HUDSON
EMERGENCY MEDICAL SERVICE

Protocol Addendum

2019

Hudson EMS Protocol Addendum, 2019

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Addendum Introduction:

This document is an addendum to the Lake Health 2019 EMS Protocol, (Update: 01/01/2019), and is for use by the Hudson Emergency Medical Service.

Please see the Lake Health 2019 EMS Protocol for the majority of the EMS Protocols.

Additional information, specific to Hudson EMS, is contained within this addendum.

The content of this addendum is neither reproduced within, nor searchable within, the core Lake Health Protocol. It is, however, to be considered a part of the Protocol, and is provided as a separate document only for logistical purposes.

There may be instances within the Lake Health Protocol where the details are specific to either the Lake County or the Cincinnati region of this Protocol's implementation, in which case deviation to comply with Hudson operational practices is expected.

This Hudson EMS specific addendum is to be viewed as superseding the Lake Health Protocol when differences exist.

This addendum is in effect until updated, and its contents shall be considered to be a part of the Lake Health 2019 EMS Protocol regarding expectations of care, QA, and Medical Control authorization.

PROTOCOL AUTHORIZATION

This pre-hospital Patient Care Protocol and Procedures Manual is in effect and operational for Hudson EMS, Hudson, Ohio; their EMT, Advanced EMT, Paramedic, and ancillary personnel.

All personnel recognized as active members, in good standing, may operate according to the limits of their individual State of Ohio EMT, AEMT, or Paramedic certification level, and in strict compliance with the following pre-hospital Patient Care Protocol and Procedures Manual.

Activities of EMS personnel must also be in compliance with all applicable federal, state, county and local laws and regulations pertinent to the practice of EMS.

All previous versions of this Protocol and Procedures Manual are considered void.

I, Jay Carter, MSEE, MD, FACEP, FAEMS, authorize this agency, and its authorized personnel to operate as an Emergency Medical Service under my direction and in accordance with this pre-hospital Protocol and Procedure Manual.

_____

Jay Carter, MSEE, MD, FACEP, FAEMS

Medical Director, The City of Hudson

September 1, 2019

PREFACE

This EMS Protocol and Procedure manual was established to provide for optimal patient care provided by multiple levels of EMS providers functioning within this agency.

This agency's medical director is the sole physician authorized to provide Medical Control Authority to personnel within this agency. Each person functioning under the auspices of this agency is required to have the specific approval and authorization of the Medical Director.

Errors in pre-hospital care are generally errors of omission. The EMS provider will be proactive in the implementation of these Protocols and should not withhold or delay any indicated intervention. Providers should additionally remember to "FIRST DO NO HARM".

GUIDELINES AND PROTOCOLS

This document contains both general guidelines and specific EMS Protocols and Procedures for use by our EMS providers.

The practice of pre-hospital emergency medicine demands a strong commitment to the profession. It is the responsibility of each EMS provider to remain current in the lifelong process of EMS education. EMS providers are strongly encouraged to attend available continuing education opportunities.

Pre-Hospital and Emergency Medicine continues to evolve at a rapid pace. Accordingly, this document is subject to revision as new information becomes available and to be consistent with currently acceptable medical practices.

CONTINUOUS QUALITY IMPROVEMENT

To maximize the quality of care in EMS, it is necessary to continually review all EMS activities to identify areas of excellence and topics for improvement. This approach allows for continuous improvement and optimal care. Continuous Quality Improvement ("CQI") is defined as a proactive process of systems evaluation to assess current performance and mold methodologies and practice patterns to further improve overall performance. Components of CQI include: active communications, documentation, case presentations, protocol review and refinement, medical direction involvement, medical community involvement, continuing education, and reassessment of expected goals and outcomes. Participation in the CQI process is mandatory in order to function within this system.

The primary focus of CQI is on "system performance". Specifically, CQI focuses on the bigger picture of our system, including protocols, guidelines, equipment, training and standard operating procedures, rather than on the individual care provider, or any specific patient.

The EMS Medical Director may request additional documentation for gathering information about a call, event or procedure in question. Failure to cooperate with the CQI or quality assurance process may result in withdrawal of authorization to practice.

DISCLAIMER

Every attempt has been made to reflect sound medical guidelines and protocols based on currently accepted standards of care for out of hospital emergency medicine. It is the reader's responsibility to stay informed of any new changes or recommendations made at the State or service level and adopted by this agency. Despite our best efforts, these guidelines may contain typographical errors or omissions.

General Policies:

- All personnel shall always conduct themselves in a professional manner during which time they are on duty, or in uniform.

- All personnel shall provide care encompassing procedures and medication administrations only up to their level of training, certification, Protocols, pre-approved departmental authorization, and Ohio EMS Scope of Practice.

- Hudson EMS provides service to all the citizens and visitors to the City of Hudson and will not deny care or medical service to any patient based on their race, creed, religion, sexual preference, ability to pay, location, or pre-arrival care.

- All patients and family members are to be treated with due respect.

- All personnel are individually responsible for being up to date on all departmental policies, procedures, and protocols.

- This department's Medical Direction authorization exists only while functioning under the auspices of this department.

- Medical records, (Patient Care Reports), and associated documentation shall be accurate, complete, and timely.

- Patient confidentiality is always to be respected.

- All personnel shall conduct operations in a manner to minimize undue risk, harm, or injury to themselves and their crews.

- All personnel shall maintain departmental, State, and other regulatory credentials as required, and shall provide documentation of such as requested by the Medical Director, Chief, or their designee.

- All medications, procedures, and ancillary medical equipment are to be specifically approved by the Medical Director.

- The Medical Director is the only physician who can provide authorization, (Medical Direction), to function in a medical capacity, or related support capacity, within this department.

- The Medical Director may limit, suspend, withdraw, or revoke an individual's Medical Direction authorization at any time, at the sole discretion of the Medical Director.

- Medical Direction and this department recognize a "Zero Tolerance" policy regarding illicit drug and alcohol usage amongst health care providers.

Scope of Practice:

The Hudson Emergency Medical Service will, as a general principle, provide an Advanced Life Support (ALS) level of service and patient assessment to each patient encountered by our service.

For the purposes of this policy, an ALS response presumes an ALS patient assessment by a Paramedic will occur.

When HEMS resources preclude an ALS assessment, it may be undertaken through other means such as mutual aid.

Non-ALS assessment may, on rare occasion, be appropriate. Examples include patients with minor concerns who otherwise meet the On-Line Medical Control (OMLC) contact exemption policy, or those with significant concerns facing a significant delay in transport pending an ALS response.

Non-ALS transport may be undertaken, when medically appropriate, following both an ALS assessment and as per the Level of Care Reassignment Protocol.

It is acknowledged that on occasion deviation from this protocol may be required due to scene safety, scene management, or due to other extenuating circumstances. Such events shall be noted within the patient's PCR, or via the appropriate form. Sanctioned deviation is at the sole discretion of the Medical Director.

Multiple simultaneous patient encounters, (e.g. LVI's & MCI's), are excluded from this policy. Either ALS or BLS assessment may be undertaken, as appropriate, per Incident Command & Medical Control.

Hudson EMS Approved Destination Facilities & Phone Numbers

Akron Children's Hospital
ER: 177 W. Exchange St.
Akron, OH 44302
330-543-1000
800-262-0333
EMS: 330-543-8995

Akron City Hospital, (Summa)
Main: 525 East Market Street
ER: 141 N. Forge St.
Akron, OH 44304
ER: 330-375-3361
EMS: 330-375-3198

Cleveland Clinic Akron General, (Main)
1 Akron General Ave.
Akron, OH 44307
330-344-6000
EMS: 330-344-8451

Cleve Clinic Akron General North
4300 Allen Rd.
Stow, OH 44224
330-945-9300
EMS: 330-945-3111

Cleve Clinic Twinsburg ED
8701 Darrow Rd.
Twinsburg, OH 44087
330-888-4101
EMS: 330-487-1232

Univ Hosp Ahuja Medical Center
3999 Richmond Rd.
Beachwood, OH 44122
216-593-5500
EMS: 216-593-1755

Univ Hosp Bedford Medical Center
44 Blaine Ave.
Bedford, OH 44146
440-735-3900
EMS: 440-735-3810

Univ Hosp Portage Med Cntr, (Robinson)
6847 N. Chestnut St.
Ravenna, OH
330-297-0811
EMS: 330-297-2958

Univ Hosp Twinsburg Health Center
8819 Commons Blvd.
Twinsburg, OH 44087
330-405-1500
EMS: 330-486-9801

Western Reserve Hospital
1900 23rd Street
Cuyahoga Falls, OH 44223
330-971-7000
EMS: 330-971-7828

Trauma Centers:
Akron City Hosp, (Summa)
Cleve Clinic Akron General, Main
Akron Children's Hospital

HEMS Vehicles:
4011 330-760-4011
4012 330-958-4056
4016 330-958-7813
4021 330-958-7814
4036 330-801-4026
4046 330-813-4046
4066 330-958-4440

HEMS Dispatch:
330-342-1800

Chief Varnes:
O: 330-342-1854
C: 330-441-1776

Assist. Chief Vargo:
O: 330-342-1876
C: 330-958-7806

Dr. Carter:
C: 330-730-1757

Advanced Care Medications:

EMS may, at times, be called upon to transport patients whose care has been initiated by a physician prior to EMS assuming care of the patient. The transport of a patient from a physician's office, urgent care center, and nursing home are examples of this.

If the patient is on an I.V. infusion, receiving fluids, medications, TPN, or blood products not otherwise specifically sited within this protocols, the patient may be continued on it provided that the crew is paramedic staffed, and has received specific directions for the infusion by an on scene physician, or by OLMC.

The physician / medical control is to be specifically informed that the given medication is not a "Standard EMS Medication", and that it may be either discontinued for the transport, or continued if the paramedic is provided with the following information. Such instructions are to include what adjustments are to be made to the administration should the patient experience:

- Hypertension
- Hypotension
- Symptomatic bradycardia
- Malignant tachycardia, (e.g. HR > 150, VT, etc.)
- Anaphylactic symptoms, possibly from the medication, (e.g. Stop the medication)
- Other specific instructions as provided.

The purpose of this Protocol is to facilitate the continuation of specific, physician ordered treatment, indicated to enhance patient care, particularly where its discontinuation may worsen the patient's condition.

Typical examples of this scenario include, but are not limited to:

- A pediatric patient on an antibiotic, such as Rocephin.
- A cardiac patient on a nitroglycerine drip.
- A diabetic patient on a D_5 or D_{10} type IV fluid.

ALS Cardio-Respiratory Monitoring

Paramedic

Cardio-respiratory monitoring is indicated for the majority of patient presentations, including, but not limited to:

- Unconsciousness
- Syncope, Near syncope
- Chest pain
- Respiratory distress
- Altered mental status
- Significant trauma
- Abnormal vital signs
- Anaphylaxis
- Environmental emergencies
- Dizziness, Lightheadedness

Cardio-respiratory monitoring is indicated for all patients receiving pre-hospital medications, including supplemental oxygen.

For many patients an EKG rhythm strip and pulse oximetry are sufficient.

A 12-Lead EKG is indicated for patients experiencing:

- Cardiac type chest pain
- Chest pain where the cause is not clearly known not to be cardiac in nature
- Shortness of breath
- CHF / Pulmonary Edema
- Syncope / Near syncope
- Arrhythmias evident on the 3-Lead rhythm strip
- Adult diabetic patients experiencing weakness or nausea / vomiting
- Geriatric patients who feel "weak"
- Many patients who have upper abdominal pain / discomfort
- Many patients who have mid to upper back pain
- Other patient's at the crew's discretion

A 12 lead EKG, when obtained for patients experiencing chest pain, is ideally obtained prior to treatment with nitrates. Pre and post treatment EKGs may be significantly different, and this is pertinent to the patient's definitive care.

All patients with syncope, near-syncope, or unconsciousness, are to be placed on a cardiac monitor ***immediately*** upon EMS personnel arrival. Arrhythmias are a known cause for such events and are often transient and episodic.

Pulse oximetry monitoring should be continuous monitoring in those patients with significant cardio-respiratory symptoms. Non-continuous monitoring may be used in less ill/injured patients.

If no oximetry reading can be obtained, the chart should be marked: “Unable” or “Poor Signal”. A poor signal is often due to poor peripheral circulation. The patient should be assessed closely for their hemodynamic status, (shock), and treated as indicated. Cold extremities may also result in poor peripheral perfusion resulting in a poor signal and can be treated by warming the patient.

All patients needing to be monitored throughout the transport should be monitored until they are transferred to the hospital bed. Monitoring shall not be discontinued within the squad, prior to taking the patient into the ED.

All patients with an elevated carboxyhemoglobin level, (COHb), obviously require its documentation. A normal value should be documented in cases where the patient's history or symptoms necessitated its being checked.

All patients are to have a minimum of two sets of vital signs. At times this might not be possible, such as with an agitated psychiatric patient, in which case the PCR should reflect the reason for deferring a second, (or more), set of vital signs.

Exceptions:

- Death in the field
- Medical Control contact exemptions
- In station asymptomatic B/P checks

Children with Special Health Care Needs, (CSHCN):

The medically fragile child is one who depends on some form of technological assistance. This can be anything from a nasal cannula to a child who requires total ventilatory support.

Caring for a medically fragile child requires a full **TEAM** = **T**rust **E**very **A**vailable **M**ember. Do not be concerned about removing the family from the crisis situation but *inform* them about what you are doing and *include* them in your plan of care. In most cases, the parents and/or home care providers can be of great assistance to the EMS providers. It is vitally important that their knowledge and experience is utilized when treating the child. Most importantly, they can console, comfort and calm their child.

A. Treat the ABC's first. Treat the child, not the equipment. If the emergency is due to an equipment malfunction, manage the child appropriately using your own equipment.

B. Children formerly cared for in hospitals or chronic care facilities are often cared for in homes by parents or other caretakers. These children may have self limiting or chronic diseases. There are a multitude of underlying medical conditions that may categorize children as having special needs. Many are often unstable and may frequently involve the EMS system for evaluation, stabilization, and transport. Special needs children include technology-assisted children such as those with tracheostomy tubes with or without assisted ventilation, children with gastrostomy tubes, and children with indwelling central lines.

C. CSHCN may have many allergies. Children with spina bifida are often allergic to latex. Before treating a patient, ask the caregivers if the child is allergic to latex or has any other allergies.

D. Listen carefully to the caregiver's guidance regarding their child's treatment.

E. Children with chronic illnesses often have different physical development from well children. Therefore, their baseline vital signs may differ from normal standards. The size and developmental level may be different from age-based norms and length based tapes used to calculate drug dosages. Ask the caregiver if the child normally has abnormal vital signs, (i.e. a fast heart rate or a low pulse oximeter reading).

F. Some CSHCN may have sensory deficits, (i.e. they may be hearing impaired or blind), yet may have age-appropriate cognitive abilities. Follow the caregiver's lead in talking to and comforting a child during treatment and transport. Do not assume that a CSHCN is developmentally delayed.

G. When moving a special needs child, a slow careful transfer with two or more people is preferable. Do not try to straighten or unnecessarily manipulate contracted extremities as it may cause injury or pain to the child.

H. Caregivers of CSHCN often carry “go bags” or diaper bags that contain supplies to use with the child’s medical technologies and additional equipment such as extra tracheostomy tubes, adapters for feeding tubes, suction catheters, etc. Before leaving the scene, ask the caregivers if they have a “go bag” and carry it with you.

I. Caregivers may also carry a brief medical information form or card. The child may be enrolled in a medical alert program whereby emergency personnel can get quick access to the child’s medical history. Ask the caregivers if they have an emergency information form or some other form of medical information for their child.

J. Caregivers of CSHCN often prefer that their child be transported to the hospital where the child is regularly followed or the “home” hospital. When making the decision as to where to transport a CSHCN, take into account: the child’s condition, capabilities of the local hospital, caregiver’s request, and the choice of approved destination facilities.

Croup, Alternative Medication Treatment

This Protocol is a supplemental addition to the Lake Health Protocol for the treatment of croup.

For Moderate / Severe symptoms may one administer Epinephrine as per the Lake Health Protocol,

OR one may administer:

Racemic Epinephrine, 2.25% Solution:

0.5 ml of Racemic Epi mixed with 3 ml of NS, administered as an aerosol treatment.

- May repeat x 2 prior to contact with OLMC.
- May give back-to-back, if needed, as guided by the patient's condition.

Firefighter Rehabilitation

Purpose:
The purpose of this protocol is to ensure that the physical and mental condition of our fire department personnel operating at the scene of an emergency incident or training exercise does not deteriorate to the point that it adversely impacts the safety of the firefighter, or others on the scene.

Establishment of REHAB:
Rehab should be established as soon as possible for any incident which will require an extended commitment of resources.

Staffing of REHAB:
At least one BLS crew member should be designated to manage the Rehab area. This crew member will ensure that firefighters have access to beverages, and that personnel get a sufficient break. This crew will assist in establishing an appropriate environment to benefit the rehab process.

Location of REHAB:
Environment: Weather is a major consideration and the site should provide relief from extreme weather conditions. Space must be available for firefighters to sit, remove equipment, etc. The site should be far enough from the incident to isolate firefighters from hazards yet near enough for easy access to the incident. Noise and exhaust from fire apparatus is also to be considered.

Resources:
Fluids: Water, oral electrolyte solutions, ice, etc.

Rest:
Unless otherwise superseded by Incident Command or Hudson Fire Department protocols, all members shall be sent to rehabilitation following the use of two 30-minute SCBA cylinders or one 45- to 60-minute SCBA cylinder. Shorter times might be considered during extreme weather conditions. Rest and cooling/warming rehab intervals will not be less than 10 to 20 minutes.

REHAB Assessment:
The REHAB EMS crew will be responsible for screening members entering REHAB and documenting their vitals and the beginning REHAB time. The crew will assess the firefighter's name, B/P, Pulse, SpCO and SpO_2 .

Pulse will be WNL (60 – 100) prior to release back to duty. A HR that is abnormally fast, slow or irregular should be turned over to the EMS crew for evaluation. Check Temperature: Elevated temperature, noted by touch or measured, should alert the rehab crew to the possibility of heat-related illness. A member whose blood pressure is greater than 160 systolic and/or 100 diastolic should not be released from rehabilitation. Respiratory rate will be WNL (12 – 20)

prior to being released back to duty. Record evaluation and treatment times, all findings and time returned to duty on the Rehab report.

No Firefighter will return to duty without being released by the rehab crew. NFPA 1584.

