	70 - 100	4 - 10	9 - 22
Toddler 1-3 yrs.	20 - 35	70 - 150	80 - 110	10 - 14	22 - 31
Preschooler 3-5 yrs.	20 - 30	60 - 120	80 - 110	14 - 18	31 - 40
School Age 6-12 yrs.	15 - 30	60 - 110	80 - 120	20 - 42	41 - 92
Adolescent 13+ yrs.	12 - 20	55 - 110	110 - 120	>50	>110

Lbs	Kgs	Lbs	Kgs	Lbs	Kgs	Lbs	Kgs	Lbs	Kgs
8	3.5	38	17.0	68	31.0	98	44.5	128	58.0
9	4.0	39	17.5	69	31.5	99	45.0	129	58.5
10	4.5	40	18.0	70	32.0	10	45.5	130	59.0
11	5.0	41	18.5	71	32.0	101	46.0	131	59.5
12	5.5	42	19.0	72	32.5	102	46.5	132	60.0
13	6.0	43	19.5	73	33.0	103	46.5	133	60.5
14	6.5	44	20.0	74	33.5	104	47.0	134	61.0
15	7.0	45	20.5	75	34.0	105	47.5	135	61.5
16	7.5	46	21.0	76	34.5	106	48.0	136	61.5
17	7.5	47	21.5	77	35.0	107	48.5	137	62.0
18	8.0	48	22.0	78	35.5	108	49.0	138	62.5
19	8.5	49	22.0	79	36.0	109	49.5	139	63.0
20	9.0	50	22.5	80	36.5	110	50.0	140	63.5
21	9.5	51	23.0	81	36.5	111	50.5	141	64.0
22	10.0	52	23.5	82	37.0	112	51.0	142	64.5
23	10.5	53	24.0	83	37.5	113	51.5	143	65.0
24	11.0	54	24.5	84	38.0	114	51.5	144	65.5
25	11.5	55	25.0	85	38.5	115	52.0	145	66.0
26	12.0	56	25.5	86	39.0	116	52.5	146	66.0
27	12.5	57	26.0	87	39.5	117	53.0	147	66.5
28	12.5	58	26.5	88	40.0	118	53.5	148	67.0
29	13.0	59	27.0	89	40.5	119	54.0	149	67.5
30	13.5	60	27.0	90	41.0	120	54.5	150	68.0
31	14.0	61	27.5	91	41.5	121	55.0	151	68.5
32	14.5	62	28.0	92	41.5	122	55.5	152	69.0
33	15.0	63	28.5	93	42.0	123	56.0	153	69.5
34	15.5	64	29.0	94	42.5	124	56.5	154	70.0
35	16.0	65	29.5	95	43.0	125	56.5	155	70.5
36	16.5	66	30.0	96	43.5	126	57.0	156	71.0
37	17.0	67	30.5	97	44.0	127	57.5	157	71.5

POISONING

TREATMENT:

BLS

A. USE PROPER PRECAUTIONS to avoid contamination of rescuers.
B. Treat per UNIVERSAL PATIENT CARE.
C. If systolic BP < 90 mmHg, follow SHOCK PROTOCOL.
D. If unknown poison or overdose and patient has a decreased level of consciousness, treat per ALTERED MENTAL STATUS PROTOCOL.
E. Consider contacting Poison Control for specific management and treatment: **1-800-222-1222**.
F. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
G. Treat specific poisons/overdoses as outlined below:
H. Encouraged to contact OLMC for further assessments and interventions.

CARBON MONOXIDE

A. Remove patient from culprit environment.
B. High flow oxygen.
C. All symptomatic patients (e.g. headache, dizziness, nausea, chest pain, altered mental status) should be transported.

TRICYCLIC ANTIDEPRESSANT

A. Treat seizures per SEIZURE PROTOCOL.
B. Treat hypotension per SHOCK PROTOCOL.

NARCOTIC

See ALTERED MENTAL STATUS, Suspected Opiate Overdose.

NOTES & PRECAUTIONS:

A. Pulse oximeter may provide a false reading in patients with elevated CO levels.
B. For large organophosphate poisonings (pesticides), consider contacting OLMC.
C. Do not neutralize acids or alkalis.
D. Consider HazMat Team activation.

KEY CONSIDERATIONS:

Route of poisoning, amount of ingestion, antidote given, suicidal intent, multiple patients, psychiatric history.

RESPIRATORY DISTRESS

TREATMENT:

A. Treat per UNIVERSAL PATIENT CARE.
B. Follow appropriate AIRWAY MANAGEMENT or CARDIAC PROTOCOL if indicated.
C. Maintain $SpO_2 \geq 92\%$ with **oxygen** use.
D. Treat patient's clinical impression as follows:

UPPER AIRWAY

1. **Croup & Epiglottitis**

Characterized by inspiratory stridor, most often in children and young adults. Patient often wants to sit very upright or remain very still, seems focused on breathing.

BLS

A. Transport in position of comfort, AIRWAY MANAGEMENT PROTOCOL as needed.

ALS

B. If stridor persists at rest, transport is delayed, and the patient is having respiratory distress, consider **nebulized epinephrine (1mg/ml) 0.5 ml/kg, max 5 ml**. Most patients >10kg: combine 3-5 1 ml vials 1mg/ml epinephrine with 3-5 ml saline for nebulization.

2. **Anaphylaxis** – Treat per ANAPHYLAXIS and ALLERGIC REACTION PROTOCOL.

3. **Foreign Body**

BLS

A. Refer to general CPR guidelines for treatment of choking/airway obstruction.

PEDIATRIC PATIENTS:

A. The usual cause of respiratory arrest in children with upper airway obstruction such as croup, epiglottitis or laryngeal edema is exhaustion, not complete obstruction. If the child with suspected upper airway compromise deteriorates, you may still be able to ventilate with a BVM.

PULMONARY EDEMA/CHF

BLS

A. Sit patient upright.
B. See ALTITUDE CONDITIONS PROTOCOL.

CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

BLS

A. **Albuterol-ipratropium 2.5-0.5 mg via nebulizer** if known history. Repeat **albuterol-ipratropium 2.5-0.5 mg via nebulizer** every 10 minutes as needed for dyspnea and wheezing. Discontinue if the patient develops chest pain.

ASTHMA

BLS

A. Assist patient in use if their own inhaler, may administer 4-10 puffs every 20 minutes up to 3 times in an hour.
B. **Duoneb 2.5-0.5 mg via nebulizer**, if known history of asthma and actively wheezing.
C. Patient may be released after treatment if meeting all of the following criteria:
    a. Received maximum of 1 nebulizer treatment;
    b. Has normal respiratory rate , spO2 >92%, normal work of breathing;
    c. Has resolution of all reported dyspnea;
    d. Characterizes their symptoms as mild, routine, and previously occurring;
    e. Has an albuterol MDI available on premises.