EMS Assessment:
Any firefighter that after rehab assessment and a reasonable amount of time does not rebound to a healthy state will be turned over to EMS for care.

Hyperventilation Syndrome

EMT, AEMT and Paramedic

1. Universal patient Assessment Protocol, Adult or Pediatric, as indicated.
2. Be calm and reassuring. Carefully explain to the patient why this is happening.
3. Successful treatment requires that the patient gain control of his / her own breathing.
4. Administer O_2 as per the Oxygen Protocol.
5. Monitor, as able, SaO_2, EKG, and $EtCO_2$.

AEMT and Paramedic

1. Consider Sedation Protocol.

Medical Control Contact Exemption:

The vast majority of patient's require communications with On-Line Medical Control. This includes, but is not limited to, all patients who are transported, all patients who receive medications, and all patients with significant medical or trauma presentations. On-line communications is required for all patients who demonstrate an altered level of consciousness, or whom appear to be intoxicated.

On-line communications may be established, if desired, even in those cases which are exempt from doing so.

CONTACT EXEMPTIONS:

It is not necessary to establish contact with On-Line Medical Control, (OLMC) in the following circumstances.

1. Exemption is granted for on-station, asymptomatic, blood pressure checks meeting the following criteria:
   - ✓ Asymptomatic, (No headache, chest pain, shortness of breath, etc.)
   - ✓ BP: Systolic < 200, Diastolic < 100
   - ✓ Non-ill in appearance
   - Patient's name and B/P are to be recorded in the station Log Book.

2. Exemption is granted for minor, first aid type calls, such as giving a band aid to a patient who does not require other care.

3. Exemption is granted for calls where there is no injury claimed by the supposed victim, and none is noted by EMS personnel. *An example would be the victim of an MVA where EMS was activated by a third party, and the person involved denies any injury, and there is no injury apparent to EMS personnel.* Physical exam not performed.
   - An ePCR is to be completed. Include the patient's name if it is provided.
   - The ePCR documents EMS's response to the scene, and the fact that EMS inquired as to the presence of patients with injuries or the desire to be evaluated by EMS.

4. Exemption is granted for calls where there is no injury claimed by the supposed victim, a mechanism of injury did exist, but there was no apparent injury on EMS evaluation.
   Note that a medical record is required, which documents that an examination was performed, and that it was negative for apparent injury. Physical exam performed.
   - A full ePCR is required.

5. Exemption is granted for personnel receiving routine "Rest and Rehabilitation" services in whom there is no indication for medical intervention. *For example, firefighters rotating through "Rehab" for rest and oral hydration are exempt.* However, while an ePCR is not required, rehab documentation must be completed. Those requiring parenteral hydration, oxygen, aerosol treatment, etc., are not exempt.

6. Exemption is granted for minor injuries where private transport for medical evaluation is available, and acceptable to the patient and/or family.
   An example would be a 'stoved' finger or a broken toe, without deformity, in which distal functions are intact both before and after splinting, if immobilization is indicated.
   An example would include a minor laceration with intact distal functions and no active bleeding.
   - A full ePCR is required.

7. Exemption is granted for insect stings and bites which demonstrate only a local reaction, and meet ALL of the following conditions:
   a) The patient has no past history of any significant reaction to insect stings or bites.
   b) More than one hour has elapsed since the sting or bite occurred.
   c) The patient denies any respiratory distress, throat swelling, or diffuse itching.
   d) Physical exam reveals an absence of:
      - ✓ Respiratory distress
      - ✓ Wheezing
      - ✓ Pharyngeal edema or stridor
      - ✓ Generalized (diffuse) urticaria (hives)
      - ✓ Hypotension
   - A full ePCR is required.

8. Exemption is granted for calls for unskilled nursing assistance, (e.g. lifting assistance). *An example would be a call to assist in moving an elderly individual who does NOT have any acute problem.* This would include helping an individual back into bed who has fallen, if a full examination reveals no evidence of trauma, and the history reliably excludes an acute condition as having precipitated the fall. If the patient desires transport, appears ill, demonstrates evidence of trauma, or the cause for the fall is uncertain, then transport is indicated. An ePCR is required for all such patients, transported or not.

9. Exemption is granted for adult patients who are refusing further care and transport against the medical advice of the crew, and whom appear competent to refuse care, understand the risks associated with their refusal for further care and transport, and who do not appear to be impaired by drugs, alcohol, hypoglycemia, hypotension, head injury, or other causes which would impair their ability to make an informed decision, (as per Refusal of Care protocol).
   - A full ePCR is required.

Nerve Agent Exposure

This protocol supplements the Lake Health: Hax-Mat: Auto Injectors Protocol in the Special Protocols Section, HaxMat Sub-Section.

AEMT and Paramedic

DUODOTE Auto Injectors:
Purpose: **These are antidotes to be used in instances of exposure to a nerve or organophosphate agent.**

Contents**: A combination of 2 mg Atropine & 600 mg 2-PAM, Pralidoxime Chloride per injection**

- **NOTE: These injectors are not to be used as a prophylactic modality. There is to be no self – administration of the antidote.**

Auto Injector Use:

(a) Atropine / Pralidoxime, (2 – PAM CL), may be administered by qualified emergency personnel and designated emergency responders who have training in onsite recognition and treatment of nerve and/or organophosphate agent intoxication in the event of a chemical release. This is specific to the disaster setting.

(b) Medical treatment is directed to relieving repiratory distress and treating seizures.

(c) Apply appropriate Medical Protocol(s).

Indications for use of the Duo-Dote Auto Injectors :

(a) It is a concern that the use of auto – injectors could lead to administration of inappropriate and harmful doses during a non – chemical agent or minimal exposure situations. The auto – injectors are to be used only if the patient presents with: **SLUDGEM and RESPIRATION and AGITATION**

(b) The Atropine / Pralidoxime, (2- PAM CL), auto injectors should be used by qualified emergency medical personnel and designated emergency responders only after the following events have occurred:

1. The recognition of the existence of a potential chemical or organophosphate agent released in the area.
2. Some or all of the symptoms of the nerve agent poisoning cited below are present: **SLUDGEM + RESPIRATORY DISTRESS and AGITATION**

S – salivation, (excessive drooling).
L – lacrimation, (tearing).
U – urination.
D – defecation / diarrhea.
G – GI upset, (cramps).
E – emesis, (vomiting).
M – muscle, (twitching, spasm, “bag of worms”).
and
RESPIRATORY DISTRESS – difficulty breathing / distress, (sob, wheezing).
and
AGITATION + CNS SIGNS – confusion, agitation, seizures, coma.

3. If symptoms resolve, then only monitoring is necessary.

The Duo-Dote Auto-injector is most effective if administered immediately after the poisoning, especially for severe exposures.

If seizures persist, see seizure protocol.

When the nerve agent has been ingested, exposure may continue for some time due to slow absorption from the lower bowel, and fatal relapses have been reported after initial improvement. Continued medical monitoring and transport is mandatory.

If dermal exposure has occurred, decontamination is critical and should be done with standard decontamination procedures. Patient monitoring should be directed to the same signs and symptoms as with all nerve or oganophosphate exposures.

- **DuoDote autoinjector has a limit of 3 injections. This will administer a total 1,800 mg of 2-PAM.**
- **Atropine: Should be administered in 2 mg IM increments until SLUDGEM ceases. There is no maximum dose for Atropine.**

SEVERITY	**CHOLINERGIC AGENT** **SIGNS & SYMPTOMS**	**ADULT TREATMENT** **STANDING ORDERS**
Mild	Runny nose Cough Pupils may be pinpoint Eye pain Lacramation	Decontaminate Administer 100% oxygen Administer One DuoDote kit IM may repeat every 3-5 minutes until symptoms improve. Maximum of 3 doses. May administer Atropine 2 mg IM every 3-5 minutes until symptoms improve.
Moderate	Runny nose Cough Sweating, twitching Nausea, abdominal cramping Weakness Localized sweating (seen with dermal exposure)	Decontaminate Administer 100% oxygen. Administer Two DuoDote kits IM May administer 1 additional DuoDote in 3-5 minutes. May administer Atropine 2 mg IM every 3-5 minutes until symptoms improve.

	Eye pain, trouble seeing Wheezing, shortness of breath	
Severe	All the above plus: Vomiting Diarrhea Drooling, copious respiratory secretions Significant weakness Seizures Decreased level of consciousness Apnea	Decontaminate Administer 100% oxygen Administer Three DuoDote kits IM May administer Atropine 2 mg IM every 3-5 minutes until symptoms improve. ***&*** *one of the following:* Diazepam 10 mg IM/IV **OR**, Midazolam 5-10 mg IM/IV

Non-Hospital Transfers

Non-hospital location to a Non-hospital location

- HOME TO HOSPICE
- HOSPICE TO HOME

On occasion, one may be called upon to transport a patient from a non-hospital location to another non-hospital facility such as a Hospice Center, or from Hospice to home, or to a doctor's office. The provider(s) will follow the written or pre-existing orders of the patient's physician or physician approved hospice center orders for the transport. At times, a Hospice nurse may arrive or already be at the scene. He/she should be able to help review orders and/or care directives such as DNR or "Support Care" orders to enable transport in accordance with the wishes of the patient and his/her family. A Hospice patient by definition is DNR.

Medical Control does not need to be contacted unless the DNR is revoked. However, if the provider(s) feels the need to contact Medical Control for advice or direction, the provider(s) will clearly advise Medical Control of the patient's terminal condition and DNR status.

These patients require a history, physical exam, vital signs, and a complete medical record, as do all patients.

Non-transported patients:

Hudson EMS provides service to all of the citizens and visitors to the City of Hudson and will not deny care or medical service to any patient based on their race, creed, religion, sexual preference, ability to pay, location, or pre-arrival care.

All individuals that are involved as patients or potential patients should receive proper evaluation and treatment. Most patients warrant transportation to an appropriate medical facility. Non-transported patients fall under two categories: Code 1s and refusals. Code 1 patients undergo an appropriate evaluation and are deemed by EMS and Medical Control to not require EMS transport. Refusal patients are patients that refuse evaluation, treatment, and/or transport. Pre-hospital personnel should utilize the appropriate refusal of care protocol in situations in which a patient refuses evaluation, treatment, and/or transportation.

NON – TRANSPORT ADVISORY (Code 1) –

This category covers all minor illness and injury circumstances and the patient is in no danger of developing significant signs and symptoms. This advisory will be explained to the patient in detail that this is in no way a statement that they do not need medical attention, in fact medical treatment may have already been provided. It is a statement that they do not need to be transported by EMS to obtain additional attention. If the patient has no other way of getting the medical attention needed, then you will offer transport to an approved destination facility.

Note well: If the patient desires EMS transport, then that will be provided. Patients who desire transport will not be "abandoned".

NON – TRANSPORT ADVISORY (Code 1) – *DOES NOT* REQUIRE APPROVAL OF ON-LINE MEDICAL CONTROL if it falls within the MEDICAL CONTROL CONTACT EXEMPTION protocol.

NON – TRANSPORT ADVISORY (Code 1) – For minors:

Ohio Statute defines a minor child as anyone under the age of 18 that has not been emancipated.

An injured or ill minor qualifying as a Code 1 should be handled the same as an adult with the exception of, if you are unable to make contact with and/or obtain a signature from the parent or guardian then an adult can sign for the minor as long as s/he is a responsible adult which may be a family friend, neighbor, school bus driver, teacher, school official, police officer, social worker, or other person at the discretion of the paramedic.

Detailed circumstances of the non-transport advisory (Code 1) will be documented on an ePCR.

On Line Medical Control Contact:

A member of the pre-hospital care team must contact Medical Control at the earliest time conducive to good patient care. This may be a brief early notification or “heads up”. It may mean that the hospital is contacted from the scene if assistance is needed in the patient's immediate care or permission is required for part of the patient care deemed necessary by the paramedic or EMT in charge.

When possible, the member of the team most knowledgeable about the patient should be the one calling in the report.

Reports should contain the key information in an organized manner, while striving to be concise. Additional information can be provided during one’s beside report at the receiving facility.

If multiple victims are present on the scene a preliminary report will be given to Medical Control. This should be an overview of the scene, including the number of victims, seriousness of the injuries, estimated on-scene and transport times to the control hospital or possible other nearby facilities.

Western Reserve Hospital and Children’s Hospital Medical Center of Akron will be used as On-Line Medical Control for patients requiring Non-transport advisories and refusal.

Once the destination facility has been contacted, they will generally serve as the On-Line Medical Control for that patient. Their orders supersede the written Protocol as long as they are both within the Hudson EMS protocol and are within the care provider’s Scope of Practice. OLMC orders to either institute or withhold any specific intervention should be documented within the patient’s medical record. If the destination facility declines to provide OLMC orders then proceed as per the written protocol. Do not re-request orders from any other facility after receiving OLMC orders form the destination facility.

The Medical Director may provide orders, at any time, in addition to, or in lieu of, On-Line Medical Control.

Orthopedic Injuries

EMT, AEMT and Paramedic

- Universal Assessment, Adult or Pediatric as indicated.
- Address life threatening injuries prior to treating orthopedic injuries.
- Assess distal functions, Motor, Sensory, and Pulse(s) / Perfusion.
- Dress wounds.
- If distal pulses are present then splint the region / extremity in the position found.
- If distal pulses are absent then gently realign a long bone injury in an effort to restore perfusion.
- As a general rule, do not manipulate elbow or knee joint injuries.
- Consider traction splints when indicated.
- A vacuum mattress splint may be utilized for immobilization as an alternative to using smaller, localized, splints.
- Whenever possible, to NOT reduce an open fracture. Doing so adds contamination to the wound. Instead dress the exposed bone and wound with saline moistened dressings.
- Pain Management Protocol as indicated.
- Ice pack treatment as indicated.
- Document distal function status pre and post splinting.

Overdose on Benzodiazepines

- Universal Patient Assessment
- Airway Management Protocol
- Oxygen Protocol
- Monitor: SaO_2, $EtCO_2$, EKG
- Blood Glucose Level
- HbCO Level, (If ≥ 10 then see HbCO Protocol)
- IV, IO as indicated
- Consider Narcan Protocol
- Shock Protocol as indicated
- Determine, as best as possible, what was taken, when, how much, and what has been done prior to your arrival.

<u>For a KNOWN benzodiazepine overdose, (or very highly suspected), with both unconsciousness and inadequate respirations:</u>

Paramedic Only:

Romazacon

0.2 mg IV/IO over 30 seconds, then

0.3 to 0.5 mg IV/IO, over 30 seconds, every 30 seconds, as needed.

Maximum dose is 3 mg

Contra-Indications:

- Patient has a known seizure disorder.
- Patient is known to be dependent upon benzodiazepines. (Romazacon can induce a seizure in these patients!)

Warning:

Do NOT administer Romazacon unless it is specifically indicated as above! It is not to be used for diagnostic purposes, or as a "general" antidote.

Examples of benzodiazepines:

Valium, Ativan, Xanax, others.

Overdose on Beta Blocker

Typical symptoms: Shock, Bradycardia, Cardiac Arrest, CHF, confusion, coma, seizure, hypoglycemia

- Universal Patient Assessment
- Airway Management Protocol
- Oxygen Protocol
- Monitor: SaO_2, $EtCO_2$, EKG
- Blood Glucose Level
- HbCO Level, (If ≥ 10 then see HbCO Protocol)
- IV, IO as indicated
- Consider Narcan Protocol
- Shock Protocol as indicated, (IV fluid boluses, Epi Drip)
- Determine, as best as possible, what was taken, when, how much, and what has been done prior to your arrival.

Paramedic Only:

For a KNOWN or suspected Beta blocker overdose:

- **Calcium Chloride**, 10% (1000 mg/10ml) solution:
  - 1 gm, (10 ml), Slow IVP.
  - May dilute to administer.
  - MR x 1 in 5 minutes if no response hypotension or bradycardia.
- **Atropine:**
  - Adult: 0.5 - 1 mg IV/IO, MR every 3 - 5 minutes to a Maximum of 3 mg
  - Peds: 0.05 mg/kg IV/IO, MR every 3 - 5 minutes to a maximum of 3 mg.
    - Minimum Peds dose is 0.1 mg
    - Maximum Peds dose, per dose, is 0. 5 mg
- **Glucagon:**
  - Adult: 1 mg IM/IV/IO
  - Peds: 0.1 mg/kg IM/IV/IO to a Maximum of 1 mg

Common Beta Blockers:

Acebutolol, (Sectral)	Nadolol, (Corgard)
Atenolol	Sotalol, (Betapace)
Carteolol, (Cartrol)	Propranolol, (Inderol)
Esmolol, (Brevibloc)	Timolol
Labetalol, (Normodyne)	Others
Metroprolol, (Toprol)	

Overdose on Calcium Channel Blocker

Typical symptoms: Shock, Bradycardia, Cardiac Arrest, CHF, confusion, coma

A SINGLE PILL of Nifedipine can be FATAL in pediatrics.

- Universal Patient Assessment
- Airway Management Protocol
- Oxygen Protocol
- Monitor: SaO_2, $EtCO_2$, EKG
- Blood Glucose Level
- HbCO Level, (If ≥ 10 then see HbCO Protocol)
- IV, IO as indicated
- Consider Narcan Protocol
- Shock Protocol as indicated, (IV fluid boluses, Epi Drip)
- Determine, as best as possible, what was taken, when, how much, and what has been done prior to your arrival.

Paramedic Only:

For a KNOWN or suspected calcium channel blocker overdose:

- **Calcium Chloride**, 10% (1000 mg/10ml) solution:
  - 1 gm, (10 ml), Slow IVP.
  - May dilute to administer.
  - MR x 1 in 5 minutes if no response hypotension or bradycardia.
- **Atropine:**
  - Adult: 0.5 - 1 mg IV/IO, MR every 3 - 5 minutes to a Maximum of 3 mg
  - Peds: 0.05 mg/kg IV/IO, MR every 3 - 5 minutes to a maximum of 3 mg.
    - Minimum Peds dose is 0.1 mg
    - Maximum Peds dose, per dose, is 0. 5 mg
- **Glucagon:**
  - Adult: 1 mg IM/IV/IO
  - Peds: 0.1 mg/kg IM/IV/IO to a Maximum of 1 mg

Common Calcium Channel Blockers:

Amlodipine, (Norvasc)	Nicardipine, (Cardene)
Bepridil, (Vascor)	Nifedipine, (Adalat, Procardia)
Diltiazem, (Cardizem, Dilacor)	Nimodipine, (Nimotop)
Felodipine, (Plendil)	Verapamil, (Calan, Isotin, Verelan)
Isradipine, (DynaCirc)	Others

Pronouncement of Death:

Under Ohio administrative code rule 4731-14-01, only a licensed physician can pronounce a person dead. A physician does not have to personally examine the body of the deceased "if a competent observer has recited the facts of the deceased's present medical condition to the physician and the physician is satisfied that death has occurred."