ALS

A. If patient is deteriorating and < 40 years old, consider **epinephrine. Adult: 0.5 mg IM**; may repeat every 10 min up to 3 doses. Contact OLMC for additional doses, if patient is > 50 years old, or if a history of heart disease.

PEDIATRIC PATIENTS:

ALS

If patient is deteriorating give **1mg/ml epinephrine 0.01 mg/kg IM** every 15 minutes (max single dose 0.3 mg) up to 3 doses. If no weight is available, use 0.15 mg IM. Contact OLMC for additional doses.

NOTES & PRECAUTIONS:

A. In addition to specific interventions for respiratory distress, aggressive airway management, including intubation with LMA is appropriate for the patient with altered mental status and impending respiratory collapse.
B. For the asthma patient who is intubated with LMA/receiving assisted ventilations: encourage a long expiratory phase. Add compression of the rib cage after giving a breath to minimize breath stacking/air trapping and barotrauma.
C. The best indicator for the cause of respiratory distress is past history. If a person has had COPD or CHF in the past, it is likely the person has the same condition again.
D. In cases of tachypnea, it is essential to consider all causes such as pain, pulmonary embolism, hypoxia, cardiac causes, infection, DKA, and trauma. Hyperventilation may be a response to an underlying medical problem and should only be considered after these other causes have been excluded. Do not treat hyperventilation by rebreathing CO2. Reassurance and oxygen as needed is appropriate.

ASTHMA SEVERITY ASSESSMENT GUIDE			
	MILD	**MODERATE**	**SEVERE**
Short of breath	Walking	Talking	At rest
Able to speak	In sentences	In phrases	In words
Heart rate	< 100	100 - 120	> 120
Respiratory rate	Elevated	Elevated	> 30
Lung sounds	End expiratory wheezes	Full expiratory wheezes	Wheezes both phases or absent
Accessory muscle use	Not usually	Common	Usually
Alertness	Possibly agitated	Usually agitated	Usually agitated
ETCO2	20 - 30	30 - 40	>50

TENSION PNEUMOTHORAX

BLS

A. Administer Oxygen. Request for immediate ALS and transport. Call OLMC.

ALS

B. Perform **Needle Decompression** (notes below). Contact OLMC prior to procedure if the patient is alert.

ALS-C

C. Needle decompression or Simple (finger) Thoracostomy with commercial Chest Seal.

Tension Pneumothorax Indications

Symptomatic or at risk of death with:

- High clinical suspicion.
- Progressive respiratory distress.
- Shock symptoms.

AND at least one of the following:

- Decreased or absent breath sounds.
- Consistent history (i.e., chest trauma).
- Asymmetrical chest movement with inspiration.
- Hyper-expanded chest on affected side.
- Increased resistance to positive pressure ventilation.
- Drum like percussion on the affected side.
- Tracheal deviation (late sign).
- Distended neck veins (late sign).

Witnessed traumatic arrest patients with abdominal or chest trauma for whom resuscitation is indicated should have bilateral chest decompression performed even in absence of the above signs per traumatic arrest protocol above.

Needle decompression procedure: Advance needle/catheter perpendicular to skin on affected side. Anterior axillary line, 4^{th}-5^{th} intercostal space. Remove needle, leave catheter and secure in place.

Notes & Precautions:

- Patient should be reassessed often for return of tension or other respiratory complications.
- May need to repeat procedure or use alternate site if no response to initial attempt.
- Simple or non-tension pneumothorax is not life threatening and should not be decompressed in the field.
- Tension pneumothorax can be precipitated by the occlusion of an open chest wound. If the patient deteriorates after dressing an open chest wound, remove dressing and reassess.
- Possible complications:
  - Creation of pneumothorax if none existed previously.
  - Laceration of blood vessels (always insert needle above the rib).
  - Infection (vigorously clean the site if possible).

SEIZURES

TREATMENT:

BLS

A. Treat per Universal Patient Care.
B. Protect patient from injury without restraining them.
C. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
D. Place patient on their left side for transport if impaired level of consciousness.
E. All first-time seizure patients require medical evaluation by a physician. Contact OLMC if patient refuses transport.

ALS

A. If patient has continuous seizure or repetitive seizures without regaining consciousness:
    a) Administer **midazolam 2.5 - 5 mg IV/IO or 5 mg IM/IN** May repeat to a maximum dose of **20 mg**. Monitor patient's respiratory status and SpO_2 closely. Place on Zoll monitor with capnography if available.
    b) Contact OLMC if further doses are needed.

PEDIATRIC PATIENTS:

ALS

A. Administer **midazolam 0.1 mg/kg IV/IO** or **midazolam 0.2 mg/kg IN/IM** to a maximum initial dose of 2.5 mg IV/IO or 5 mg IN/IM. May repeat to a maximum dose of 5 mg for seizures lasting longer than five minutes
B. Febrile seizures are generally found between the ages of 1- 6 and are usually short in duration with rapid return to normal baseline.
C. **acetaminophen 15 mg/kg PO** if available and normal mental status.
D. First time seizures in children should be considered sepsis or meningitis until proven otherwise.

NOTES & PRECAUTIONS:

A. Consider arrhythmia as a cause for apparent seizures in patients > 50 years of age.
B. New onset of seizures in a pregnant patient, especially in the third trimester, may indicate eclampsia. This is an emergency even if asymptomatic at the time of rescuer contact. Transport by EMS to hospital.
C. Remember to check a pulse once a seizure stops. Seizure activity may be the sign of hypoxia or dysrhythmias.
D. In newborns seizures are most commonly related to hypoglycemia, treat under ALTERED MENTAL STATUS PROTOCOL.
E. Consider ETOH withdrawal as a potential cause.

SHOCK

TREATMENT:

A. Treat per UNIVERSAL PATIENT CARE.
B. Prepare for rapid transport.
C. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
D. Determine type of shock and treat as follows:

HYPOVOLEMIC SHOCK

BLS

A. Take measures to stop bleeding. Consider direct pressure, packing wounds with combat gauze, and applying tourniquets as needed.
B. Avoid hypothermia in patients with hemorrhagic shock; even mild hypothermia significantly impairs clotting.

ALS

A. Give **NS or LR 500 ml** fluid bolus, repeat as needed (if no signs of pulmonary edema) up to 2,000 ml. Give warm fluids if possible.

CARDIOGENIC SHOCK

ALS

A. Consider fluid challenge but avoid if signs of volume overload.
B. With diminished perfusion or shock symptoms with concern for deterioration or impending arrest, consider **epinephrine IV infusion (1mg in 1000 ml or 0.5mg in 500 ml)** to titrate SBP>90. Start at 2mcg/min (120ml/hr). *If using 10 drops/min tubing these equals 1 drop every 3 seconds, best to count 10 drops in 30 seconds to reduce error).*

DISTRIBUTIVE SHOCK (ANAPHYLAXIS, SEPSIS, NEUROGENIC)

BLS

A. Follow ANAPHYLAXIS AND ALLERGIC REACTION PROTOCOL if applicable.

ALS

A. Give **NS or LR 500 ml fluid bolus**; repeat as needed if no signs of pulmonary edema. May repeat to a total of 2,000 ml if available.
B. If possible, treat the underlying cause.