Competent observers are individuals who by virtue of their training and licensure are able to determine vital signs or the absence of vital signs and assist the physician in making the determination of death. Competent observers are not themselves permitted to make a pronouncement of death. Therefore the following protocol will be followed upon the determination that death has occurred and resuscitative efforts are not applicable.

Requesting pronouncement of death:
Western Reserve Hospital will be contacted as OLMC and will provided with a full description of the scene, ALS patient assessment, and a request for a pronouncement and time of death.

Document the name of the physician acting as OLMC along with the time and method of communication on your PCR.

Contact the office of the Medical Examiner, (Summit County Coroner's Office), at 330-643-2101 with the location of the deceased, circumstances surrounding the death, the deceased's SSN, DOB, next of kin and their contact number, and the physician that pronounced.

The M.E. will advise if they are going to take jurisdiction of the decease or if they will release the body. If the deceased is to be transported to the M.E.'s office, contact a private ambulance service to do the body removal. Once pick up arrangements has been made, turn the deceased and the PCR over to the P.D. If the decease is released by the M.E.'s office, assist the family with funeral home arrangements and turn the body over to the P.D. P.D. will remain on scene until the body has been picked up.

Complete the patient care report and provide the agency you are surrendering the body to with a copy including EKG strips, if applicable. Provide support to the family of the deceased.

Always handle a deceased body with kindness and respect.

Note: The Medical Examiner **will not** pronounce a patient deceased. This must be done by the protocol above and before the notification of their office.

Hospice Patients – Pronouncement of death:
A hospice patient will most likely have a DNR at their bedside. This is not a requirement of hospice but is a normal procedure. The hospice patient has already been cleared by a physician and the physician has agreed to sign the death certificate.

Deceased hospice patient procedure:
Notify the hospice agency of the deceased. Give 30 minutes for hospice to call back. If they do not call back, contact OLMC. Obtain the name of the person you spoke to as well as an estimated time of their arrival. Confirm the physician has agreed to sign the death certificate and obtain the name of the physician, include this in the ePCR. Contact the Medical Examiner's office at 330-643-2101 with the location of the deceased, that the patient is hospice, and the physician that will be signing the death certificate. Turn over a copy of your ePCR and EKG strips, if applicable, to the same agency you turn the deceased individual over to.

Radio / Telephone Report Format:

Provide an appropriate pre-arrival report, and solicit OLMC orders as indicated, from the destination facility in a timely manner.

Include:

1. Identify the Squad and yourself, state with emergent or non-emergent radio traffic.
2. If calling OLMC for an AMA transport refusal, state so early in one's report.
3. State if physician's consult or request for orders is desired.
4. Patient's age and sex, include the patient's approximate weight for young pediatric patients.
5. A one-line summery / impression of the patient's condition.

   (e.g. We are en route to you with a 60 year old male presenting with a STEMI by history and EKG; We are en route to you with a 30 year old male major trauma patient ejected from a motorcycle; We are en route to you with an 80 year old female nursing home patient presenting with fever, cough, shortness of breath, and sepsis; etc.)
6. Level of consciousness and orientation to Person, Place, Time, and Incident.
7. Chief Complaint:
   - Mechanism of injury / history of present illness / pertinent scene information.
   - Symptoms, degree of distress.
   - Pertinent negatives.
8. If relevant to the current situation then provide a brief past medical history, pertinent medications, and allergies.
9. Clinical Findings:
   - Assessment findings.
   - Vital signs:

     BP, HR, RR, SpO_2, $EtCO_2$, Temperature, HbCO, trending, etc., as indicated.
   - EKG assessments, include arrhythmias and STEMI vs Non-STEMI, as indicated.
   - Other pertinent observations.
10. Treatment initiated and response to that treatment.
11. Estimated time en route or time of arrival.
12. Update the receiving facility if the patient experiences a significant deterioration.

Sickle Cell Anemia Crisis

- Universal Patient Assessment
- Airway Management Protocol
- Oxygen Protocol
  For this condition do administer supplemental O_2 regardless of the patient's SaO_2
- Monitor: SaO_2, EKG; ($EtCO_2$ as indicated)
- Blood Glucose Level as indicated
- HbCO Level, (If ≥ 10 then see HbCO Protocol)
- IV, (IO as indicated)
- Shock Protocol as indicated
- Fluid bolus:
  1. Adult: 500 ml NS IV, MR x 1
  2. Peds: 20 ml / kg NS IV, MR x 1
- Pain Management Protocol

Termination of Resuscitation Timeframe:

The Termination of Resuscitation Protocol within the Lake Health Protocol Guidelines section uses 10 minutes for the minimum attempted duration of resuscitation.

This minimum time duration is increased to 20 minutes.

The remainder of the protocol is as stated.

Transport Destination

STABLE PATIENT:

1. Stable patients will be transported to the pre-approved destination facility of their choice.

2. If the patient / family request transport to a non-approved facility they may be turned over to a private ambulance service. This constitutes a refusal of care and a refusal form must be completed. Hudson EMS will facilitate contacting a private ambulance service and will remain on the scene until the arrival of the private service. A copy of the PCR will be turned over with the patient to the transporting agency.

UNSTABLE PATIENT:

The definition of an unstable patient is one who presents with any of the following:

Significant chest discomfort, significant dyspnea, altered mental status, signs of shock, or otherwise presents with signs or symptoms of a potentially high acuity nature as determined by the EMS personnel.

1. All patients whose condition meets the definition of UNSTABLE will be transported by HEMS to an appropriate approved destination facility.

2. If several approved destination hospitals are within the same approximate time or distance from the scene, permit the patient and/or patient's family to select the destination facility.

3. If an unstable patient refuses transport to the closest appropriate facility, explain the danger involved in their decision, up to and including a possible result of death. If the patient still refuses to comply with the recommendations of the paramedic and/or OLMC, document it on a PCR and have the patient sign a refusal form. One may then transport the patient to their destination of choice from within the list of approved destination facilities.

DESTINATION FACILITIES:

See Addendum and/or SOP for current list.

Trauma in Pregnancy

- Perform the usual trauma patient care as indicated and covered elsewhere.
- Check for vaginal bleeding, uterine contractions, or leaking amniotic fluid.
- Ask the patient about the presence of any fetal movement, if she has felt this previously.
- If the patient is hypotensive, in addition to the Shock Protocol, tilt the patient up onto their left side, (right side elevated), to help shift the weight of the uterus off of the inferior vena cava.

Tylenol Protocol, Supplement

Tylenol, (Acetaminophen), may be used for the treatment of fever or pain.

Tylenol administration is at the discretion of the Paramedic.

This Protocol supplements the Lake Health Pediatric Fever Protocol.

Paramedic:

Indications:

- Optional, for treatment of fever > 101'F, (or > 38'C), in those who have not had medication for fever within the last 4 hours, (such as Aspirin, Acetaminophen, or Ibuprofen).
- Alternative medication for treatment of pain in those who will not likely require surgery, (in which case they should be given nothing by mouth).

Dosage:

Based upon Age or Weight, as per table below.

Dissolve in mouth or Chew thoroughly before swallowing.

May administer a small drink of water after swallowing medication.

Tylenol Tablets, 160 mg each:

Age	Pounds	Kgs	# Pills	mg
2-3	24-35	11-15.9	1	160
4-5	36-47	16-21.9	1.5	240
6-8	48-59	22-26.9	2	320
9-10	60-71	27-31.9	2.5	400
11	72-95	32-43.9	3	480
≥12	≥ 96	≥ 44	4	640

Notes:

- Tylenol Jr. Meltaways contain 160mg of acetaminophen, each.
- Tylenol comes in many different forms and concentrations, be sure to check the concentration before administering per the table above.

Pharmacology Addendum

Brilinta, (Ticagrelor)

ACTION: Platelet inhibitor

- Brilinta (ticagrelor) keeps the platelets in your blood from coagulating (clotting) to prevent unwanted blood clots that can occur with certain heart or blood vessel conditions.
- Brilinta is used to lower your risk of having a stroke or serious heart problems after you have had a heart attack or severe chest pain (angina).

INDICATIONS:

- **OLMC Order only, for use in treating acute STEMI patients.**

PRECAUTIONS:

- Do not take BRILINTA if there is active bleeding, (e.g. ulcers).
- History of bleeding in the brain.
- Severe liver disease.

ADVERSE REACTION:

- General risk of bleeding, (may be fatal)
- Dyspnea
- Hyper- or hypotension
- Chest pain

DOSAGE:

Adult: 180mg (90mg Tablets x 2, P.O.), with a small sip of water

Pediatric: Not indicated / OLMC order only

How Supplied:

- 90mg is supplied as a round, biconvex, yellow, film coated tablet marked with a “90” above “T” on one side.

Calcium Chloride, ($CaCl_2$)

ACTIONS:

- Couples electrical and mechanical events of the myocardium.
- Increases myocardial contractility.
- Increases ventricular irritability.

INDICATIONS:

- Hyperkalemia
- Overdose of calcium channel blockers or Beta Blockers
- Antidote for Magnesium Sulfate toxicity

PRECAUTIONS:

- Patients taking digitalis-based medications
- I.V. line should be flushed between calcium chloride and Sodium Bicarb.
- Extravasation may cause tissue necrosis.

SIDE EFFECTS:

- Bradycardia
- Hypotension
- Syncope

DOSAGE:

Adult:

- 1 gram slow I.V./IO
- 10 mg/kg slow I.V. push of a 10% solution; may be repeated at 10-minute intervals.

Pediatric:

- **20mg/kg I.V. / IO**
- 0.2 ml/kg slow I.V. push **of a 10% solution, (1gm / 10ml prefilled)**

ROUTE: SLOW IVP / IO

HOW SUPPLIED:

- 1gm / 10 ml prefilled syringe

Prochlorperazine

ACTION:

- Antiemetic.

INDICATIONS:

- For control of severe nausea and vomiting

CONTRAINDICATIONS:

- Patients with a history of hypersensitivity to the drug.

PRECAUTIONS:

- Extrapyramidal and dystonic reactions may occur. Treat these with I.V. Benadryl.

ADVERSE REACTIONS:

- May impair mental and physical ability
- Drowsiness, seizure, arrhythmia

DOSAGE :

ADULT :

- 5-10 mg slow I.V., (over at least 2 minutes), or IM

PEDIATRIC:

- 0.15 mg/kg IM, (I.V. by **OLMC** order only).

Under 4 y/o: OLMC only

ROUTE:

- IVP, (**Slow over 2 minutes)**
- IM, (Deep, not deltoid)

HOW SUPPLIED:

- 10mg / 2ml Vial

Haldol, (Haloperidol)

ACTION:

Blocks the dopamine receptors in the brain that are responsible for mood behavior. Has antiemetic properties.

INDICATIONS:

- Acute psychotic episodes
- Emergency sedation of severely agitated or delirious patients

CONTRAINDICATIONS & PRECAUTIONS:

- None

ADVERSE REACTIONS:

- Arrhythmias including torsade de pointes
- Dystonic reactions, (which are treated with Benadryl).
- Neuroleptic malignant syndrome, (high fever, altered mental status, DEATH)

DOSAGE:

Adult: 5mg IM

Pediatric:

Age 6 - 12 yrs old: 2 mg IM

Age < 6 yrs old: Contraindicated.

ROUTE:

- IM only

HOW SUPPLIED: 5mg / 1ml

Racemic Epinephrine, (Vaponefrin)

ACTION:

Effective in reversing upper airway edema when administered with a nebulizer. Proposed mechanism of action is alpha-adrenergic receptor-mediated vasoconstriction of edematous tissues. Racemic epinephrine also causes bronchodilation, increases one's heart rate, and increases one's cardiac contractile force.

INDICATIONS:

- Croup, (laryngotracheobronchitis)

CONTRAINDICATIONS:

- Hypersensitivity to the drug

PRECAUTIONS:

- Vital signs should be constantly monitored.

ADVERSE REACTIONS:

- Arrhythmias
- Anxiety
- Headache

DOSAGE:

ADULT & PEDIATRIC:

- 0.5ml of a 2.25% solution in 3.0 ml Normal Saline.
- May repeat, back-to-back, x 2 prior to OLMC order.

ROUTE:

- Inhalation by nebulizer

HOW SUPPLIED:

- 2.25% solution in 0.5ml unit dose, to be mixed in 3.0 ml N.S. nebulizer.

Romazacon, (Flumazenil)

ACTIONS:

Benzodiazepine antagonist. Reverses effects of benzodiazepines. Reversal is typically evident within two minutes of administration, peaking at 6 to 10 minutes.

INDICATIONS:

- To reverse CNS and respiratory depression caused by Benzodiazepine overdose, or mixed alcohol and Benzodiazepine overdose.

CONTRAINDICATIONS:

- Romazacon **should not** be used as a diagnostic agent.
- Known or suspected seizure disorder.
- Known or suspected post-ectal state.
- Known or suspected tricyclic overdose.
- Known hypersensitivity to the drug.

PRECAUTIONS:

- Administer with caution, if at all, to patients dependent upon Benzodiazepines as it may induce seizures.

ADVERSE REACTIONS:

- Seizures
- Arrhythmias

DOSAGE:

ADULT :

- 0.2mg I.V. over 30 seconds.
- Then administer 0.3 to 0.5mg q 30 seconds up to a total dose of 3.0 mg.

PEDIATRIC:

- 0.01 mg / kg I.V., (Maximum of 0.2 mg / dose), over 1-minute, repeated q 2 minutes if needed, to a maximum dose of 1 mg.

ROUTE:

- I.V./IO

HOW SUPPLIED:

- 0.5mg / 5ml Vial

Tetracaine Opthalmic, (Pontocaine)

ACTION:

Is used for rapid, brief, ocular anesthesia. The agent inhibits conduction of nerve impulses from sensory nerves.

Tetracaine causes a brief burning or stinging when initially instilled into the eye.

INDICATION:

- Short-term relief from eye pain or irritation.
- Prior to insertion of the Morgan eye lens for subsequent irrigation.

CONTRAINDICATION:

- Patients with known hypersensitivity to tetracaine
- Open eye injuries

ADVERSE REACTIONS:

- Do not allow the patient to rub their eyes once they are anesthetized.

DOSAGE:

ADULT & PEDIATRIC:

- 2 drops to the effected eye, may be repeated in 10 minutes, if needed. Gently pull down the lower eye lid and instill 2 drops into the lower eye sac.

ROUTE:

- Topical ophthalmic

HOW SUPPLIED: 0.5% in 2 ml plastic bottle

Procedures Addendum

Bag Valve Mask (BVM) Ventilation

Indications:

- Patient requiring positive pressure ventilation.
- Patient in respiratory arrest.
- Patient in severe respiratory distress.

Contraindication / Precaution:

- Inflate only to chest rise.
- Insure proper chest rise if pop off valve activates, (Peds only).

Equipment Needed:

- Bag-valve-mask with reservoir.
- Oxygen tubing.
- Oxygen source with regulator and flow meter.
- Assorted oral & nasal airway adjuncts.

	Procedure	Satisfactory	Unsatisfactory
1	Open the airway with jaw thrust or head tilt/chin lift.		
2	Insert an airway adjunct, (oral or nasal airway).		
3	Select proper bag: adult, child, infant.		
4	Select appropriate size mask.		
5	Connect reservoir and oxygen tubing.		
6	Create proper mask-to-face seal with the “EC” clamp technique.		
7	Ventilate adult patient once every 5 seconds, children and infants every 3 seconds.		
8	Adjust oxygen liter flow to ensure reservoir bag stays inflated, (12 – 15 LPM).		

Blow-By Oxygen

Indications:

- Infant / child that will not tolerate a mask or nasal cannula.
- Patient requiring supplemental low concentration oxygen.

Contraindication / Precaution:

- None

Equipment Needed:

- Oxygen tubing
- Oxygen source with regulator and flow meter.

	Procedure	Satisfactory	Unsatisfactory
1	Explain procedure to patient, if possible.		
2	Check Tank Pressure.		
3	Attach oxygen tubing to oxygen regulator.		
4	Adjust liter flow to 4-6 LPM.		
5	Place tubing approximately 1-2 inches from patient's. nose/mouth		
6	Monitor patient as appropriate.		

Chest Decompression, Needle, Anterior Approach

Indications:

- Tension Pneumothorax associated with closed chest trauma and any of the following signs and symptoms:
- Respiratory distress, anxiety or restlessness.
- JVD (if not hypovolemic).
- Decreasing LOC.
- Initially tachycardic but later will be bradycardic.
- Hypotension.
- Tracheal deviation, (very late sign).
- Absent breath sound(s).

Contraindication / Precaution:

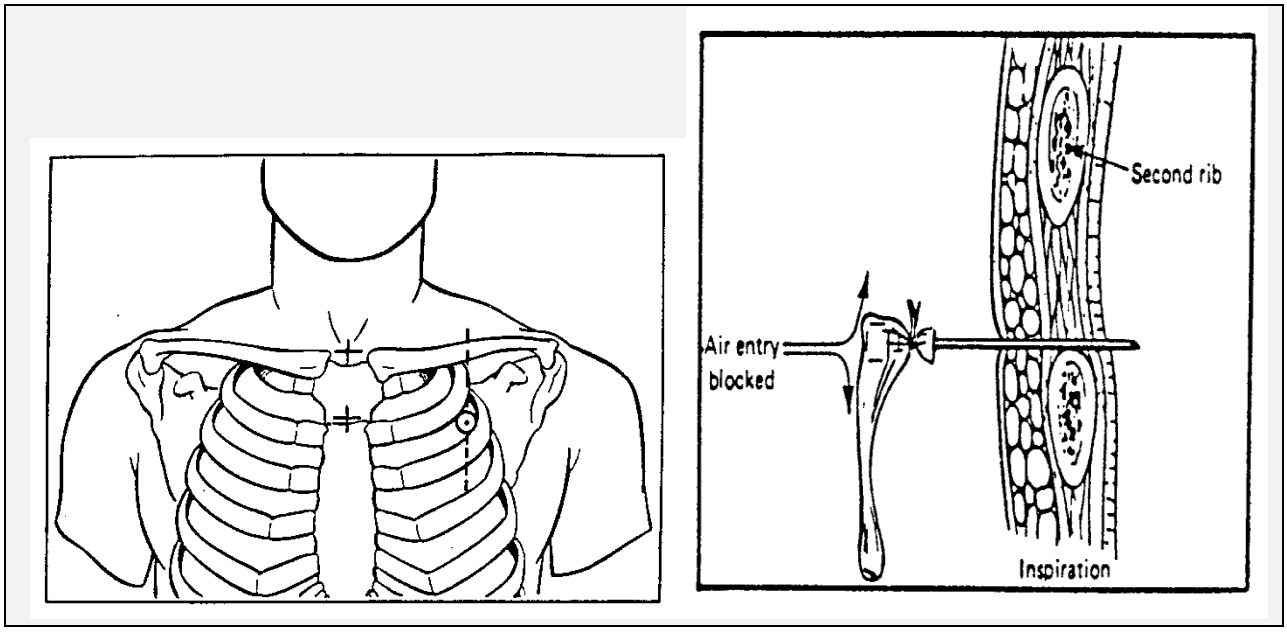
- Not all signs and symptoms listed above will be present.
- Must enter skin above the ribs to avoid neurovascular bundle located just underneath each rib.
- Creation of a pneumothorax may occur if one is not already present.
- Laceration of the lung is possible.

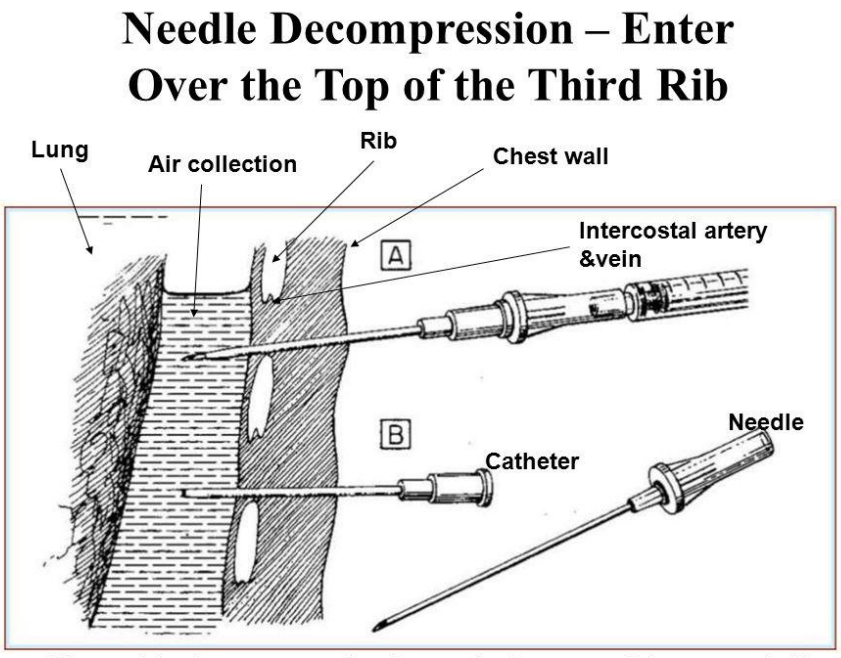
Equipment Needed:

- 10ml syringe
- 14 ga IV catheter/minimum 3 ½" length.
- 3-way stopcock.

	Procedure: Needle Chest Decompression – Anterior Approach
1	Identify landmarks and prep the skin.
2	Insert needle straight into the second intercostal space in the midclavicular line, just above the top of the rib, perpendicular to the chest wall.
3	Advance the catheter forward until the hub of the angiocath is in contact with the patient's skin and retract needle leaving catheter in patient's chest.
4	Attach 10ml syringe to the hub of the angiocath
5	Confirmation of a successful decompression will be evident by positive pressure allowing ease of pulling back on plunger. If negative pressure is felt when pulling back on the plunger remove the entire device from the patient's chest. If blood is present when pulling back on plunger remove entire device.

6	If confirmed, remove the syringe leaving the angiocath in place.
7	There are two options to occlude the angiocath from atmosphere: A) Attach 3-way stopcock and close until relief of pressure is needed again; or B) Insert the needle through the glove finger, from the inside, before inserting it into the patient's chest.





• This avoids the artery and vein on the bottom of the second rib.

Chest Seal

A chest seal is a sterile occlusive dressing for treating open pneumothorax and preventing tension pneumothorax in chest injuries from gunshots, stab wounds, or other penetrating chest trauma. The one-way valve is designed to let air and blood escape while preventing re-entry of either.

There are numerous brands of chest seals, such as Sam, Asherman, Hyfin, etc.

A pacing/defib patch can be used when a formal chest seal is not available.

Be sure to check the patient for multiple wounds, (multiple stab wounds, GSW entry and exit, etc.).

Procedure		Satisfactory	Unsatisfactory
1	Use the 4 X 4 to clean and dry the area around the chest wound.		
2	Peel off the protective paper liner, exposing the adhesive.		
3	Place the chest seal over the wound.		
4	With each breath, more air will be forced out through the flutter valve, which also keeps outside air from returning to the pleural space.		

Cricothyrotomy, Quick Trach

Indications

- Acute upper airway obstruction, which cannot be relieved using basic airway maneuvers:
    - Finger sweep, endotracheal visualization or Magill forceps removal.
- Respiratory arrest with facial or neck injury, or abnormal anatomy, which makes endotracheal intubation impossible.
- Inability to ventilate patient with a bag valve mask.

Contraindication / Precaution

- Bleeding
- Vocal cord injury.
- Failure to place the catheter in the trachea.

Sizing:

- Adult (4.0 mm)
    - Any patient greater than 100 pounds (45kg).
- Pediatric (2.0mm)
    - Any patient less than 100 pounds (45 kg).

	Procedure: Cricothyrotomy – Quick Trach)
1	Expose the neck.
2	Identify the cricoid membrane located between the cricoid cartilage and the thyroid cartilage.
3	Prep the skin.
4	Puncture the cricothyroid membrane at a 90-degree angle with the catheter/syringe assembly.
5	Aspirate for air upon introducing the catheter.

6	Upon aspiration of air, redirect the catheter in a 60-degree angle, (toward feet), and advance until the stopper meets the skin.
7	Remove the stop guide.
8	Advance the catheter (not the needle) until the flange rests on the skin.
9	Remove the needle-syringe assembly.
10	Attach the connecting tube to the 15mm adaptor.
11	Attach a bag valve mask, (BVM), to the other end of the connecting tube.
12	Secure the Quick Trach.
13	Ventilate the patient using the BVM.

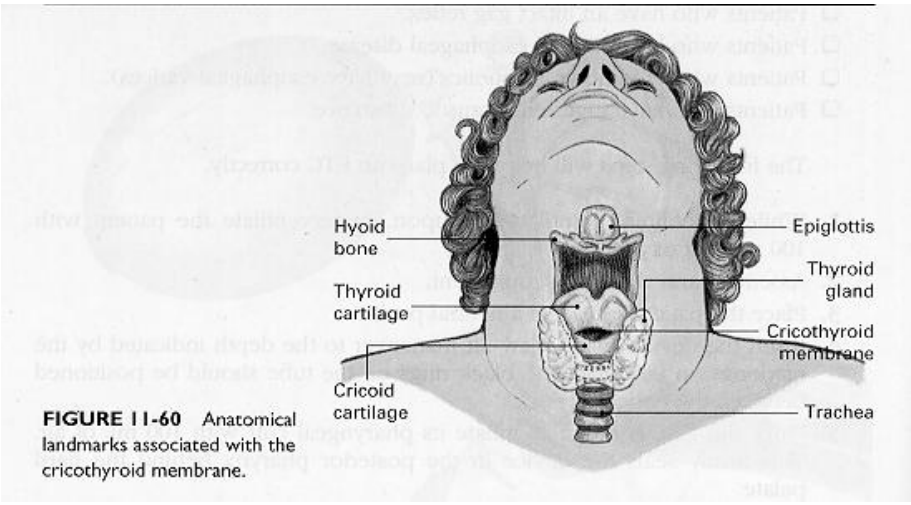


FIGURE 11-60 Anatomical landmarks associated with the cricothyroid membrane.

Endotracheal Intubation Preparation

Indications:

When Endotracheal Intubation is required.

Contraindication / Precaution: None

Equipment Needed:

- Proper size ET tube.
- Prepare suction equipment.
- Laryngoscope and proper blade for patient age.
- Proper size stylette.
- 10cc syringe.
- BVM
- Oral tracheal or nasal pharyngeal airway.
- Endotracheal stabilizing device.

	Procedure	Satisfactory	Unsatisfactory
1	Open airway with jaw thrust or head tilt chin lift.		
2	Ventilate patient using BVM with high flow oxygen.		
3	Pre-oxygenate patient until ready to begin intubation attempts.		
4	Prepare suction equipment.		
5	Prepare and connect $EtCO_2$ monitoring equipment.		
6	Make sure all equipment is ready and operational, (cuff check, blade light, etc).		

ETT Position Confirmation Devices, (Esophageal Intubation Detection Devices, EDD)

Indications:

- Aid in determination of correct ET tube placement

Contraindication / Precaution:

- None identified

Equipment Needed:

- Bulb Type device
- Syringe Type device

	Procedure: Esophageal Intubation Detection – Bulb Type Device
1	Compress the bulb and place the device on the end of the ET tube.
2	If the device easily refills, the tube is in the trachea.
3	If the device is difficult or fails to refill, the tube is in the esophagus.

	Procedure: Esophageal Intubation Detection – Syringe Type Device
1	Place syringe on the end of the ET tube.
2	Create negative pressure on the syringe.
3	If syringe is easily aspirated, the tube is in the trachea.
4	If the syringe is difficult or fails to aspirate, the tube is in the esophagus.

Gum Bougie Assisted Intubation

Indications

- Difficult endotracheal intubation with limited visualization of the vocal cords.
- Anticipated ET tube of size 6.0 mm or larger.
- The epiglottis must be visible.

Contraindication / Precaution:

- Severe oral trauma
- Patient needs to be well oxygenated prior to intubation attempts
- In-line stabilization should be performed for suspected cervical injury patients
- Avoid injuries to tongue and teeth

	Procedure: Gum Bougie
1	Prepare, position and oxygenate the patient with 100% O_2.
2	Select proper ET tube without stylet, test cuff and prepare suction.
3	Lubricate the distal end and cuff of the endotracheal tube, (ETT), and the distal ½ of the Endotracheal Tube Introducer, (Bougie), (Note: Failure to lubricate the Bougie and the ETT may result in being unable to pass the ETT).
4	Using laryngoscopic techniques, visualize the vocal cords if possible, consider applying gentle cricoid pressure if needed.
5	Introduce the Bougie with curved tip anterior and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.
6	Once inserted, gently advance the Bougie until you meet resistance or “hold-up”, (if you do not meet resistance you have a probable esophageal placement and insertion should be re-attempted or alternative methods implemented).
7	While maintaining a firm grasp on the proximal Bougie, introduce the ET tube over the Bougie passing the tube to its appropriate depth.
8	If you are unable to advance the ETT into the trachea and the Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT, (This will require an assistant to maintain the position of the Bougie and, if so desired, advance the ETT).
9	Once the ETT is correctly placed, hold the ET tube securely and remove the Bougie.
10	Confirm tracheal placement according to the intubation protocol. Secure the tube.

Humidified Oxygen

Indications:

May be used with:

- COPD / Emphysema
- Asthma
- Croup

Heated Humidified Oxygen:

- Hypothermia

Contraindication / Precaution:

- CHF / Pulmonary Edema

Equipment Needed:

- Oxygen
- Regulator
- H_2O Reservoir

Inhaler Administration, (Multi-dose Inhaler, MDI)

Indications:

- Prescribed to patients with pulmonary disease.
- Signs and symptoms of respiratory difficulty.

Contraindication / Precaution:

- Altered mental status.
- Inhaler is not prescribed to the patient.
- Patient has already reach the maximum dose.
- Inhaler expired.

Equipment Needed: Inhaler / MDI.

	Procedure	Satisfactory	Unsatisfactory
1	Shake canister and mouthpiece well.		
2	Invert the device and hold it close to the patient's mouth.		
3	Advise patient to exhale, pushing as much air from lungs as possible.		
4	Place mouthpiece in patient's mouth and instruct patient to close his/her lips loosely around the mouthpiece with tongue underneath.		
5	Advise patient to inhale deeply, press down on canister quickly then release it, (over 5 sec).		
6	Instruct patient to hold his/her breath for 5 to 10 seconds before exhaling.		
7	Monitor patient for desired effects.		

Intubation, Inline

Indications:

- Patients with possible spinal injuries
- Considerations under the Spinal Motion Restriction Protocol

Contraindication / Precaution:

- Two rescuers

Equipment Needed:

- Intubation equipment
- Second rescuer

Follow intubation procedures, with the following additions:

	Procedure: Intubation – Endotracheal Inline
1	Follow Intubation – Endotracheal Protocol.
2	Rescuer 1 to apply manual in-line stabilization.
3	Proper position will be placing hands over patient's ears with little fingers under the occipital skull and the thumbs over the maxillary sinuses.
4	Stabilization should be maintained in a neutral position throughout the intubation procedure.
5	Follow Spinal Motion Restriction Protocol.
6	See the Airway Management and Difficult Airway Protocols if intubation is challenging.

Intubation, Oral Endotracheal Intubation

Indications:

- Respiratory or cardiac arrest
- Glasgow Coma Scale of 8 or less
- Inadequate ventilations
- Possible airway obstruction
- When a patient cannot maintain his/her own airway

Contraindication / Precaution:

- Severe oral trauma
- Patient needs to be well oxygenated prior to intubation attempts
- In-line stabilization should be performed for suspected cervical injury patients
- Avoid injuries to teeth, tongue, and vocal cords.

Equipment Needed:

- Suction
- Laryngoscope handle with appropriately sized blade or Videolaryngoscopy device
- Proper size endotracheal (ET) tube
- Water soluble lubrication gel
- 10 ml syringe
- Stylet or introducer in case of use of the GlideScope
- Gum Bougie
- Tape or endotracheal securing device
- Proper size oral or nasal pharyngeal airway
- BVM
- C-Collar, if indicated
- Stethoscope
- EDD/EID device

	Procedure: Endotracheal Intubation
1	Prepare suction equipment and place stylet in ET tube.
2	Position the head properly and remove oral/nasal airway, if placed. Maintain cervical alignment, if indicated.
3	Pre-oxygenate the patient, as indicated.

4	Remove dentures or broken teeth, if indicated.
5	With the left hand, insert the laryngoscope blade while displacing the tongue to the left.
6	DL: Insert blade and gently lift up and away (towards Pt's feet, not head), until in proper position with direct visualization of the glottic opening is obtained. Do not pry backwards against the patient's teeth. VL: Insert blade and gently rotate handle to a vertical position, then lift upwards as needed, until in proper position with direct visualization of the glottic opening is obtained.
7	Introduce the ET tube through the right corner of the mouth and advance the cuff through the glottic opening to approximately ½ - 1 inch past the vocal cords; note the ET insertion depth. Many ETTs have a double black line above the ETT balloon that serves as a position marker for the vocal cords.
8	Suction and remove debris, as indicated.
9	Remove stylet, carefully, while securely holding ETT in place.
10	Inflate the cuff with 10 ml of air and disconnect the syringe.
11	Ventilate the patient with appropriate device.
12	Attach inline $EtCO_2$ detector
13	Confirm proper placement by: • Auscultation of lungs bilaterally and over epigastrium • Chest rise/fall • Appropriate numeric $EtCO_2$ value and/or wave form on device • EDD, as indicated by poor $EtCO_2$ value
14	If abdominal sounds are heard, deflate the endotracheal cuff and remove the endotracheal tube immediately. Ventilate the patient and attempt intubation again.
15	If lung sounds are unequal, deflate the ET tube cuff and reposition the ET tube. Inflate ET tube cuff and reassess lung sounds. If lung sounds are still unequal, assess the patient for pneumothorax.
16	Secure the ET tube with appropriate device and/or method and reassess ET tube position.
17	Document confirmation of ET tube position and method(s) utilized to confirm placement.
18	See the Airway Management and Difficult Airway Protocols if intubation is challenging.

King LT-D Supra-glottic Airway

Indications:

- Apneic patient when endotracheal intubation is not possible or not available.
- Unresponsive patients without an intact gag reflex.

Contraindication / Precaution:

- Intact gag reflex.
- Known esophageal disease such as cancer.
- Caustic ingestion patient.

Procedure:

Choose correct size:	Size Height (ft)	Cuff Volume (ml)	Connector Color
3	4 - 5	50	(Yellow)
4	5 – 6	70	(Red)
5	6 +	80	(Purple)

Equipment Needed:

- King Airway Adjunct
- 80cc Syringe
- Lubricant
- Thomas Tube Holder
- Easy Cap II /Capnography
- Suction equipment

King LT-D Supra-glottic Airway Insertion		Satisfactory	Unsatisfactory
1	Secure the device.		
2	Test cuffs for leaks.		
3	Lubricate device with water soluble lubricant.		
4	Pre-oxygenate and hyperventilate the patient, if time permits.		
5	Grasp the patient's tongue and jaw with your gloved hand and pull forward.		
6	With the King LT-D rotated laterally at 45-90 degrees such that the blue orientation line is touching the corner of the mouth, introduce tip into mouth and advance behind base of tongue.		
7	As tube tip passes under tongue, rotate tube back to midline, (blue orientation line faces chin).		
8	Advance tube until base of connector is aligned with teeth or gums.		
9	Inflate cuffs to appropriate volume as listed above.		
10	Connect the King LT-D to a bag-valve device and ventilate the patient.		
11	Assess for adequate placement by auscultation, (equal breath sounds over the chest and lack of sounds over the epigastrium with bagging), while gently bagging the patient to assess ventilations, simultaneously withdraw the airway until ventilations are easy and free flowing.		

Meconium Aspirator

Indications

- Newborns requiring resuscitation whose amniotic fluid *does* contain thick meconium and who are limp, apneic, or pulseless

Contraindication / Precaution

- Oxygen desaturation
- Aspiration of meconium
- If Meconium is present, *do not* stimulate the newborn.