ALS-C (OR ALS with OLMC)

C. With diminished perfusion or shock symptoms, consider **epinephrine IV infusion (1mg in 1000 ml or 0.5mg in 500 ml)** to titrate SBP>90. Start at 2mcg/min (120ml/hr). *If using 10 drops/min tubing these equals 1 drop every 3 seconds, best to count 10 drops in 30 seconds to reduce error).*

PEDIATRIC PATIENTS:

Treat as outlined above using the following Fluid Administration guidelines:

a) Infants – 10 ml/kg.
b) Children – 20 ml/kg.
c) Maximum fluid amount in Cardiac and Obstructive shock is 20 ml/kg.

NOTES & PRECAUTIONS:

A. Closely monitor the patient's respiratory status and vital signs. Keep patient warm

SNOW IMMERSION SUFFOCATION (SIS)

Snow immersion suffocation (SIS), or tree well burial, is a rapidly fatal condition that results from critical burial of the head and chest in loose snow, usually at the base of a conifer tree where a local terrain trap forms due to a snow void under branches.

SIS is often fatal within 10 minutes if the victim is not rescued due to the airway filling with snow, resulting in rapid hypoxia. Victims are rarely resuscitated successfully, and there has been no reported case of a tree well burial resulting in hypothermia alone. Accordingly, rescue prioritizes rapid victim location and extrication, and we may sacrifice spinal precautions to reach the airway.

Patients found adjacent to trees but without critical burial of the head/chest should be assumed to be victims of trauma and should receive usual treatment under Trauma and AMS protocols.

BLS:

A. Use any means necessary to quickly access the patient's airway. This may involve an axial drag or entering the tree well with a shovel to access the patient's head, taking care not to further compress snow around the airway.
B. Manually sweep any snow which is plugging the patient's airway.
C. Use a jaw thrust to open the airway and immediately provide 3-5 rescue breaths using a CPR mask or BVM. Use supplemental oxygen if available but do not delay breaths to connect O2.
D. Check for a pulse. If pulse is absent, treat per CARDIAC ARREST – ATRAUMATIC protocol.
E. If pulse is present, treat per UNIVERSAL PATIENT CARE, supporting respirations as needed.
F. Regardless of presence of pulse, after initial patient repositioning to facilitate ongoing respirations, maintain spinal precautions if personnel and equipment allow.

SPINAL MOTION RESTRICTION (SMR)

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Patients with penetrating trauma to the head, neck, or torso and no evidence of spinal injury should not be motion restricted (e.g. impalement).
C. Appropriate patients to be motion restricted include those with:
    a) Provider concern.
    b) Blunt trauma and an altered level of consciousness.
    c) Spinal pain or tenderness.
    d) Neurologic complaint (e.g., numbness or motor weakness).
    e) Anatomic deformity of spine.
    f) High energy/concerning mechanism of injury and any of the following:
        I. Drug or alcohol intoxication.
        J. Inability to communicate.
        K. Distracting injury (consider for any park jump injury with orthopedic injury).
D. Check CSM exam before and after immobilization.
E. Treat pain per PAIN MANAGEMENT PROTOCOL.
F. If decision is make not to immobilize, ensure documentation of all spinal/neurological exam findings in the run report.

PEDIATRIC PATIENTS:

A. Children may require extra padding under the upper torso to maintain neutral cervical alignment.
B. Consider using a short-spine device (OSS, KED) if immobilizing patient on an adult backboard.

CRITERIA TO WITHHOLD SPINAL MOTION RESTRICTION AFTER TRAUMA

(patient must meet all criteria):

Entirely normal mental status.
No evidence of intoxicants.
No neck or back tenderness.
No neurological deficits.
No distracting injuries such as a long bone fracture.

NOTES & PRECAUTIONS:

A. Consider immobilization in any patient with age >65, arthritis, cancer, dialysis, Down's Syndrome, or other underlying spinal or bone disease, as they are at higher risk for spinal cord injury.
B. Long spine boards (LSB) have both risks and benefits for patients and *have not* been shown to improve neurologic outcomes in many patients. The best use of the LSB may be for extricating the unconscious patient, or for providing a firm surface for compressions. If a hard spine board is used as an extrication tool, transfer the patient to a padded toboggan or EMS gurney when able.
C. Spinal motion restriction can be maintained by manual stabilization followed by securement in a toboggan in a padded, strapped, secure position. A Kendrick Extraction Device or Oregon Spine Splint (OSS) are also considered immobilization. *A*

SKED stretcher is not a spinal motion restriction device and should be used in conjunction with OSS or vacuum mattress.

D. If any immobilization techniques cause pain or increased neurological symptoms, remove the intervention and splint/position the patient in a position of comfort and/or the position in which they were found.
E. Any patient placed in spinal motion restriction should remain in spinal precautions and should be transferred to hospital by EMS.

Definitions:

Concerning Mechanism of Injury: Any trauma mechanism that produced a violent impact to the head, neck, torso, or pelvis. Incidents producing sudden acceleration and/or deceleration, or lateral bending forces to the neck or torso. Any fall, especially in elderly persons. Ejection from a motorized vehicle, including snowmobiles.

Distracting Injury: Any injury that may have the potential to impair the patient's ability to appreciate other injuries. Examples include 1) long bone injury, 2) large laceration, degloving injury, or crush injury; 3) large burns, or 4) any other injury producing acute functional impairment.

Inability to Communicate: Any patient who, for reasons not specified above, cannot clearly communicate so as to actively participate in their assessment. Examples: speech or hearing impaired, those who only speak a foreign language, and small children.

Intoxication: Any patient who exhibits any of the following:

- Difficulty with cognitive functions: difficulty answering questions, following commands or reasoning
- Slurred speech
- Unsteady Gait
- Difficulty ambulating or reported history of difficulty ambulating, patients who cannot get up on their own.

SPORTS EQUIPMENT REMOVAL

HELMETS

Helmets provide valuable protection and warmth to patients who must be transported by toboggan, litter, or vehicle. Additionally, helmet removal has been shown to increase flexion of the cervical spine when a patient is placed in spinal precautions. Accordingly, unless there is a compelling reason to do so, helmets should not be removed in the field.