Equipment Needed

- Appropriate size ET tube
- Meconium aspirator
- Portable or onboard suction with a suction gauge

	Procedure: Meconium Aspirator
1	Identify meconium staining (thick pea soup density) feces in the uterus.
2	Once identified, *do not* dry or stimulate.
3	Suction airway prior to any other resuscitative efforts.
4	Attach the meconium aspirator between the end of ET tube (ETT) and the suction tubing.
5	Perform endotracheal intubation.
6	Suction the ETT via the meconium aspirator while slowly withdrawing the ETT.
7	Never suction over 5 seconds.
8	Never suction over 100 mmHg.
9	Repeat this procedure until little or no meconium is acquired or until heart rate indicates resuscitative efforts must begin immediately.
10	Do not replace the ETT once the airway has been cleared unless the newborn remains limp, apneic, and pulseless.
11	Begin resuscitative procedures only after the airway has been cleared of thick meconium.

Nasal Cannula

Indications:

- Spontaneous breathing patient without respiratory compromise.
- Patient unable to tolerate a mask.

Contraindication / Precaution:

- Epistaxis

Equipment Needed:

- Nasal Cannula
- Oxygen source with regulator and flow meter.

	Procedure	Satisfactory	Unsatisfactory
1	Explain procedure to patient.		
2	Check Tank Pressure.		
3	Attach nasal cannula to oxygen regulator.		
4	Adjust liter flow to 0.5 - 6 liters/minute.		
5	Apply nasal cannula to patient.		

Nasalpharyngeal Airway Placement, (NPA)

Indications:

- Patient is not fully responsive.
- Patient with a gag reflex.
- Assistance needed in maintaining an open airway.

Contraindication / Precaution:

- Improperly sized airway.
- Fractured facial bones.
- Basilar skull fractures.

Equipment Needed:

- Assorted sizes of nasopharyngeal airways.
- Water soluble lubricant.

	Procedure	Satisfactory	Unsatisfactory
1	Explain procedure to patient, if necessary.		
2	Select appropriate airway by measuring from the tip of the nose to the ear lobe.		
3	Lubricate airway with a water soluble lubricant.		
4	Insert the airway into the larger or more open nostril with the bevel facing towards the septum.		
5	If you meet resistance, gently rotate from side to side as you insert. If resistance continues remove and try the other nostril.		
6	Airway should rest against the flare of the nostril. May withdraw slightly if gag flex is stimulated.		

Non-Rebreather Mask, (NRBM)

Indications:

- Patient requiring high concentrations of oxygen.
- Respiratory distress
- Cardiac related symptoms
- Shock / Trauma

Contraindication / Precaution:

- **None**

Equipment Needed:

- Non-rebreather mask.
- Oxygen source and regulator with flow meter.

	Procedure	Satisfactory	Unsatisfactory
1	Explain procedure to patient.		
2	Check tank pressure.		
3	Attach NRBM to oxygen regulator.		
4	Pre - fill reservoir bag.		
5	Adjust liter from 10 – 15 LPM flow to ensure reservoir bag stays inflated.		
6	Apply and adjust mask to the patient.		
7	Monitor reservoir bag for constant inflation.		

Oralpharyngeal Airway Placement, (OPA)

Indications:

- Unconscious patient.
- No gag reflex.

Contraindication / Precaution:

- Responsive patient.
- Gag reflex.

Equipment Needed:

- Assorted sizes of oropharyngeal airways.
- Suction.

	Procedure	Satisfactory	Unsatisfactory
1	Select appropriate size airway by measuring from the center of the mouth to the angle of the jaw or corner of the mouth to the ear lobe.		
2	Insert airway upside down using the cross finger technique with the tip pointing to the roof of the mouth.		
3	When airway comes in contact with the soft palate at the back of the roof of the mouth, gently rotate 180 degrees while continuing to advance the airway until the flat flange at the top of the airway rests on the patient's front teeth.		
4	In pediatrics place directly in following the natural curvature of the airway.		
5	If patient gags during insertion remove the airway.		

Oxygen Administration

Indications:

Oxygen administration is first guided by the **Oxygen Protocol**. If supplemental O_2 is to be provided then the following apply:

Nasal Cannula: For the spontaneously adequately breathing patient with no significant compromise or potential compromise in condition. Choice is determined by severity of condition, practice parameters and patient tolerance.

Non-Rebreather Mask: For any patient whose condition or complaint suggests that severe hypoxia or ischemia may be a problem. Use on all multi-trauma patients and all patients who present with sign and symptoms of shock.

Bag Valve Mask, (BVM):

Assist ventilations in the conscious or unconscious hypoxemic patient who is not moving air adequately.

Ventilate the apneic patient, or those with insufficient ventilations.

Equipment:

- **Nasal Cannula:** 2 - 6 liters/minute delivers 25 - 40 % of oxygen.
- **Non-Rebreather Mask (NRBM):** 8 - 15 liters/minute delivers > 90 % of oxygen.
- **Bag Valve Mask, (BVM):** with supplemental oxygen at 15 liters/minute and reservoir attached delivers nearly 100% oxygen.

Pulse Oximetry

Pulse oximetry is used in conjunction with other assessment processes to determine the available oxygen in the blood for use by body tissue. Pulse oximetry measures the oxygen saturation of the red blood cells, (%SpO_2). Pulse Oximetry can assist in assessing a patient's clinical status and their response to treatment.

Pulse oximetry should be used on all patients as part of obtaining their vital signs.

Pulse oximetry should be continuously monitored on all patients with shock, altered LOC, or cardio/respiratory symptoms.

An SpO_2 reading does not replace one's clinical assessment of the patient's respiratory status.

Indications:

- To determine effective ventilation and oxygenation.
- Initial vital signs on all patients.

Contraindication / Precaution:

Hypothermia, Hypotension, (Shock), and vasoconstrictive medications can all result in poor peripheral circulation. This then can result in the pulse oximeter having a poor signal and result in no reading or an inaccurate reading.

Fingernail polish can result in the pulse oximeter having a poor signal and result in no reading or an inaccurate reading.

The presence of Carbon Monoxide poisoning, (HbCO), will result in an erroneously high SpO_2 reading as the pulse oximeter does not account for the HbCO level.

Equipment Needed:

- Pulse oximeter with proper probe

	Pulse Oximetry	Satisfactory	Unsatisfactory
	NORMAL VALUES 94% -- 100%		
1	Turn on device.		
2	Place probe on proper body part.		
3	Read and document SpO_2.		

Interpretation of Reading:

94% to 100% Ideal Range - Maintain oxygen and airway support methods being used.

90% to 93% Mild to Moderate Hypoxemia - Check airway and increase oxygen support until ideal range is achieved.

85% to 89% Severe Hypoxemia - Aggressive airway and oxygen support is essential. Look for and treat cause: i.e. COPD, CHF, etc. Consider CPAP or BVM assistance.

Below 85% BE PREPARED TO INTUBATE AND/**OR** ASSIST VENTILATION.

Rad 57 Pulse Oximeter (SpO_2) and Carboxyhemoglobin (HbCO) monitor

The **RAD-57** monitor is both a normal pulse oximeter and is also capable of non-invasively measuring the patient's carboxyhemoglobin level, (HbCO), (Elevated with Carbon Monoxide Poisoning). This device measures the level of carbon monoxide in the blood, allowing early detection and treatment of carbon monoxide poisoning.

Indications:

- Headache, dizziness, syncope, weakness.
- Altered LOC.
- Firefighter rehabilitation.
- Extended time on or near fire-ground.
- Smoke inhalation exposure.
- Multi-patient presentation.
- Nausea, abdominal complaints.
- Any ill or injured patient with vague complaints found in a building or in a car.
- Any scenario where both the patient(s), and their pet(s) are ill.

Contraindication / Precaution:

- Be sure to shield the sensor from ambient light.

Equipment Needed:

- RAD 57 monitor
- Finger sensor
- Acetone wipe

	Rad-57 Monitoring	Satisfactory	Unsatisfactory
1	Press on / off button.		
2	Place probe on the patient's finger.		
3	Wire from probe should be on top of finger.		
4	Position Markers on side of probe over middle of fingernail.		
5	Use Ring Finger on Non Dominate hand whenever possible. Finger should be warm and clean.		
6	Device will take 6-10 seconds to calibrate, (you will see zeros).		
7	Device will display pulse rate and SpO_2. Press SpCO button to display Carboxyhemoglobin %.		
8	Display will return to pulse rate and SpO_2 in 10 seconds.		
9	Document Readings.		

Procedures Addendum

Cardiac Arrest

Lucas 2 Chest Compression System

Indications:

The Lucas 2 device is use for mechanical CPR when the patient is pulseless and apneic.

Contraindications / Precautions:

Do NOT use the LUCAS Chest Compression System in these cases: If it is not possible to position LUCAS safely or correctly on the patient's chest.

a) Too small patient: If you cannot enter the PAUSE mode or ACTIVE mode when the pressure pad touches the patient's chest and LUCAS alarms with 3 fast signals.

b) Too large patient: If you cannot lock the Upper Part of LUCAS to the Back Plate without compressing the patient's chest.

Equipment Needed:

Lucas 2 Device, Reeves or LBB.

Push ON/OFF on the User Control Panel for 1 second to power up LUCAS in the bag and start the self-test. The green LED adjacent to the ADJUST key illuminates when LUCAS is ready for use. Place the LUCAS Back Plate under the patient, immediately below the arm pits.

Attach the support legs to the Back Plate, so that the two support legs lock against the Back Plate. Listen for click. (Pull up once to make sure that the parts are correctly attached).

Adjust the height of the Suction Cup to set the Start Position.

a) Make sure that LUCAS is in the ADJUST mode.

b) Push the Suction Cup down with two fingers until the pressure pad makes firm contact with the sternum without compressing the chest.

Push PAUSE to lock the Start Position - then remove your fingers from the Suction Cup.

a) Check for proper position. If not, push ADJUST, pull up the Suction Cup to readjust the central and/or height position for a new Start Position. Then Push PAUSE.

b) Push ACTIVE (continuous) OR ACTIVE (30:2) to start the compressions.

Secure the patient's arms:

When you move the patient, secure the patient's arms with the Patient Straps on the LUCAS. This makes it easier to move the patient.

Attaching Stabilization strap.

Carefully lift the patient's head and attach stabilization strap behind the patient's neck. Position the cushion as near the patient's shoulders as possible. Connect the buckles on the support leg straps with the buckles on the cushion strap. Make sure the straps are not twisted.

Change the Battery

1. Push PAUSE to temporarily stop the compressions.
2. Pull the Battery out and then upwards to remove it.
3. Install a fully-charged LUCAS Battery by putting it in from above.
4. Wait until the green PAUSE mode LED illuminates.
5. Push ACTIVE (continuous) or ACTIVE (30:2) to start the chest compressions again. The LUCAS Smart Restart feature remembers the settings and Start Position for 60 seconds.

Connect to the external Power

To use the Power Supply cable:

a) Connect the Power Supply cable to LUCAS.

b) Connect the main cable to the wall mains outlet (100-240V, 50/60Hz)

Caution - The Battery must always be installed for LUCAS to be able to operate, even when powered by the external Power Supply.

Remove LUCAS™ from the patient:

a) Push ON/OFF for 1 second to power off the device.

b) If a LUCAS Stabilization Strap is attached to LUCAS, remove the cushion strap, which is part of the Stabilization Strap, from the support leg straps.

c) Pull the release rings to remove the Upper Part from the Back Plate.

d) If the patient's condition allows it, remove the Back Plate.

Note: LUCAS powers down automatically after 5 minutes if you let it stay in the ADJUST mode.
Note: If the Battery change takes more than 60 seconds, LUCAS does a self-test and you must adjust the Start Position again.

Remove and install a new Suction Cup after each patient usage.

a) Pull the Suction Cup off the black mounting tube.

b) Discard the Suction Cup as contaminated medical waste.

c) Bend a new Suction Cup onto the black mounting tube.

d) Make sure the Suction Cup is safely attached on the mounting tube.

Lucas 2 Chest Compression System		Satisfactory	Unsatisfactory
1	Push ON/OFF on the User Control Panel for 1 second to power up LUCAS in the bag and start the self-test. The green LED adjacent to the ADJUST key illuminates when LUCAS is ready for use.		
2	Place the LUCAS Back Plate under the patient, immediately below the arm pits.		
3	Attach the support legs to the Back Plate, so that the two support legs lock against the Back Plate. Listen for click.		
4	With the Lucas is in the ADJUST position. Use to two fingers to push the Suction Cup down until it is place in the center of the Sternum with the bottom of the suction Cup just above the bottom of the sternum then press Pause to lock the Start Position.		
5	Press ACTIVE to start compression. Intubated or King select 100/min. Any other airway select 30/2.		
6	Secure the hands to the patient straps.		

Procedures Addendum

Defib / Monitor

Cardiac Monitoring, 4 Lead

Indications:

- All ALS patients shall have their EKG rhythm monitored

Contraindication / Precaution:

- Do not delay transport of trauma patients to attach the EKG monitor

Equipment Needed:

- Monitor/defibrillator
- Associated monitoring cables
- Electrodes
- Razor

Procedure: Cardiac Monitoring – 4 Lead EKG	
1	Treats patient per appropriate protocol.
2	Remove clothing from patient's chest if placing the electrodes on the thorax.
2	Shave excessive hair on chest to maximize electrode adhesion.
3	Place electrodes on limbs or on thorax adjacent limbs. Leads will be marked accordingly. (LA – left arm, RA – right arm, LL – left leg, RL – right leg).
4	Obtain baseline EKG tracing.
5	Analyze EKG for: - Rate - Rhythm - Ectopy - AV block - Pacing

Cardiac Monitoring, Defib/Pacing pads

Indications:

- Determination and monitoring of cardiac rhythms with anticipation of defibrillation

Contraindication / Precaution: None

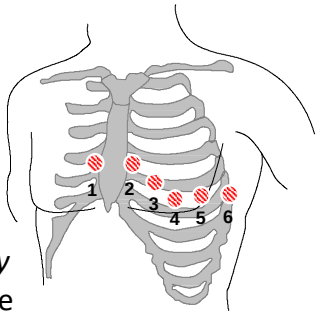
Equipment Needed:

- Monitor/defibrillator
- Multifunction defib/pacing pads
- Associated cables
- Razor

Procedure: Cardiac Monitoring – Multifunction Defib/Pacing Pads	
1	Treats patient per appropriate protocol.
2	Remove clothing from patient's chest.
3	Shave excessive hair on chest to maximize multifunction defib/pacing pad adhesion.
4	Plug multifunction defib/pacing pad connector into the defib/pacing cable on the cardiac monitor
5	Apply Sternum pad to upper sternum slightly toward right shoulder.
6	Apply Apex pad to the anterior (mid-axillary) line below the left nipple.
7	Ensure the lead selection is in Pads Mode

Cardiac Monitoring, 12-Lead LocationV1 Lead Positioning

Other important considerations:



- When placing electrodes on female patients, always place leads V3 - V6 under the breast rather than on the breast.
- Never use the nipples as reference points for locating the electrodes for men or women patients because nipple locations may vary widely.
- Locating the V1 position (fourth intercostal space) is *critically important* because it is the reference point for locating the placement of the remaining V leads. To locate the V1 position:

	12-Lead EKG V1 Lead Positioning
1	Place your finger at the notch in the top of the sternum
2	Move your finger slowly downward about 1.5 inches until you feel a slight horizontal ridge or elevation. This is the “angle of Louis” where the manubrium joins the body of the sternum
3	Locate the second intercostal space on the right side, lateral to and just below the Angle of Louis
4	Move your finger down two more intercostal spaces to the fourth intercostal space which is the V1 position

Transcutaneous Pacing

Indications:

- May be used for symptomatic bradycardia.
- Consider for asystolic cardiac arrest.

Contraindication / Precaution:

- Do not pace patients with severe hypothermia.
- Asystolic cardiac arrest for greater than 20 minutes.

Equipment Needed:

- EKG monitor/defibrillator/pacer.
- Peripheral IV supplies.

Procedure—Transcutaneous Pacing	
1	Treat patient per Bradycardia Protocol.
2	Identify rhythm on the cardiac monitor.
3	Obtain vascular access as soon as possible.
4	If patient is conscious and aware of situation during pacing refer to Conscious Sedation Protocol.
5	Apply pacing electrodes.
6	Set the pacemaker to 60 beats per minute.
7	Set the current output to 0 mA.
8	Turn on the pacer.
9	Slowly increase the current, (mA), until ventricular capture is detected.
10	Reassess the vital signs. Adjust the rate and current as necessary to maintain capture and perfusion.

Procedures Addendum

Immobilization

Hip Immobilization

Indications:

- Hip fracture, (Often shortened and externally rotated).
- Hip dislocation, (Often shortened and internally rotated).

Contraindication / Precaution:

- Assessment of neurovascular status.

Equipment Needed:

- Pillow
- Kling or cravats
- Scoop stretcher
- Vacuum mattress

	Hip Immobilization	Satisfactory	Unsatisfactory
1	Slide cravats or similar lengths of Kling under knee area of both legs and position one high under the upper leg, one under the lower half of the upper leg and one just below the knees.		
2	Spread legs open by moving the unaffected leg.		
3	Place a pillow or blanket lengthways between legs and move unaffected leg back in position.		
4	Tie cravats or Kling around both legs.		
5	Disassemble scoop stretcher.		
6	Slide half of scoop stretcher under affected side while lifting up side of patient only enough to get stretcher in place.		
7	Slide other half of scoop stretcher under the unaffected side lifting up on patient only enough to attach both ends of scoop together.		
8	Pad as necessary for patient comfort.		
9	Secure patient to scoop with four straps.		

Kendrick Extrication Device, (KED)

Indications:

KED maybe used as an adjunct device at the provider's discretion.

Contraindication / Precaution:

- If another immobilization device is more appropriate for the situation.
- If patient meets criteria for "Rapid Extrication" and another method or device is preferred.
- If patient is too large for the device, consider other options.
- Only use head pad if patient has a natural anterior curve to c-spine due to physical limitations, or if patient complains of pain when rolling shoulders back into device.

Equipment Needed:

- KED
- Cervical Collar
- LBB

	KED	Satisfactory	Unsatisfactory
1	Rescuer 1 applies manual inline immobilization.		
2	Rescuer 2 applies appropriate cervical collar.		
3	Rescuer 2 grasps upper torso and together with rescuer 1, leans patient forward as a unit allowing placement of the KED.		
4	Rescuer 2 places KED behind patient and centers the device with leg straps in stored position and all chest straps folded away.		
5	Both rescuers lean patient back into the KED as a unit.		
6	Remove leg straps from stored position and pull down and out of the way.		
7	Wrap torso section of KED around patient and assure that device is snug under the patient's armpits.		
8	Connect the middle chest strap and make snug.		
9	Connect the lower chest strap and make snug.		
10	See-Saw the leg straps under the buttocks and bring through legs and cross over to other side for fastening, (For isolated groin injury only, attach to same side).		
11	Place head strap around cervical collar and attach to head flap catching lower corner.		
12	Open head strap and place non-slip side against forehead just catching the eyebrows and attach to head flap catching upper corner.		
13	Connect the upper chest strap and make snug.		
14	Head pad is to be used only with certain criteria, (If used, place appropriate thickness behind head and place excess over top of head flap).		

MAST Pants

Military Anti-Shock Trousers, Pneumatic Anti-Shock Trousers

Indications:

- Shock believed to be from a ruptured AAA.
- Stabilization of a pelvic fracture.

These conditions require that **BOTH** the legs and abdominal section be inflated.

Contraindication / Precaution:

- Acute Pulmonary Edema.
- Pregnancy - Do not inflate abdominal section.
- Cardiogenic Shock.
- Open wounds of the chest.

Removal: PASGs **should not** be deflated until:

- At the Emergency Department.
- The potential for shock management is recognized by the receiving care providers.

Equipment Needed:

- Pneumatic Anti-Shock Garment.
- Foot Pump

	MAST Pants	Satisfactory	Unsatisfactory
1	Unfold PASG completely and lay on a stretcher or backboard.		
2	Put patient on the PASG face up, (supine), so that the top of garment will be just below the lowest rib.		
3	Wrap the left leg first, then the right leg, then the abdomen. Each should be snug and all Velcro should be fastened. Following this sequence will facilitate quicker application of the garment.		
4	Check the victim's vital signs and breath sounds. If symptoms of shock are present, inflate PASG.		
5	Attach foot pump to PASG at the valves and inflate each section, starting with the leg sections, **until:** patient's systolic BP reaches 100, velcro fasteners crackle, air escapes the safety valves and/or bleeding stops.		
6	**IF USING AS A SPLINT,** INFLATE ONLY UNTIL GARMENT IS FIRM.		
7	Close valves, leave hoses and pump attached for transport.		

Pediatric Immobilizer

Indications:

The pediatric immobilizer is an optional adjunct to pediatric care.

Contraindication / Precaution:

- Weight over 65lbs.

Equipment Needed:

- Pediatric Immobilizer
- Cervical collar, if indicated per Spinal Care Protocol.

	Pediatric Immobilizer	Satisfactory	Unsatisfactory
1	Begin with manual immobilization of the head in a neutral, in-line position, unless contraindicated. Manual immobilization should be provided without interruption until complete patient immobilization is accomplished.		
2	Size and apply the appropriate cervical collar.		
3	While maintaining manual stabilization with a cervical collar in place:		
3a)	Position the Pediatric immobilizer next to the patient so that the head of the immobilizer is approximately 6-12 inches above the patient's head.		
3b)	Log roll the patient onto the immobilizer in a supine position.		
3c)	Reposition patient, in order to center on immobilizer, by sliding patient in an upward motion, (axially), on the immobilizer. Do not slide patient in a direct lateral position, as this may manipulate the spine.		
4	Pad the space, as needed, between the back of the head and the immobilizer to prevent hyperextension of the cervical vertebrae.		
5	Secure the patient's body to the immobilizer with the attached straps.		
5a)	Immobilize the upper torso to prevent upward sliding of patient's body during movement and transportation. This is accomplished by bringing straps over the shoulders and across the chest to make an X. The cross straps velcro into the strap that crosses the abdomen.		
5b)	Apply the attached straps across the chest, abdomen and legs. Take care not to leave any space between the straps and the sides of the patient. If the patient is so small that there is a space left between straps and sides of patient, fill the space with pads, (eg. blanket, towel, etc.).		
5c)	Arms should be placed at the patient's side to prevent movement of the shoulder girdle.		

Rapid Extrication

Indications:

- If the patient's life or the life of the rescuer is in immediate danger.
- If the patient's condition requires immediate life saving intervention that cannot be done in the vehicle.
- If a stable patient needs to be removed to gain access to a patient that requires immediate life saving intervention that cannot be done in the vehicle.

Contraindication / Precaution:

- Stable patients.
- Not to be implemented out of convenience.

Equipment Needed:

- Cervical collar

	Rapid Extrication	Satisfactory	Unsatisfactory
1	Manually immobilize patient's head, situation permitted.		
2	Consider Spinal Care protocol, (C-Collar), if practical.		
3	Extricate patient as able.		

Repositioning Prone Patients

Indications: Prone patients requiring repositioning.

Equipment Needed:

- Extrication device (Vacuum mattress, Reeve's stretcher, backboard, etc.)
- Logrolling Technique, minimum of 3, preferably 4 rescuers

	Repositioning Prone Patients	Satisfactory	Unsatisfactory
1	Address spinal care.		
2	RESCUER applies a cervical collar, if indicated per step 1 then maintain in-line stabilization.		
3	RESCUER kneels alongside patient. and grasps patient's shoulder and hip.		
4	RESCUER kneels alongside patient. and grasps patient's back and behind the knee.		
5	RESCUER (if available), kneels alongside patient. and grasps patient's upper leg and lower leg.		
6	Together as a unit and under the command of the rescuer at the head, roll patient onto side toward rescuers, leaning against rescuers upper legs.		
7	RESCUER 4 or another person stabilize the extrication device behind the patient.		
8	Together as a unit and under the command of the rescuer at the head, roll patient onto the extrication device.		
9	If needed to center patient then have rescuers straddle patient. With one rescuer at head, one grasping under the armpits, one grasping the hips, and one grasping the legs.		
10	On order of the rescuer at the head, slide patient as a unit to proper position onto the extrication device.		
11	Place head strap around cervical collar and attach to head flap catching lower corner.		
12	Open head strap and place non-slip side against forehead just catching the eyebrows and attach to head flap catching upper corner.		
13	Connect the upper chest strap and make snug.		
14	Head pad is to be used only with certain criteria, (If used, place appropriate thickness behind head and place excess over top of head flap).		

Sling & Swathe

Indications:

Injury to the clavicle, shoulder, upper arm, or elbow.

Contraindication / Precaution:

Shoulder injuries that don't allow proper positioning due to pain upon movement.

Equipment Needed:

Two slings, or one sling and a roller bandage.

	Sling & Swathe	Satisfactory	Unsatisfactory
1	Position patient's arm against chest and at a 45° angle at the elbow, if possible.		
2	Place a sling over the patient's chest with short end behind the elbow, and one long point over the opposite shoulder and the other long point lying across the patient's lap.		
3	Bring the bottom point over the patient's arm over the injured shoulder.		
4	Tie the two long ends of the sling together behind patient's neck.		
5	Secure short end of sling over elbow with a knot or safety pin.		
6	Apply swathe, (sling or roller bandage), around patient and over sling to secure arm in place against the chest.		

Spinal Care, Cervical Range of Motion (CRM) Assessment

Indication: **Per Spinal Care Protocol.**

Contraindication: **Per Spinal Care Protocol.**

CERVICAL RANGE OF MOTION (CRM)

CRM ASSESSMENT		Assessed	Not Assessed
1.	Stop the assessment, have the patient return to the neutral position, and apply SMR if the patient experiences pain, discomfort, numbness or tingling to an extremity, or other such symptoms.		
2.	CRM testing is to be performed by the patient doing gentle range of motion themselves, EMS personnel are not to move the patient's head.		
3.	Have the patient gently flex their cervical spine by bringing their chin down to their chest, and then extend their cervical spine by tilting backwards to look upwards.		
4.	From the neutral position then have the patient rotate their head to the left and right, by bringing their chin over to towards their shoulders.		

Spinal Care, Applying Spinal Motion Restriction, (SMR)

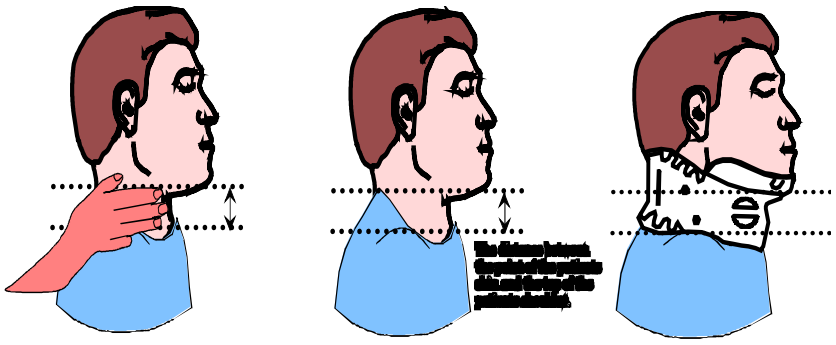
Spinal Motion Restriction (SMR) is obtained by the application of a C-Collar.

Procedure:
Determining the correct Cervical Collar size:

- The front height of the collar should fit between the point of the chin at the suprasternal notch. Once in place, the collar should rest on the clavicles and support the lower jaw.

- The height of the collar can be measured by using the width of one, two, three or four fingers to measure the distance between the point of the patient's chin and the top of the patient's shoulder. This distance should correlate with the distance between the lowest point on the chin rest of the collar and the bottom of the lateral shoulder rest of the collar. (See attached diagram next page.)

Spinal Motion Restriction		Satisfactory	Unsatisfactory
1.	Use BSI for this procedure.		
2.	Stabilize head and neck usually from the rear.		
3.	Angle collar under patient's chin, and position it around patient's neck. (If patient is in a supine position, slide posterior side of collar under patient's neck, and the place the chin in the chin groove.).		
4.	Hold the collar in place and secure with the Velcro™ closure on the left side of patient's neck.		



Splinting

Indications:

Signs & Symptoms of a bone or joint injury including:

- Deformity or abnormal position of an extremity.
- Pain and tenderness.
- Grating, (Crepitus).
- Swelling, bruising or discoloration.
- Guarding.
- Exposed bone ends.
- Joint locked into position.

Contraindication / Precaution:

- Mid shaft fractures of long bones may be realigned prior to splinting.
- Joint fractures may have one attempt made to realign them if there is an absent distal pulse.
- **Do Not** pull open fractures back into a wound.

Equipment Needed:

- Rigid splints
- Ladder splints
- Kling
- Slings
- Pillow
- Vacuum

	Splinting	Satisfactory	Unsatisfactory
1	Splint joints and bone ends above and below the fracture.		
2	Immobilize open and closed fractures in the same manner.		
3	Cover open fractures to minimize contamination.		
4	Check and document pulses, sensation, and motor function before and after splinting.		
5	Stabilize the extremity with gentle, in-line traction to a position of normal alignment.		
6	Immobilize a long bone extremity in a straight position that can easily be splinted.		
7	Immobilize joints as found, joint injuries are only aligned if there is no distal pulse.		
8	Apply cold to reduce swelling and pain.		
9	Apply compression to reduce swelling.		
10	Elevate the extremity, if possible.		

Traction Splint, Hare

Indications:

- Femur fracture

Contraindication / Precaution:

- Fractures to lower extremity of same leg.
- Fracture to foot or ankle of same leg.

Equipment Needed:

- Hare Traction Splint

	Hare Traction Splint	Satisfactory	Unsatisfactory
1	Rescuer 1 manually stabilizes the injured leg so that no motion occurs at the site of injury.		
2	Assess and document motor, sensory, and distal circulation in the injured extremity.		
3	Apply the ankle hitch.		
4	RESCUER 1 to apply manual traction while holding the ankle hitch just above the attachment ring(s) and pulling and supporting upper leg near fracture site.		
5	Measure the splint against the uninjured leg and adjust to extend from the ischial tuberosity to approximately 8-12 inches beyond the foot.		
6	RESCUER 1 raises injured leg while under traction and RESCUER 2 places splint in place.		
7	Apply the proximal ischial strap.		
8	Connect the “S” hook of the ratchet mechanism to the ring(s) of the ankle hitch.		
9	Wind the mechanism until the traction is equal to what is being manually applied by RESCUER 1.		
10	Further tighten ratchet as needed to reduce pain and align fracture.		
11	Secure the splint support straps around the leg.		
12	Re-evaluate proximal/distal securing devices.		
13	Re-assess and document motor, sensory, and distal circulation.		
14	Secure patient to backboard if needed.		
15	Secure splint to backboard, (If indicated).		

Traction Splint, Sagar

This splint is different in several ways from the Hare Traction splint. It works by providing counter-traction against the pubic ramus and the ischial tuberosity medial to the shaft of the femur, and thus does not go under the leg. The hip does not have to be slightly flexed as with the Hare splint. One can also use it to splint both legs with one splint, if needed.

Indications:

- Fractures of the shaft of the femur.

Contraindications:

- Fractures involving or distal to the knee.
- Fractured pelvis.
- Hip injury with gross displacement.

Equipment:

- Sager splint.
- Ankle hitch with D-ring.

	Sager Traction Splint	Satisfactory	Unsatisfactory
1	Expose injury site.		
2	Assess and record pulse, sensation, and motor function distal to injury site.		
3	Position patient on a long back board.		
4	Rescuer 1 supports the leg and maintains gentle traction.		
5	Rescuer 2 positions the splint against the inside of injured leg with the padded bar fitted snugly against pelvis in the groin. The splint can be used on the outside of leg, using strap to maintain traction against the pubis. **BE CAREFUL NOT TO COMPRESS THE GENITALS UNDER THE BAR OR STRAP**.		
6	While maintaining gentle manual traction, attach the padded ankle hitch to the foot and ankle.		
7	Extend splint until the correct tension, (10% of the patient's body weight in lbs), on the pulley wheel is obtained. Maximum of 15 lbs per pulley wheel.		
8	Release manual traction and recheck pulse, sensation, and motor function distal to injury site.		
9	Apply elastic straps above and below knee. Strap ankles and feet together. Secure patient to the long back board.		

Procedures Addendum

IV / IO and Medication Administration

Infusion Pressure Bags

Indication:

- Infusion pressure bags may be used to facilitate the rapid infusion of I.V. fluids when rapid infusion is indicated. Their usage is discretionary. Document its usage.

Contraindication / Precaution:

- Be sure to monitor both the infusion site and the remaining fluid quantity closely when I.V. pressure infusion bags are utilized.

Equipment Needed:

- Patent IV access
- Fluid to be infused
- Pressure infuser bag

Infusion Pumps

Indications:

- Regulated intravenous infusions of medications and fluids.
- Specific amount of fluid to be infused.
- Transfer of a patient on an established pump infusion.

Contraindication / Precaution:

- Major trauma & cardiac arrest patients.
- Unfamiliar with the setup or operations of the specific pump.

Equipment Needed:

- Specific type of infusion pump /syringe.
- Specific type of tubing.

Patients who are already on an infusion pump may be continued on that pump during EMS care and transport, provided the crew is familiar with the pump being used.

Intraosseous Infusion, EZ IO

Additional information to the Lake Health protocol.

Indications:

- The EZ-IO is indicated whenever traditional vascular access techniques are not possible or require too much time to achieve a successful insertion. These reasons may include, but are not limited to:
- Hemodynamic instability.
- Respiratory compromise.
- Patients requiring emergent medication or volume replacement.
- Altered mentation: GCS < 8.
- May be used immediately in the following patients:
    - Patients in Cardiac Arrest.
    - Patients who are Hypovolemic / Hypotensive with profoundly altered mental status.
- Viable patients receiving IO lines warrant transport.

Device Sizing:

- EZ-IO Adult, Yellow 45mm, for patients weighing 40 kg or greater *with* excessive tissue over the insertion point
- EZ-IO Adult, Blue: 25mm, for patients weighing 40 kg and greater *without* excessive tissue over the insertion point
- EZ-IO Pedi, Pink: 15mm, for patients weighing between 3 and 39 kg

Contraindications:

- Any patient that may receive thrombolytic therapy; specific to Acute MI and/or Stroke.
- Suspected fracture of the associated tibia or femur.
- Previous orthopedic procedures: i.e. knee replacement.
- Extremity that is compromised by a pre-existing medical condition, i.e. tumor or PVD.
- Overlying skin infection/trauma at placement site.
- Inability to locate the 3 anatomical landmarks for insertion, which are the patella, tibial. tuberosity, and 1 finger width medical to the tibial tuberosity.
- Excessive tissue over the insertion site.

Equipment:

- EZ-IO Driver and Needle Set
- Provo-iodine, Betadine or Iodine swabs or prep pads.
- IV setup and interconnecting tubing.
- 10cc or 20cc Syringe.
- Roller gauze

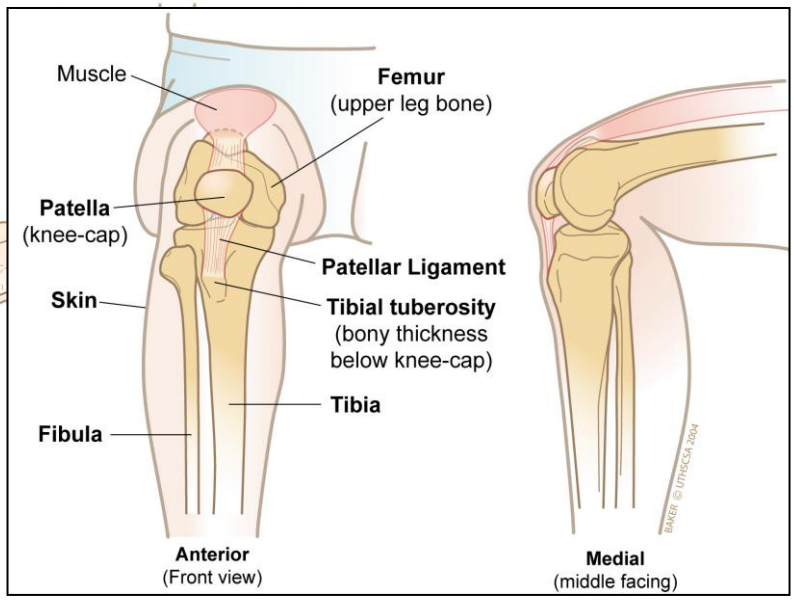
Procedure:

1. Use universal precautions.
1. Determine if EZ-IO is indicated and no contraindications are present.
2. Locate proper site for EZ-IO insertion.
    a. Feel the front of the leg and locate the patella.
    b. Locate the tibial tuberosity inferior to the patella.
    c. Place 1 finger medial to the tibial tuberosity. Insertion location is 1 finger width medial of the tibial tuberosity.
    d. On younger patients the tibial tuberosity can be difficult if not impossible to palpate. If it cannot be located the insertion site is two finger widths below the patella and then medial along the flat aspect of the tibia.
3. Cleanse the insertion with betadine/iodine or similar prep-pads using accepted technique. Remember to work from the inside to the outside in concentric circles.
4. If patient is conscious, inform patient of the EMERGENT need to perform procedure and that they might feel some discomfort until Lidocaine is administered.
5. Prepare the EZ-IO Driver and Needle Set.
    a. Open the case and remove the driver and needle set cartridge.
    b. Open the cartridge and attach the needle set to the driver.
    c. Remove needle set from the cartridge.
    d. Remove the cap from the needle set.
6. Begin insertion of the EZ-IO
    a. Hold the EZ-IO Driver in one hand and stabilize the leg near the insertion site with the opposite hand.
    b. Position the driver at the insertion site at a 90-degree angle to the bone surface.
    c. Power the driver through the skin at the insertion site until it makes contact with bone. Let the driver do the work! STOP WHEN YOU FEEL THE POP!
    d. Evaluate the EZ-IO needle for the 5mm mark.
7. Power the EZ-IO Driver and continue insertion until the flange, (base) of the EZ-IO needle set touches the skin OR a sudden lack of resistance is felt, indicating entry into the marrow cavity.
8. Remove the driver from the needle set.
9. Remove the stylet from the catheter.
10. DO NOT REPLACE or ATTEMPT to recap the needle set.
11. Confirm proper EZ-IO Catheter tip position by checking for at least one of the following:
    a. IO catheter standing at 90 degrees and firmly seated in tibia.
    b. Blood at tip of the stylet.
    c. A free-flow of fluid through the needle with no evidence of extravasation.
    d.
12. Aspirate a small amount of blood or marrow into the tubing.
13. Connect the included mini extension set and begin infusion.
14. Rapid Bolus site with 10 ml of NS to flush out any bone plugs, (5ml flush in
    a. pediatric pts).
14. If site does not flow, consider pressure infusion and/or rotate needle 180 degrees.