Helmet removal is indicated if:

- There are suspected significant injuries to the head or neck which cannot be evaluated without removal;
- The patient is altered or experiencing respiratory compromise and the helmet impedes access to or management of the airway;
- The patient has nausea or other predictors of a possible need to access the face promptly during transport, and helmet is expected to impede;

HELMET REMOVAL PROCEDURE:

A. If the patient is breathing and stable, perform a brief neurological exam before removal.
B. Stabilize the head using two hands from the direction of the patient's neck.
C. A second caregiver should unbuckle the helmet or cut the neck strap.
D. Pull the helmet towards the top of the head, in the same line/axis as the cervical spine. Use as little force as possible and avoid flexing/extending/rotating the neck.
E. Repeat brief neurological exam.
F. Maintain manual stabilization of the head/cervical spine until patient is placed in a hard collar or positioned in litter/toboggan with stabilization of the head/neck.
G. Document all neurological exam findings before and after helmet removal in the run report.

SKI/SNOWBOARD BOOTS

The primary impetus to remove a ski or snowboard boot in the field is the inclination to perform a CSM exam distal to a suspected musculoskeletal injury. However, removal of the boot can be a painful process which causes additional trauma at the site of injury, removes a preexisting splint, and which then exposes the foot to environmental injury. Significant injuries within the boot requiring intervention in the field are extremely rare. Additionally, field interventions in an austere environment are unlikely to resolve neurovascular problems in a limb which was previously held in anatomic alignment.

Accordingly, ski and snowboard boots should be left in place for transport to a sheltered environment, such as the clinic or ambulance, unless there is an indication for their removal.

A brief neurological exam can be conducted with the boot on by asking the patient if they are experiencing numbness or tingling in the foot/toes, and by asking the patient if they feel that they are able to wiggle the toes and plantar/dorsiflex the foot inside the boot. Any abnormal finding reported by the patient should increase suspicion for neurovascular compromise and prompt expedited transport to clinic or EMS.

Boot removal is indicated if:

- There is penetrating injury to the boot, without persistent impalement. *See WOUND CARE for guidance on impalement*.
- Blood is upwelling from the boot, raising concern for significant bleeding within the boot.

BOOT REMOVAL PROCEDURE:

A. Perform a brief neurological exam as above prior to removing the boot.
B. Consider analgesics per PAIN MANAGEMENT prior to procedure.
C. During all steps, take care to minimize movement to the lower extremity.
D. Completely unfasten all buckles, power straps, laces, etc. Cut laces or BOA wire if necessary.
E. The first operator should use gloved hands inside the cuff of the boot to stabilize the injured limb, supporting the limb as far into the boot as possible.
F. A second operator should carefully but aggressively spread the two sides of the boot apart at the upper cuff.
G. A third operator, if available, should pivot the boot off of the foot, not by pulling axially, but by sliding off along the curvature of the foot towards the toes.
H. Repeat a neurological exam.
I. After examining or intervening as necessary, take care to protect the exposed foot against environmental injury before and during transport.
J. Document all neurological exam findings before and after boot removal in the run report.

STROKE

Consider stroke in any acute-onset neurological symptoms without associated trauma. In the trauma patient, stroke symptoms should be considered evidence of severe head injury or neurological compromise of the extremity.

EMS TRIAGE STROKE SCREENING

B.E.F.A.S.T. Stroke Screen (Balance-Eye-Face-Arm-Speech-Time)

Balance: Dizzy, Loss of Balance/coordination, difficulty walking, abnormal gait.
Eyes: Sudden vision changes – blurry, limited field, double, dark spots.
Face: One sided weakness, droop, unequal movement, numbness.
Arms: One sided drift, unequal grips, numbness.
Speech: Slurred or inappropriate.
Time: Below 24 hours from last seen normal.

STROKE 1 CRITERIA

If patient has any of the abnormal findings on the B.E.F.A.S.T. screening, and symptoms < 24 hours in duration, activate Stroke 1 by notifying dispatch, who should inform EMS dispatch of Stroke 1 criteria.

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Check blood glucose and treat per ALTERED MENTAL STATUS PROTOCOL.
C. Transport patient in supine position with > 15 degree of head elevation if tolerated.
D. Determine baseline neurological status and LKW (Last Known Well): date and time the patient was last without stroke signs and symptoms.
E. Document serial neurologic examinations.
F. Prepare to suction airway as needed.

ALS

G. If CBG is low, refer to HYPOGLYCEMIA PROTOCOL.

NOTES & PRECAUTIONS:

A. Do not treat hypertension or give aspirin.
B. Activate Sroke-1 through dispatch if patient has focal neurological deficits with the LKW within 24 hours.

KEY CONSIDERATIONS:

Time last seen normal, pertinent medical history including history of GI bleeding, trauma or surgery in last 3 months, history of prior CVA/TIA, CBG, neurological exam (including pupils), currently taking Coumadin/warfarin, clopidogrel (Plavix®), other oral anticoagulants, or heparin.

SUBMERGED/DROWNED PATIENT

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE.
B. Priorities in drowning subject in pulmonary/cardiac arrest are ABC, not CAB.
C. If there is any doubt as to mechanism of injury or any possibility of cervical injury, immobilize patient according to the SPINAL INJURY PROTOCOL.
D. If indicated, treat per HYPOTHERMIA PROTOCOL.
E. If patient is in cardiac arrest, **do not attempt resuscitation if patient has been submerged for more than 30 minutes**, with the following exceptions:
   Resuscitation may be initiated if the patient is recovered within 60 minutes if:
   a) Children < 6 years of age and water temperature at recovery depth of <40°F.
   b) Patients who may have been trapped in an underwater air pocket.
   c) Water temperature at recovery depth is <40°F and information suggests that the patient may have been swimming on the surface for at least 15 minutes prior to becoming submerged.
   d) Contact OLMC for guidance if needed.
F. All drowned/submerged patients should be transported to hospital, even if clinically well.

NOTES & PRECAUTIONS:

A. If the patient is still in the water, rescue should be performed by properly trained and equipped personnel only.
B. Be prepared to manage vomiting.
C. Even if the patient initially appears fine, delayed pulmonary edema is likely to occur.

KEY CONSIDERATIONS:

Medical history, age, length of submersion, water temperature at recovery depth, medications and allergies, events prior to submersion.

TRAUMA ACTIVATION CRITERIA

TREATMENT: Consider EMS trauma activation if patient meets criteria. All patients meeting RED CRITERIA or YELLOW CRITERIA should be transported to hospital by EMS.

National Guideline for the Field Triage of Injured Patients

RED CRITERIA
High Risk for Serious Injury

Injury Patterns	Mental Status & Vital Signs
• Penetrating injuries to head, neck, torso, and proximal extremities • Skull deformity, suspected skull fracture • Suspected spinal injury with new motor or sensory loss • Chest wall instability, deformity, or suspected flail chest • Suspected pelvic fracture • Suspected fracture of two or more proximal long bones • Crushed, degloved, mangled, or pulseless extremity • Amputation proximal to wrist or ankle • Active bleeding requiring a tourniquet or wound packing with continuous pressure	**All Patients** • Unable to follow commands (motor GCS < 6) • RR < 10 or > 29 breaths/min • Respiratory distress or need for respiratory support • Room-air pulse oximetry < 90% **Age 0–9 years** • SBP < 70mm Hg + (2 x age years) **Age 10–64 years** • SBP < 90 mmHg or • HR > SBP **Age ≥ 65 years** • SBP < 110 mmHg or • HR > SBP

Patients meeting any one of the above RED criteria should be transported to the highest-level trauma center available within the geographic constraints of the regional trauma system

YELLOW CRITERIA
Moderate Risk for Serious Injury

Mechanism of Injury	EMS Judgment
• High-Risk Auto Crash – Partial or complete ejection – Significant intrusion (including roof) • >12 inches occupant site OR • >18 inches any site OR • Need for extrication for entrapped patient – Death in passenger compartment – Child (Age 0–9) unrestrained or in unsecured child safety seat – Vehicle telemetry data consistent with severe injury • Rider separated from transport vehicle with significant impact (eg, motorcycle, ATV, horse, etc.) • Pedestrian/bicycle rider thrown, run over, or with significant impact • Fall from height > 10 feet (all ages)	**Consider risk factors, including:** • Low-level falls in young children (age ≤ 5 years) or older adults (age ≥ 65 years) with significant head impact • Anticoagulant use • Suspicion of child abuse • Special, high-resource healthcare needs • Pregnancy > 20 weeks • Burns in conjunction with trauma • Children should be triaged preferentially to pediatric capable centers **If concerned, take to a trauma center**

Patients meeting any one of the YELLOW CRITERIA WHO DO NOT MEET RED CRITERIA should be preferentially transported to a trauma center, as available within the geographic constraints of the regional trauma system (need not be the highest-level trauma center)

TRAUMATIC BRAIN INJURY

TREATMENT:

BLS

A. Treat per UNIVERSAL PATIENT CARE, SPINAL INJURY, WOUND CARE protocols.
B. Evaluate best GCS to help categorize injury severity:
    i. Mild injury – GCS 13-15
    ii. Moderate injury – GCS 9-12
    iii. Severe injury – GCS <=8
C. Avoid hypoxia. Place supplemental oxygen on all patients with possible TBI.
D. Prevent hypotension. Goal SBP in adult >90 mmHg.
    i. BLS: Position patient supine or Trendelenburg if airway permits.
    ii. ALS: Initiate bolus of IV fluid.
    iii. Repeat boluses to maintain SBP>90.
E. If patient is unable to maintain airway, consider an oral airway. Avoid nasal airways if concern for significant facial injury or possible skull fracture.
F. Place an LMA if BVM ventilation is ineffective in maintaining oxygenation of airway remains compromised after OPA.
G. Avoid hyperventilation. Squeeze BVM bag gently, target respiratory rate of 10/min, EtCO2 40-45 mmHg if available.
    i. If there are signs of brain herniation, including decerebrate or decorticate posturing or unilateral blown pupil, target mild hyperventilation with 12-14 breaths/min. EtCO2 35 mmHg.
H. Consider and treat other causes of altered mental status per AMS protocol.

PEDIATRIC PATIENTS:

A. Treat per UNIVERSAL PATIENT CARE, SPINAL INJURY, WOUND CARE protocols.
B. Evaluate best GCS to help categorize injury severity as above.
C. Avoid hypoxia. Place NRB mask on all patients with possible TBI.
D. Prevent hypotension.
    i. ALS: Initiate bolus of 20ml/kg IV fluid.
    ii. Repeat boluses to maintain SBP:
        1. Infants/Children <10 yrs: 70 + (2 x Age) mmHg.
        2. Children 10+ yrs: 90 mmHg.
E. If patient is unable to maintain airway, consider an oral airway. Avoid nasal airways if concern for significant facial injury or possible skull fracture.
F. Place an LMA if BVM ventilation is ineffective in maintaining oxygenation of airway remains compromised after OPA.
G. Avoid hyperventilation. Squeeze BVM bag gently, target respiratory rates below, EtCO2 40-45 mmHg if available.
    i. Infants age 0-24 mo: 25 breaths / min (bpm).
    ii. Children 2-14 yrs: 20 bpm.
    iii. 15+ yrs: 10 bpm.
H. If there are signs of brain herniation, including decerebrate or decorticate posturing or unilateral blown pupil, target mild hyperventilation by increasing rate slightly. EtCO2 35mmHg.
I. Consider and treat other causes of altered mental status per AMS protocol.

WOUND CARE

GOALS OF WOUND CARE

A. Stop blood loss.
B. Reduce risk of infection.
C. Promote healing and reduce discomfort.
D. Minimize loss of function.

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

TREATMENT:

BLS

A. Stop bleeding.
    a) Apply direct pressure for immediate bleeding control.
    b) Direct firm pressure to proximal arterial site (femoral artery, brachial artery) may aid in serious bleeding control until a tourniquet can be placed.
    c) Use tourniquet(s) for severe or uncontrolled bleeding.
    d) Apply pressure/combat dressing if sufficient to control bleeding.
    e) Use combat gauze as needed.
    f) Immobilization is appropriate.

B. Protect the wound with a sterile dressing.

Impaled objects should generally be stabilized with gauze padding and left in place. The object should be removed only if it cannot be effectively stabilized for packaging and transport. Contact OLMC prior to removing an impaled object.

MEDICATIONS

Acetaminophen (Tylenol®)

BLS

PROTOCOL(S) USED IN:
Pain Control, Pediatric Seizure

PHARMACOLOGY AND ACTIONS:
Non-narcotic analgesic and antipyretic.

INDICATIONS:
Reduction of pain. Reduction of fever associated with febrile seizures in the pediatric patient.

ADULT DOSING:
1000 mg PO

PEDIATRIC DOSING:
15 mg/ kg PO

SIDE EFFECTS AND NOTES:
Do not exceed 4000 mg in 24 Hours for adults. Be aware that acetaminophen is often in pain, cold, cough, and fever medications.

CONTRAINDICATIONS:

A. Hypersensitivity.
B. DO NOT use with any other products that contain acetaminophen.

Albuterol-Ipratropium (DuoNeb®)

BLS

SUPPLIED: 2.5-0.5 mg / 3 ml ampule.

PHARMACOLOGY AND ACTIONS:
Albuterol is a selective beta-2 adrenergic bronchodilator that relaxes bronchial smooth muscle and reduces release of immediate-hypersensitivity mediators, particularly from mast cells. Clinical improvement begins within 2–15 minutes, with effects lasting 4–6 hours. Limited beta-1 overlap may produce clinically significant tachycardia.

Ipratropium is an anticholinergic bronchodilator that blocks muscarinic receptors in the airways, reducing vagal-mediated bronchoconstriction and airway secretions. Onset typically occurs within 15–30 minutes, with a duration of action of 4–6 hours. Systemic absorption is minimal, but dry mouth and occasional visual or urinary effects may occur.