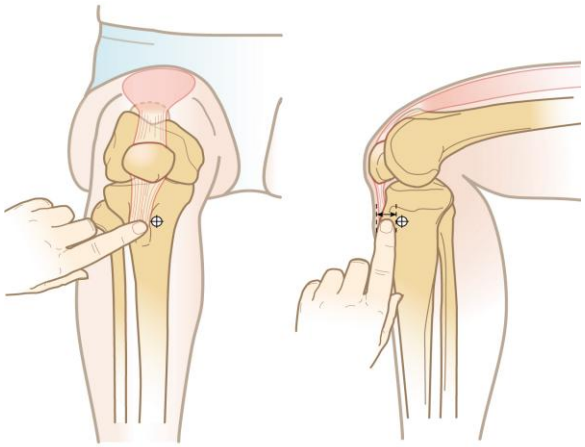
15. Dress site with roller gauze to prevent accidental dislodgement.
16. Place the yellow wrist EZ-IO band on the patient's arm.
17. Avoid rocking the needle during usage.
18. If the patient is conscious and is experiencing pain from the IO access then:

    - If patient is experiencing pain from the infusion, administer up to 50 mg, (2.5 ml) of Lidocaine 2% **SLOW** push for local analgesia. This should provide pain relief for up to 1 hour.

Warning: DO NOT hold your hand directly behind the insertion site when inserting an IO needle of any type. If the needle goes through the bone, or misses, or the bone fractures, you could skewer yourself with a contaminated needle!



Tibial Tuberosity, Anterior and Side Views, (Located BELOW the patella):



IV Therapy Setup

Indications:

- For fluid replacement and / or medication administration.

Contraindication / Precaution:

Selecting proper fluid and administration set as directed.

- Mini drip set, (60 drops / ml), for medication administration or fluid restriction.
- Macro drip set, (10/15 drops / ml), for fluid infusion.
- 0.9% NaCl, (Normal Saline), for fluid replacement on medical patients.

Equipment Needed:

- IV fluid
- Administration set
- Alcohol wipes
- Occlusive dressing
- Gauze

IV Therapy Setup		Satisfactory	Unsatisfactory
1	Obtain and set up alcohol wipes, constricting band, and gauze.		
2	Examine IV solution for proper type, clarity and expiration date.		
3	Review administration set for proper type, and remove from packaging.		
4	With flow valve shut off, attach IV tubing to IV solution.		
5	Squeeze drip chamber until approximately half full.		
6	Open flow valve and allow solution to run through entire tubing, expelling all air.		
7	Do not contaminate either the connection at the IV bag, or the connection at the IV site.		

Medication Administration, IM Route, (Intramuscular)

Indications:

- For the administration of certain medications.

Contraindication / Precaution:

- Avoid accidental administration into a blood vessel by aspirating prior to injection.
- Whenever possible, have another paramedic verify medication, dosage, and route.

Equipment Needed:

- Syringe, medication
- Needle, (19-21ga 1 ½")
- Alcohol swab
- Band-Aid

Medication Administration, Intramuscular	
1	Determines allergies
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Prepare equipment and the medication to be given.
4	Select proper injection site, (Deltoid, anterolateral proximal aspect of the quadricep, or buttock).
5	Clean site with alcohol swap, starting with small circles and working into larger ones.
6	Hold skin taut.
7	Puncture the skin and enter the muscle at a 90º angle.
8	Aspirate for blood return. (If positive, remove needle).
9	Inject medication.
10	Cover with Band-Aid.
12	Observe for positive or untoward effects.
13	Document drug given, time given, route, effects and person administering drug.

Medication Administration, Nebulizer Route

Indications:

- Asthma
- COPD
- CHF

Contraindication / Precaution:

- Patients with severe hypoxia may warrant intubation.
- Aerosol mask doesn't require patient's help and may deliver a higher O_2 percentage than the T-piece.
- Ensure proper monitoring of PT's cardio/respiratory status

Equipment Needed:

- Proper medication per protocol.
- Nebulizer device, T-piece or Mask as Appropriate.
- Oxygen – Non-humidified with a flow meter.

	Medication Administration, Nebulizer Therapy
1	Determine the patient's medication allergies.
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Verifies medication is not expired.
4	Assemble nebulizer.
5	Add medication in bowl of nebulizer.
6	Attach to oxygen with tubing and place at ~ 6 LPM.
7	Have patient begin treatment when mist is visible.
8	Instruct patient to inhale slowly and deeply and hold breath for 3 to 5 seconds before exhaling.
9	Continue until medication is depleted.
10	Repeat treatment as necessary per protocol.
11	Document name of drug given, time given, route, dose, name of person administering drug and effects of administration.

Medication Administration, IN Route, (Intra Nasal using Mucosal Atomizer Device)

Indications:

- No IV access with the following symptoms:
  - Active Grand Mal seizure
  - Suspected narcotic overdose
  - Pain Management

Contraindication/Precaution:

- Epistaxis
- Complete mucosal blockage of both nostrils
- Any recognizable nasal septal abnormalities
- Retropharyngeal lacerations/dissections
-

Equipment:

- Muscosal Atomizer Device (MAD) adapter
- Pre-filled Syringe or empty syringe if medication is in a vial
- Filter needle
- Alcohol prep pad

	Medication Administration, IN Route, MAD
1	Determines allergies
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Prepare equipment and the medication to be given.
4	The patient can have the medication delivered from any position (sitting, lying down, prone, on side)
5	Aspirate the proper volume of highly concentrated medication required to treat the patient (An extra 0.1 ml of medication should be drawn up to account for the dead space within the atomizer at the end of the procedure.)
6	Remove air from syringe
7	Attach the atomizer tip via Luer lock mechanism – it twists into place. Slip Luer is also effective as long as the tip is firmly seated on the syringe tip
8	Using your free hand to hold the crown of the head stable, place the tip of the atomizer snugly against the nostril aiming slightly up and inward (towards the top of the opposite ear).
9	Timing the respirations, depress the plunger rapidly when patient fully exhales and before inhalation
10	Briskly compress the syringe plunger to deliver half of the medication into the nostril.
11	Whenever possible do not exceed 1.0 ml per nostril.

Medication Administration, IV Route

Indications:

- For the administration of all IV medications.

Contraindication / Precaution:

- Allergic Reactions.
- Untoward Reactions (hypotension, etc., as related to each specific drug's effects).
- Whenever possible, have another paramedic verify medication, dosage, and route.

Equipment Needed:

- Alcohol wipes
- Syringes; Needles; Medication; IV Fluid

Medication Administration, Intravenous	
1	Determine the patient's medication allergies.
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Verifies medication is not expired.
4	Verifies fluid is not cloudy, discolored, and box has not been tampered with.
5	Properly prepares medication.
6	Expels air from syringe.
7	Clean off injections site with alcohol wipe.
8	Insert needle or blunt tip cannula into injection site.
9	Clamp off proximal IV tubing for the duration of the injection.
10	Administer desired dose.
11	Remove syringe and dispose of it properly.
12	Flush medication with 10ml of fluid, (IV or bolus).
13	Monitor patient for positive or adverse effects.
14	Document name of drug given, time given, route, dose, name of person administering drug and effects of administration.

Medication Administration, PR Route, (Rectal)

Indications:

- Administration of medications in pediatric seizure patients when IV or IO access is not possible or would delay the administration of medication in the case of status epilepticus seizure.
- Other medications per protocol.

Contraindication / Precaution:

- Allergic Reactions or hypersensitivity to medication to be administered.
- Untoward Reactions (hypotension, etc. as related to each specific drug's effects).
- Whenever possible, have another paramedic verify medication, dosage, and route.
- Hypersensitivity to medication to be administered.

Equipment Needed:

- Lubricant
- Tuberculin or 3-5cc syringe without needle; or
- Prefilled Carpujet without needle
- Syringe with saline.

	Medication Administration, Rectal, PR
1	Determines allergies
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Prepare equipment and the medication to be given.
4	Position the patient in lateral decubitus or supine position.
5	Insert lubricated feeding tube, syringe, or Carpujet with catheter about 5cm into rectum. If a feeding tube is used, flush catheter with 1ml NaCl
6	Inject medication.
7	Remove syringe or Carpujet and attach saline syringe.
9	Remove syringe and catheter holding buttocks together; tape buttocks closed as needed.
10	Tape buttocks closed as needed.
11	Observe for positive or untoward effects.

Medication Administration, SQ Route, (Subcutaneous)

Indications:

- For the administration of certain medications.

Contraindication/Precaution:

- Avoid accidental administration into a blood vessel by aspirating prior to injection.

Equipment Needed:

- Syringe, medication
- Needle (23-25ga ½" - 5/8")
- Alcohol swab

Medication Administration, SQ	
1	Determines allergies
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Prepare equipment and the medication to be given.
4	Select proper injection site, (Deltoid, anterolateral proximal aspect of the quadricep, or buttock).
5	Clean site with alcohol swab using aseptic technique.
6	Elevate the SQ tissue by squeezing the injection site.
7	With bevel up, insert the needle at a 45º angle.
8	Aspirate for blood return. If positive, remove needle.
9	Inject medication.
10	Massage site with alcohol swab.
11	Observe for positive or untoward effects.
12	Document drug given, time given, route, effects and person administering drug.

Medication Administration, Glucagon Reconstitution

Indications: Preparation of Glucagon.

Contraindication/Precaution: None

Equipment:

- Diluting Solution.
- Glucagon Powder.
- Sterile 1 ml syringe.
- Alcohol swab.

	Procedure: Glucagon Reconstitution
1	Determines allergies
2	Confirms: Right patient, Right drug, Right dose, Right route, Right time.
3	Prepare equipment and the medication to be given.
4	Remove the flip-off seals on bottle Nos. 1 and 2.
5	Wipe rubber stoppers on both bottles with the alcohol swab.
6	Pull up 1/2 ml of air.
7	Inject the air into the diluting solution bottle, (No. 1). Keep the tip of the needle in the solution and withdraw the entire contents of the solution.
8	Remove syringe from bottle No. 1 and insert into bottle No. 2, (Glucagon powder). Inject all of the diluting solution into bottle No. 2.
9	Remove syringe and dispose of properly.
10	Shake bottle No. 2 gently until the Glucagon powder dissolves and the solution becomes clear.
11	Administer the Glucagon immediately after reconstituting.

Peripheral IV Troubleshooting and Additional Notes

Troubleshooting the IV, (if the IV is not working well):

- Make sure the tourniquet has been removed.
- Check the IV insertion site for infiltration.
- Check the IV tubing clamp to make sure it is open.
- Check the drip chamber to make sure it is half full.
- Lower the IV bag below IV site and watch for blood to return into the tubing.

Additional Notes:

- Monitor the IV site throughout patient care to verify that it remains patent, is flowing properly, and does not infiltrate.
- Once IV is secured, set the rate as per patient's condition and Protocol, or attach a Saline Lock if no IV fluid or medications need to be administered at the time.
- EMS may start an **external** jugular IV.

Procedures Addendum

Miscellaneous

Air Medical Transport

Air medical transport may be indicated for the care and transport of severely injured trauma patients with compromised and uncontrollable deficiencies in the management of their ABC's.

The decision to utilize air medical services is optional and is at the discretion of the senior medical care provider. Logistical issues, (timing, LZ location, weather, etc.), may preclude its utilization, even when it is felt to be medically indicated.

Air medical transport requires activation of additional resources to set up a safe landing zone. This must be initiated as soon as the decision to utilize air medical services is made.

1. Air medical transport is contra-indicated in the following:

    - Patient is in cardiac arrest.
    - Patient has a medical concern and is not major trauma patient.
    - The time for patient arrival at the hospital would be longer via air medical services than via ground transport.
    - The weather precludes safe aircraft operations, (e.g. icing conditions, low ceiling (cloud layer), low visibility).
    - There is no adjacent or reasonably close landing zone.
    - Air medical services response is not immediately available.

2. Determine potential need for air medical transport of the patient.

    - Criteria that suggest the need for air medical transport may include, but are not limited to:

        - Severely injured trauma patients with compromised and uncontrollable deficiencies in the management of their ABC's.
        - Major trauma with prolonged extrication.
        - Traffic conditions or geographic terrain which prohibit adequate ground access to the victim.
        - Situations in which the time differential between air and ground transport, or care provided, may substantially impact the outcome of the patient.
        - Mass casualty incidents.

3. The paramedic in charge of the patient is responsible for determining if air medical transport is warranted. The paramedic in charge should initiate air medical transport as soon as possible to minimize response and transport times.

4. Contact Hudson Fire Department, Car-1, for FD assistance in setting up the landing zone while EMS focuses on patient care.

5. Guidelines for Landing Zone Preparation are as follows:

        - Area should be at least 100 ft. X 100 ft. (day or night), on fairly solid ground, level, free of wires, overhead obstructions, ground obstructions, people and any material which might fly loose. If there are obstructions, inform helicopter crew via radio. THE

HELICOPTER PILOT MAKES THE FINAL DETERMINATION FOR A SAFE LANDING ZONE, (LZ).

- Mark the four corners of the LZ with lights, flares or high visibility material.
- The best way to mark the landing position in the LZ at night is to place a low intensity strobe in the center of the LZ location or use two vehicles with low headlights ON, shining across the LZ with the intersection of the beams at the landing point. Turn headlights OFF after landing.
- Do not shine lights directly at the aircraft.
- Keep spectators at least 200 feet from the touchdown area and emergency personnel at least 100 feet away. Do not allow anyone to approach the helicopter after landing.
- The individual in charge of the LZ should be clearly identified day or night with either a vest or traffic control flashlight and must be wearing eye protection. He/she should have radio contact with the helicopter and is responsible for directional information.
- Once the patient is packaged and ready to load, the helicopter crew may select 2 or 3 personnel to assist loading. When approaching or departing the helicopter, **Be Aware of The Tail Rotor. Remain low at all times and follow the crew's directions for safety. Remove your headgear/cap prior to approaching the helicopter.**
- Hot Loading a patient with the aircraft engines on is rarely indicated.

Bleeding Control / Shock Management

	Bleeding Control / Shock Management	Satisfactory	Unsatisfactory
1	Uses body substance isolation precautions.		
2	Applies direct pressure to the wound.		
3	Elevates the extremity.		
4	NOTE: Wound continues to bleed.		
5	Applies an additional dressing to the wound.		
6	NOTE: Wound continues to bleed. Second dressing does not control bleeding.		
7	Locates and applies pressure to the appropriate arterial pressure point.		
8	NOTE: Bleeding is controlled.		
9	Bandages the wound.		
10	NOTE: Patient is exhibiting signs and symptoms of hypoperfusion.		
11	Properly positions the patient, (Trendelenburg).		
12	Initiates steps to prevent heat loss from the patient.		
14	Indicates the need for immediate transportation.		

Blood Glucose Level Testing

Indications:

- To determine blood glucose levels in patients with an altered level of consciousness, or suspected blood sugar abnormality.

Contraindication / Precaution:

- Use capillary or IV Access blood, as per the device manufacturer's direction.

Equipment Needed:

- Glucometer
- Test strips, (Not expired, and specifically for the glucometer being used)
- Alcohol wipe
- Lancet or blood-letting device
- 4x4 for bleeding control and Band-Aid

Blood Glucose Level Testing		Satisfactory	Unsatisfactory
1	Prepare test strip in and insert into the glucometer.		
2	Pierce desired site, (fingertip-adult / heel-Infant), with lancet enough to initiate blood flow.		
3	Wipe first droplet off with 4X4 dressing.		
4	Squeeze second droplet of blood onto test strip to trigger reading.		
5	Hold 4x4 on puncture site to control bleeding.		
6	Properly dispose of lancet in sharps container.		
7	Document the results and treat as indicated.		
8	Clean and restock the glucometer.		

CAT TOURNIQUET, (CAT), APPLICATION

The CAT Tourniquet, (Combat Application Tourniquet), may be utilized for tourniquet application to an extremity to control severe hemorrhage.

Once applied, do not remove the tourniquet in the pre-hospital setting.

In tactical applications the tourniquet is usually applied as high on the extremity as possible, regardless of the location of the bleeding site.

Indications:

- Life-threatening hemorrhage from an extremity.

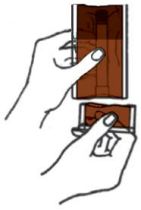
Contraindication / Precaution: **None**.