INDICATIONS:

A. To treat bronchial asthma and reversible bronchial spasm that occurs with chronic obstructive pulmonary disease.

PRECAUTIONS:

A. Paradoxical bronchospasm may occur with excessive administration.

SIDE EFFECTS AND NOTES:
Clinically significant arrhythmias may occur, especially in patients with underlying cardiovascular disorders such as coronary insufficiency and hypertension.

ADULT DOSING:
Respiratory distress, asthma, wheezing -
2.5-0.5 mg via nebulizer. Repeat as needed up to 4x / hr.

PEDIATRIC DOSING:
>6 yrs: Same as adult.
<=6 yrs: Half ampule per dose

CONTRAINDICATIONS:
Relative: Prior hypersensitivity to or paradoxical bronchoconstriction with albuterol.

Aspirin (ASA)

BLS

PROTOCOL(S) USED IN: ACLS, ACS/Chest Pain

PHARMACOLOGY AND ACTIONS:
Blocks formation of thromboxane A2 that causes platelets to aggregate and arteries to constrict.

INDICATIONS:
Chest pain suspected of being cardiac in origin.

SIDE EFFECTS AND NOTES:

A. Higher doses can interfere with prostacyclin production and interfere with positive benefits.
B. Aspirin alone, started within 24 hours of the onset of an acute MI, reduces overall mortality to almost the same degree as thrombolytic agents.

ADULT DOSING:
Chest pain (acute myocardial infarction).
4 chewable baby (81mg) aspirin to equal 324 mg PO, or chew a single 325 mg aspirin, depending on availability.

PEDIATRIC DOSING:
Not indicated for pediatric patients.

CONTRAINDICATIONS:

A. Known hypersensitivity.
B. Known or suspected bleeding.
C. Relatively contraindicated in patients with history of active ulcer disease.
D. Pregnancy.

Calcium

ALS
If available.

PROTOCOL(S) USED IN: Crush injury, poisoning, cardiac arrest

PHARMACOLOGY AND ACTIONS:
Electrolyte

INDICATIONS:
Emergent treatment of suspected hyperkalemia or adjunct in cardiac arrest or calcium channel blocking agent toxicity.

SIDE EFFECTS AND NOTES:

A. arrhythmias. Cardiac monitoring should be used if available.
C. administer very slowly, confirm IV site.
D. 1 gram (1000mg) of Calcium Chloride (1 yellow box with 10ml prefilled syringe) contains 270 mg of elemental calcium (13.5 mEq calcium)

ADULT DOSING (of Calcium Chloride)

Crush injury: 500mg (1/2 prefilled syringe) IV/IO
Suspected Hyperkalemia: 500mg (1/2 prefilled syringe) IV/IO
Suspected calcium channel blocking agent toxicity: 500mg (1/2 prefilled syringe) IV/IO, repeat 500mg after 10 min PRN.
Cardiac arrest with possible hyperkalemia: 1 gram (1 prefilled syringe) IV/IO

PEDIATRIC DOSING:
Call OLMC

Administration:
Give slowly (100mg/min at fastest, 500mg should take 5 minutes slow-IVP) for non-cardiac arrest patients. Not compatible with Sodium Bicarbonate.

Dextrose 50% (D50)

ALS

PROTOCOL(S) USED IN: Altered Mental Status/Coma, Hypoglycemia

PHARMACOLOGY AND ACTIONS:

A. Glucose is used by the body as quick energy.
B. Its use is regulated by insulin, which stimulates storage of glucose from the bloodstream, lowering blood glucose levels.

INDICATIONS:

A. Hypoglycemic states usually associated with insulin shock in diabetes.
B. The unconscious patient, when history is unobtainable but after a blood glucose test indicates hypoglycemia.
C. In patients with any focal or partial neurologic deficit or altered mental status.
D. Hypothermia, generalized.

SIDE EFFECTS AND NOTES:

A. Determine blood glucose level prior to administration.
B. Extravasation of dextrose will cause necrosis of tissue.
C. IV should be secured in a large vein and free return of blood into the syringe or tubing should be checked 2-3 times prior to and during administration. May administer IO.
D. If extravasation does occur, immediately dilute with **normal saline** injected SQ through the existing catheter into extravasated area.
E. Do not draw blood for glucose determination from site proximal to an IV containing glucose or dextrose.
F. Effect is delayed in elderly patients with poor circulation.
G. Recheck blood glucose level 5 minutes after administration and as needed.
H. The effect is short-lived and IV/IO dextrose should be followed by a high-calorie snack to prevent recurrent hypoglycemia.

ADULT DOSING:

Hypoglycemia/Altered mental status -
12.5 - 25 grams of dextrose 50% IV/IO

PEDIATRIC DOSING:

Hypoglycemia/Altered mental status - Repeat dose as needed.

a) **dextrose 25% 2ml/kg IV/IO. Mix 1ml/kg D50 with saline 1ml/kg**

Administration:

Slow IV/IO push, regularly check for blood return during administration to ensure that the IV/IO has not infiltrated.

CONTRAINDICATIONS:

None

Diphenhydramine (Benadryl®)

BLS (PO) ALS IV/IO/IM

PROTOCOL(S) USED IN: Allergy/Anaphylaxis

PHARMACOLOGY AND ACTIONS:

A. Antihistamine which blocks action of histamines released from cells during an allergic reaction.
B. Direct CNS effects which include stimulant, or more commonly, depressant depending on individual variation.
C. Anticholinergic.

INDICATIONS:

A. Allergic reaction.
B. Adjunctive therapy for anaphylaxis.

SIDE EFFECTS AND NOTES:

A. Sedation, blurred vision, anticholinergic effects.
B. May enhance effects of alcohol or other depressants.

ADULT DOSING:
BLS **25-50 mg PO**
ALS **25-50 mg IV/IO/IM**

PEDIATRIC DOSING:
Anaphylaxis - **1 mg/kg slow IV/IO or IM**

Administration:
IM: Give undiluted deep into large muscle, avoid perivascular or SQ injections because of its irritating effects.
IV/IO: Dilute in IV flush, slow IV push over 1 minute.

CONTRAINDICATIONS:
None

Epinephrine

Note: Epinephrine is very frequently associated with dangerous dosing errors. It is important to understand that we carry two concentrations of epinephrine. Verify concentration and double check dose prior to any epinephrine administration.
-The small vials in the drug kit are 1 mg/ml concentration, supplied with 1 ml total. Each of these vials contains 1 mg epinephrine total. **This concentration should never be administered IV/IO.**
-The "code dose" epinephrine supplied in the larger tan/yellow boxed is 1mg/10 ml, supplied as 10 ml total. Each of these vials contains 1 mg epinephrine total.

BLS (limited to allergic reaction/anaphylaxis), ALS, ALS-C

PROTOCOL(S) USED IN: Anaphylaxis, ACLS, Asthma, Respiratory Distress

PHARMACOLOGY AND ACTIONS:

A. Catecholamine with alpha and beta effects.
B. Increased heart rate, arterial blood pressure, systemic vascular resistance, automaticity, myocardial O2 consumption and myocardial contractile force.
C. Potent bronchodilator.

INDICATIONS:

A. Ventricular fibrillation.
B. Asystole.
C. Pulseless Electrical Activity.
D. Systemic allergic reactions.
E. Asthma in patients under 50 years of age.

SIDE EFFECTS AND NOTES:

A. Anxiety, tremor, headache, tachycardia, palpitations, PVCs, angina and HTN.
B. Should not be added directly to bicarbonate infusion; catecholamine may be partially deactivated by alkaline solutions.
C. When used for allergic reactions, increased cardiac oxygen demand may precipitate angina and/or MI in susceptible individuals.
D. Wheezing in an elderly patient may be due to conditions other than bronchospasm, including pulmonary edema or pulmonary embolus.

ADULT DOSING:

Cardiac Arrest Dosing Options ALS:

a) **1 mg (1mg/10ml) IV/IO** every 3-5 minutes during arrest.

Allergic reaction, anaphylaxis shock: BLS, severe asthma ALS:

a) **0.5 mg (1mg/ml) IM,** repeat epinephrine as needed every 5-15 min.

Push Dose ALS-C:

a) **10-20 mcg IV/IO** every 3-5 minutes as needed for peri-arrest hypotension. To mix: pull 0.1 ml of 1mg/ml epi and place into a 10ml flush, ensure a small amount of air is present for adequate mixing and invert ten times. Yields 10mcg/ml, administer 1-2ml.

PEDIATRIC DOSING:

Cardiac Arrest -

a) **0.01 mg/kg (1mg/10ml) IV/IO** every 5 minutes.

Anaphylaxis -

a) **0.01 mg/kg (1mg/ml) IM, max 0.5 mg.**
b) Use **0.15 mg (1mg/ml) IM** if weight is not available
c) Repeat every 3-5 min as needed.

Severe Asthma –

a) 0.01 mg/kg (1mg/ml) IM.
b) **0.01 mg/kg (1mg/10ml) IV/IO** over 30-60 seconds.

Croup/Epiglottitis

a) In patients with audible stridor at rest, ALS consider **3 ml epinephrine 1mg/ml via neb**.

CONTRAINDICATIONS:

Use caution in patients with peripheral vascular insufficiency.

Fentanyl (Sublimaze®)

ALS

PROTOCOL(S) USED IN: Trauma, Orthopedic Injuries, Amputation, Burns, Chest Pain, Abdominal Pain

PHARMACOLOGY AND ACTIONS:
Fentanyl is a pure opioid analgesic used to manage pain.

INDICATIONS:
A. Pain management

SIDE EFFECTS AND NOTES:
A. Respiratory depression.
B. Decreased BP; monitor BP before and after administration. Systolic BP must be >90mmHg.
C. Decreased level of consciousness; watch for respiratory depression.
D. Decreased heart rate.
E. Have naloxone available to reverse over administration.
F. May follow administration with ondansetron for nausea.
G. Administration requires close monitoring and availability of airway equipment.

ADULT DOSING:
50 mcg given slowly IV/IO/IM/IN* titrated to patient's condition and response. Max dose 200 mcg/hr.

Naloxone should be available prior to administration of fentanyl.

PEDIATRIC DOSING:
1 mcg/kg IV/IO/IM/IN*

*IN dose can be doubled.

CONTRAINDICATIONS:
A. Patients with known intolerance to fentanyl.
B. Respiratory depression.
C. Altered mental status.
D. Use caution in patient in labor as neonatal respiratory depression may occur.

Glucose - Oral

BLS

PROTOCOL(S) USED IN: Hypoglycemia

PHARMACOLOGY AND ACTIONS:
Provides a quickly absorbed form of glucose to increase blood glucose levels.

INDICATIONS:
Conscious patient with suspected hypoglycemia.

SIDE EFFECTS AND NOTES:
Duration of effect is limited; patient should consume foods high in carbohydrates as soon as possible.

ADULT DOSING:
15-30 grams orally if the patient can manage their own airway. May be repeated until desired effects have been achieved.

PEDIATRIC DOSING:
Same as adult.

CONTRAINDICATIONS:

A. Decreased level of consciousness.
B. Active vomiting.

Ibuprofen (Motrin®/Advil®)

BLS

PROTOCOL(S) USED IN: Pain Control, Frostbite

PHARMACOLOGY AND ACTIONS:
Nonsteroidal anti-inflammatory (NSAID)

INDICATIONS:
Reduction of pain.
Reduction of inflammatory response.

ADULT DOSING:
600 mg PO

SIDE EFFECTS AND NOTES:
May combine with acetaminophen.

CONTRAINDICATIONS:

A. Hypersensitivity.
B. GI ulceration or GI bleeding.
C. Pregnancy.

Ketamine (Ketalar®)

ALS Pain management
ALS-C Procedural Sedation

PROTOCOL(S) USED IN: Pain Control, Musculoskeletal Injury, Combative Patient

PHARMACOLOGY AND ACTIONS:

A. Blocks afferent impulse of pain perception.
B. Suppresses spinal cord activity.
C. Therapeutic effects include pain control and sedation.

INDICATIONS:

A. Moderate to severe pain. Preferred in cases of suspected shock, hemorrhage, hypovolemia, decreased mental status or respiratory distress.
B. Severe agitation representing danger to self or others.

SIDE EFFECTS AND NOTES:

A. Contraindicated in psychosis/schizophrenia unless used for dangerous agitation.
B. Monitor and treat nausea or vomiting.
C. Hallucinations can occur and may be dysphoric.
D. Sedation dose ketamine may cause apnea.
E. To avoid dosing errors, dilute 100 mg Ketamine into 10 ml syringe.

ADULT DOSING:

ALS

Pain: **ketamine 20 mg IV/IO OR 50 mg IM/IN**. Repeat every 20-30 minutes as needed for pain control or until nystagmus develops. Consider **Ketamine 15mg IV/IO** in smaller adults.

ALS-C

Procedure sedation: **ketamine 1 mg/kg IV/IO.** This is the fully dissociative dose. Be prepared to manage apnea. Pt will have ALOC for ~20 minutes. As much as possible provide a quiet/calm environment. For rare instances of ketamine emergence delirium consider **midazolam 2.5 mg IV/IO** repeat once as needed.

Severe agitation representing danger to self or others -
ketamine 2-4 mg/kg IM or **1 mg/Kg IV/IO**

PEDIATRIC PAIN DOSING:
ketamine 0.1 mg/kg IV/IO, 0.5 mg/Kg IM/IN, for above 3 months old.

Administration:

IV/IO: Dilute ketamine to 10 mg/ml concentration. For 500mg/10ml (50mg/ml) concentration vial, remove 2ml saline from a 10ml flush. Draw up 2 ml (100 mg) into the flush for a total of 10 ml. Agitate to mix. This makes 10 mg/ml solution. Label the syringe to avoid confusion.

CONTRAINDICATIONS:

A. Schizophrenia/psychosis.
B. Age below 3 months.

Midazolam (Versed®)

ALS

PROTOCOL(S) USED IN: Seizure, ketamine emergence delirium.

PHARMACOLOGY AND ACTIONS:

A. Sedative/hypnotic benzodiazepine.
B. Generalized CNS depression.
C. Therapeutic effects include short term sedation and postoperative amnesia.

INDICATIONS:

A. Status epilepticus (any seizure that has lasted longer than 2 minutes or two consecutive seizures without regaining consciousness).
B. Adjunct to ketamine
C. Moderate/severe agitation

SIDE EFFECTS AND NOTES:

A. Respiratory depression.
B. Paradoxical agitation in children.
C. Nausea or vomiting.
D. Increased risk of hypotension with antihypertensives, acute ingestion of alcohol or nitrates.
E. Administration requires close monitoring and availability of airway equipment.

ADULT DOSING:

Seizures:

A. Administer **midazolam 2.5 mg IV/IO or 5 mg IM/IN**. May repeat to a maximum dose of 10 mg for seizures lasting longer than five minutes.

Ketamine Emergence Delirium:

B. Administer **midazolam 2.5 mg IV/IO/IM/IN**

Moderate/Severe Agitation:

C. **Versed 2.5mg IV/IO/IM/IN,** may repeat once after 5min

PEDIATRIC DOSING:

Seizures:

A. Administer **midazolam 0.1 mg/kg IV/IO/IN** to a maximum initial dose of **2.5 mg**. May repeat to a maximum dose of 5 mg for seizures lasting longer than five minutes. If no IV/IO access, administer **midazolam 0.2 mg/kg IM/IN**

Naloxone (Narcan®)

BLS (IN only) ALS (IV/IO)

PROTOCOL(S) USED IN: Altered Mental Status

PHARMACOLOGY AND ACTIONS:

A. Narcotic antagonist.
B. Competitively binds to narcotic sites but exhibits almost no pharmacologic activity of its own.
C. Duration of action is 30-80 minutes.

INDICATIONS:

A. Reversal of narcotic overdose.
B. Coma of unknown etiology.

SIDE EFFECTS AND NOTES:

A. Acute withdrawal symptoms in addicted patients, especially vomiting.
B. Be prepared to restrain patient.
C. Titrate dosing to keep the patient awake, responsive and free from respiratory depression, but calm.
D. Patients who have received naloxone must be transported to the hospital because coma may recur when naloxone wears off.
E. Duration of action is 20-60 minutes, shorter than most opioids; repeat dosing may be needed. Watch for signs and symptoms to reappear.

ADULT DOSING:

Reversal of opioid effects, coma of unknown etiology –

A. **0.4-2 mg IV/IO/IM/IN***
B. If no response, repeat 2 mg as supplies allow. Larger and repeated doses may be required to reverse the effects of some opioids.

PEDIATRIC DOSING:

If suspected opiate overdose

A. Naloxone **0.1 mg/kg IV/IO/IM/IN*** to a maximum of 2 mg.

*IN dose can be doubled.

CONTRAINDICATIONS:

None

Ondansetron (Zofran®)

ALS

PROTOCOL(S) USED IN: Nausea & Vomiting

PHARMACOLOGY AND ACTIONS:
Selective antagonist of serotonin receptor located in the CNS at the chemoreceptor trigger zone and in the peripheral nervous system on nerve terminals of the vagus nerve.

INDICATIONS:
Prevention and control of nausea and vomiting.

SIDE EFFECTS AND NOTES:

A. Headache, malaise, fatigue, dizziness.
B. Safe in pregnancy and lactation.

ADULT DOSING:
Nausea & vomiting -

A. **4 mg ODT/IM/IV/IO. Repeat x 1 of 4mg PRN**

PEDIATRIC DOSING:

A. Ondansetron use in patients under 2 years of age requires OLMC consultation.
B. For children < 40 kg administer **ondansetron 0.1 mg/kg via slow IV/IO** push over 2 minutes up to a total maximum IV/IO dose of 4 mg.

CONTRAINDICATIONS:
A. Known prolonged QTc. Use cautiously if patients are on medications that cause prolonged QTc such as many antipsychotics.
B. Hypersensitivity to Zofran or similar medications (5-HT3 type serotonin receptor agonists (e.g., dolasetron [Anzemet®] and granisetron [Kytril]).

Oxygen

BLS

PROTOCOL(S) USED IN: All when indicated

PHARMACOLOGY AND ACTIONS:
Raises the amount of oxygen in the blood and the amount delivered to the tissues.

INDICATIONS:

A. Suspected hypoxia or respiratory distress from any cause.
B. Acute chest pain where MI is suspected.
C. Shock from any cause.
D. Major trauma.
E. Carbon monoxide poisoning.

SIDE EFFECTS AND NOTES:

A. **DO NOT WITHHOLD OXYGEN from patients with COPD.** Be prepared to assist ventilations if needed.
B. Patient should be breathing adequately on their own; if not, assist with BVM.
C. Oxygen supports combustion, use caution around flame.
D. Oxygen toxicity is not a hazard from acute administration.
E. Non-humidified O2 is drying and irritating to mucous membranes.

CONTRAINDICATIONS:
None

DOSAGE		INDICATIONS	
Low Flow (1-2lpm)		Patients with chronic lung disease	
Moderate Flow (4-6lpm)		Precautionary use for trauma, chest pain	
High Flow (10-15lpm)		Severe respiratory distress	
OXYGEN THERAPY			
Method	Device	Flow Rate	O2 % Inspired Air
Low to Moderate Flow	Nasal Cannula	1-6 lpm	25-60%
Low to Moderate Flow	Oxymizer	0.5-6 lpm	25-80%
High Flow	Non-rebreather mask	10-25 lpm	90+%

Sodium Bicarbonate

ALS
If available. Stored in base clinic.

PROTOCOL(S) USED IN: crush injury, ACLS

PHARMACOLOGY AND ACTIONS:
Alkalinizing agent

INDICATIONS:
Emergent treatment of peri-arrest or cardiac arrest in suspected metabolic acidosis or as directed by OLMC or advised by poison control.

SIDE EFFECTS AND NOTES:

A. metabolic alkalosis, hypernatremia, hypocalcemia, hypokalemia

B. one 50ml prefilled syringe (large brown box) contains 50 mEq, 4.2 grams of sodium bicarbonate.

ADULT DOSING (of Calcium Chloride)
Peri-arrest/Cardiac arrest with suspected metabolic acidosis: 50 mEq (one box) IV/IO

PEDIATRIC DOSING:
1mEq/kg IV/IO

Administration:
Not compatible with Calcium