Equipment needed: CAT tourniquet

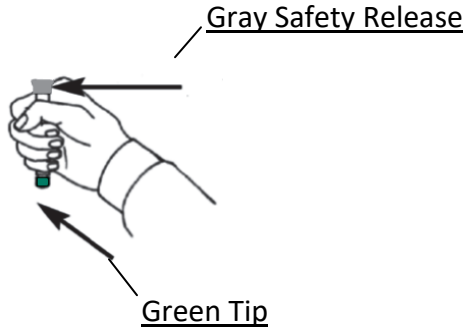
	CAT Tourniquet Application	**Satisfactory**	**Unsatisfactory**
1	Place the CAT around the injured limb at least 2 to 3 inches above the wound site to allow for possible vessel retraction.		
2	Pass the free-running end through the inside slit of the buckle and pass band through the outside slit of the buckle.		
3	Pull the band tight and securely fasten the band back on itself.		
4	Twist the windlass rod until arterial bleeding has stopped.		
5	Lock the rod in the U shaped clip.		
6	Secure the rod with the strap over the U shaped clip.		
7	Note the time the tourniquet was applied in your PCR.		
8	Notify the receiving hospital that a tourniquet is in place.		
9	If bleeding persists, one may apply a second tourniquet adjacent to the first one.		

Duodote Auto-Injector

1) Tear open the plastic pouch at any of the notches. Remove the DuoDote Auto-Injector from the pouch.



2) Place the DuoDote Auto-Injector in your dominant hand. (If you are right-handed, your right hand is your dominant hand). Firmly grasp the center of the DuoDote Auto-Injector with the Green Tip, (needle end) **pointing down**.



3) With your other hand, pull off the Gray Safety Release. The DuoDote Auto-Injector is now ready to be administered.

4) The injection site is the mid-outer thigh area. The DuoDote Auto-Injector can inject through clothing. However, make sure pockets at the injection site are empty.

5) Swing and firmly push the Green Tip straight down, (a 90^{o} angle), against the mid-outer thigh. Continue to push until you feel the DuoDote Auto-Injector trigger.

Self-Aid **Emergency Personnel Aid**

6) Hold injector at site for 10 seconds to allow medication to be administered.

Glucometer Calibration / Self Test

CONTROL TEST

The Control Test confirms that the system is functioning properly and must be done at the beginning of each week, (1st shift, each Monday), and anytime blood glucose test results are in question.

This process is glucometer specific. The following applies to the Ascensia Contour Meter.

1. Equipment:

- Ascensia Contour Meter.
- Ascensia Contour or Microfill blood glucose test Strip.
- Ascensia Contour or Ascensia Microfill Control Solution

2. Control Test:

- Remove the test strip from the plastic bottle and tightly close the bottle immediately after removing the test strips.
- Hold the round end of the test strip with the gray electrode side up.
- Insert the test strip into the meter until it stops.
- The meter will run a quick self-test and then prompt you to apply blood by showing you a picture of a drop of blood being drawn into the test strip.
- This is your signal to apply the control solution.
- Prepare the control solution by gently rocking the control solution bottle before you open it to ensure it is mixed well.
- Squeeze a small drop of control solution on a clean nonabsorbent surface (such as a clean piece of wax paper).
- Do not apply control solution to the test trip directly from the bottle.
- Touch the tip of the test strip to the drop of control solution.
- Hold it until a beep is heard indicating the test strip has an adequate amount of solution to run the test.
- The meter will begin counting down from 5 seconds.
- Compare your normal control test result with the range printed on the test strip bottle label.
- Record and date the control test results.

Meter and Test Strip Problems

PROBLEM	CAUSE	SOLUTION
No display appears when Test Strip is inserted into the Meter.	1. Batteries are not installed correctly. 2. Three minutes have passed since inserting and unit has turned off. 3. Strip not fully inserted. 4. Battery voltage is low.	1. Install batteries correctly. 2. Do not insert Test Strip until you are ready to test. 3. Insert until tab is inside Meter. 4. Replace with **new** batteries.
Check Strip test result out of range.	1. Check Strip, (meter end), dirty or damaged. 2. Meter electronics failure.	1. Wipe with clean dry tissue and visually examine and retest. 2. Contact HEMS Ops Mngr.
Meter fails to start after blood or control solution is drawn into the Test Strip.	1. Not enough blood or control solution is drawn into the Test Strip. 2. Test Strip is defective or has deteriorated. 3. Three minutes have passed since inserting and unit has turned off.	1. Form a larger drop of blood or control solution and rerun test using a **new** Test Strip. 2. Make sure strips used are within expiration date printed on foil and carton. Rerun test using a **new** Test Strip. 3. Repeat test with a new Test Strip. Do not insert Test Strip until you are ready to test.
Meter will not count down.	1. Test Strip inserted incorrectly.	1. Insert Test Strip correctly, (meter end first).
"BATT" display.	1. Battery voltage low.	1. Replace batteries.

Test Result Problems

PROBLEM	CAUSE	SOLUTION
"Lo" display.	1. The blood glucose value may be below 10 mg/dl,	1. Possible hypoglycemic condition, (low blood sugar).
	2. Test Strip not filled completely.	2. Rerun test with **new** strip and apply sufficient sample to fill Test Strip. Hold TEST END to sample until after the beep.
	3. Test Strip is defective or has deteriorated.	3. Rerun test using a **new** strip from unexpired pack.
"Hi" display.	The blood glucose value may be above 600 mg/dl	Possible hyperglycemic condition, (high blood sugar).
Blood glucose or control test results are inconsistent.	1. Not enough blood or control solution is drawn into the Test Strip.	1. Rerun test with **new** strip and apply sufficient sample to fill Test Strip. Hold TEST END to sample until after the beep.
	2. Test Strips have passed their expiration date.	2. Obtain new Test Strips that are within their expiration date.
	3. Deteriorated Test Strip caused by heat or humidity gives low and/or high readings.	3. Run a Control Test using a **new** strip. If results are still out of range, replace carton of Test Strips.
	4. Meter and/or Test Strip are not at room temperature when used.	4. Allow time for Meter and/or Test Strips to come to room temperature before use.
IMPORTANT: There can be as much as a 7% difference in blood glucose readings between capillary, (finger stick), and venous IV blood.		

Hemostatic Agent Application

Hemostatic agent dressings have an impregnated material to facilitate hemorrhage control. They may be used for wound packing, (e.g. For a stab wound, GSW, etc), or for application to a significant abrasion, laceration, or avulsion, etc., type wound that demonstrates significant bleeding that might be, or is, challenging to control otherwise.

Multiple brands exist, e.g.: QuickClot, Hemocon, WoundClot, etc.

Indications:

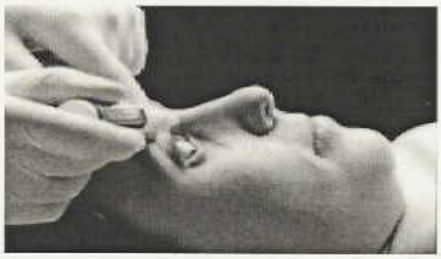
- Hemorrhage

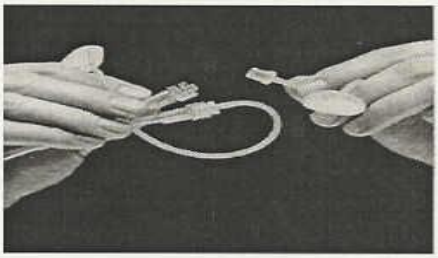
	Hemostatic Agent Application	Satisfactory	Unsatisfactory
1	Tear open package and remove the dressing		
2	Remove excess pooled blood from wound, while preserving any clots that have already formed.		
3	For puncture wounds, pack the dressing tightly into the wound. Leave a tail sticking out of the wound. Repeat until the wound is fully, tightly, packed.		
4	Quickly apply pressure until bleeding stops. Suggested time 3 -5 minutes of continuous pressure.		
5	Leave the dressing in place and wrap to secure the product in the wound.		
6	Do Not remove bandage or hemostatic dressing. Elevate and evaluate as needed.		

Morgan Lens Eye Irrigation, Additional Information

Additional information to the Lake Health Protocol:

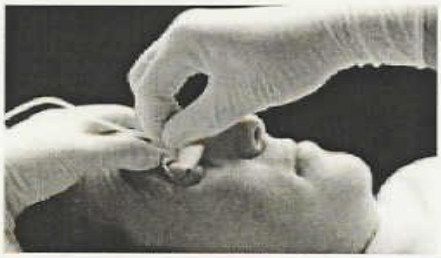
INSERTION:

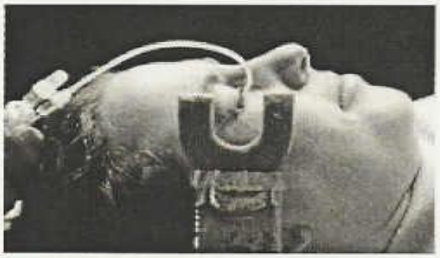




Step 1: Instill topical ocular anesthetic, if available. (Note: The irrigating solution will soothe the eye and the Morgan Lens will provide additional relief by separating the lid from the cornea so that an anesthetic is not essential)

Step 2: Attach Morgan Lens Delivery Set, I.V., or syringe using solution and rate of choice; **start flow** so the Morgan Lens floats on the fluid (it does not rest on the cornea).

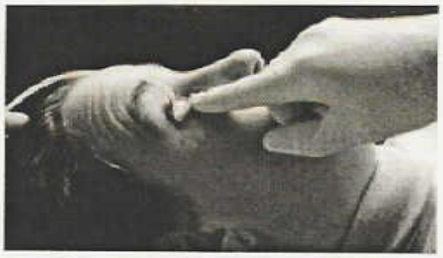


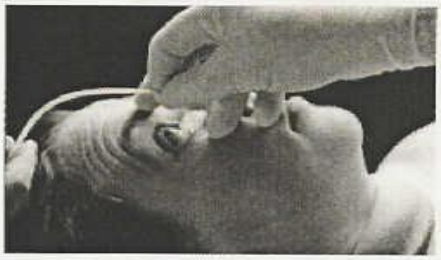


Step 3: Have patient look down, insert lens under upper lid. Have patient look up, retract lower lid, drop lens in place.

Step 4: Release the lower lid over lens and adjust flow. Tape tubing to patient's forehead to prevent accidenta lens removal. Absorb outflow. **DO NOT RUN DRY.**

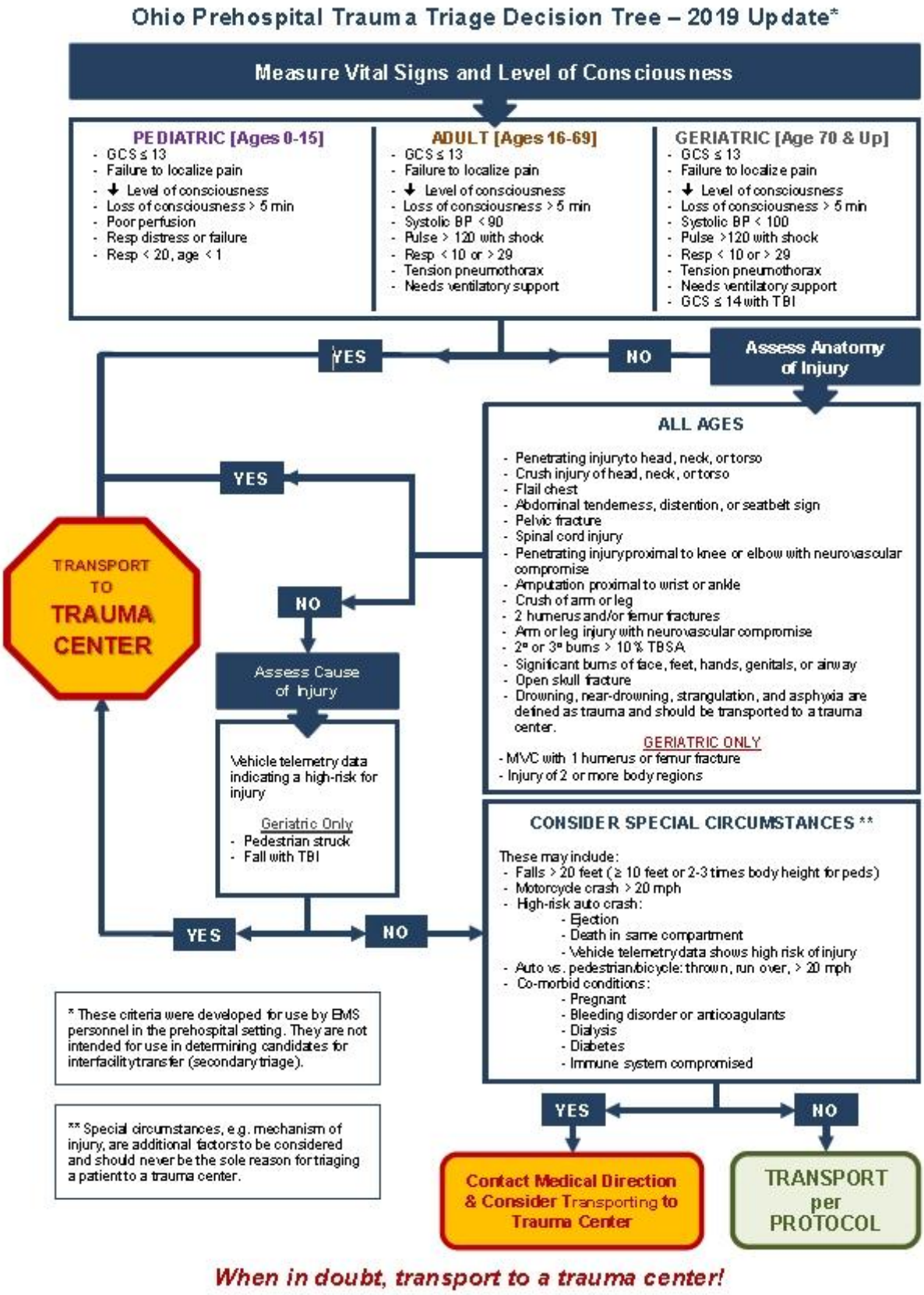
REMOVAL:





Step 5: Removal: Continue flow, have patient look up, retract lower lid - hold position.

Step 6: Slide lens out; terminate flow.


Ohio Prehospital Trauma Triage Decision Tree – 2019 Update*
Measure Vital Signs and Level of Consciousness
PEDIATRIC [Ages 0-15]
- GCS ≤ 13
- Failure to localize pain
- ↓ Level of consciousness
- Loss of consciousness > 5 min
- Poor perfusion
- Resp distress or failure
- Resp < 20, age < 1
ADULT [Ages 16-69]
- GCS ≤ 13
- Failure to localize pain
- ↓ Level of consciousness
- Loss of consciousness > 5 min
- Systolic BP < 90
- Pulse > 120 with shock
- Resp < 10 or > 29
- Tension pneumothorax
- Needs ventilatory support
GERIATRIC [Age 70 & Up]
- GCS ≤ 13
- Failure to localize pain
- ↓ Level of consciousness
- Loss of consciousness > 5 min
- Systolic BP < 100
- Pulse >120 with shock
- Resp < 10 or > 29
- Tension pneumothorax
- Needs ventilatory support
- GCS ≤ 14 with TBI
YES
NO
Assess Anatomy of Injury
ALL AGES
- Penetrating injury to head, neck, or torso
- Crush injury of head, neck, or torso
- Flail chest
- Abdominal tenderness, distention, or seatbelt sign
- Pelvic fracture
- Spinal cord injury
- Penetrating injury proximal to knee or elbow with neurovascular compromise
- Amputation proximal to wrist or ankle
- Crush of arm or leg
- 2 humerus and/or femur fractures
- Arm or leg injury with neurovascular compromise
- 2° or 3° burns > 10% TBSA
- Significant burns of face, feet, hands, genitals, or airway
- Open skull fracture
- Drowning, near-drowning, strangulation, and asphyxia are defined as trauma and should be transported to a trauma center.
GERIATRIC ONLY
- MVC with 1 humerus or femur fracture
- Injury of 2 or more body regions
YES
TRANSPORT TO TRAUMA CENTER
NO
Assess Cause of Injury
Vehicle telemetry data indicating a high-risk for injury
Geriatric Only
- Pedestrian struck
- Fall with TBI
YES
NO
CONSIDER SPECIAL CIRCUMSTANCES **
These may include:
- Falls > 20 feet (≥ 10 feet or 2-3 times body height for peds)
- Motorcycle crash > 20 mph
- High-risk auto crash:
  - Ejection
  - Death in same compartment
  - Vehicle telemetry data shows high risk of injury
- Auto vs. pedestrian/bicycle: thrown, run over, > 20 mph
- Co-morbid conditions:
  - Pregnant
  - Bleeding disorder or anticoagulants
  - Dialysis
  - Diabetes
  - Immune system compromised
YES
NO
Contact Medical Direction & Consider Transporting to Trauma Center
TRANSPORT per PROTOCOL
* These criteria were developed for use by EMS personnel in the prehospital setting. They are not intended for use in determining candidates for interfacility transfer (secondary triage).
** Special circumstances, e.g. mechanism of injury, are additional factors to be considered and should never be the sole reason for triaging a patient to a trauma center.
When in doubt, transport to a trauma center!

Pepper Spray Exposure Treatment

Action:

Sudecon Decontamination Wipes neutralizes pepper spray and tear gas even when running water is not available. It is like an antidote to pepper spray, minimizing the effects.

Sudecon works fast and consistently to clean up individuals exposed to OC, CS and CN (pepper spray or tear gas). It strips the chemical agents from the skin and takes away the burn allowing one to open their eyes in 7 to 15 minutes. This requires NO soap or water, contain all natural ingredients and NO alcohol.

Indications: Exposure to Pepper spray or Teat Gas:

OC (Oleoresin Capsicum) , CS (Orthochlorobenzalmalonitrile), and CN (alphachloroacetaphenone)

Contraindication / Precaution: • Non-toxic, non-flammable, non-irritating. Sudecon® is a topical solution that is used on closed eyes.

Equipment Needed: Sudecon towelettes

Pepper Spray Exposure Treatment		Satisfactory	Unsatisfactory
1	Tear off the top portions of a pouch and remove and unfold the damp cloth.		
2	Immediately place the towelette over the patient's face and thoroughly wipe the OC and CS off their face, eyes, nose and exposed areas.		
3	With eyes closed, using a second fresh towelette, squeeze towelette over the eyes allowing membranes to absorb the solution. (Squeeze towelette to extract solution.)		
4	It is of the utmost importance to squeeze the towelette over the eyes while allowing the liquid to flow around the eyes.		
5	After doing so, lay towelette over face to soothe burning sensation.		

Then continue to wipe the OC and CS off their face, concentrating on their eyes, nose and mouth. Do this until they can voluntarily open their eyes. Do not use water with the towelette; it will only dilute the decontamination formula.

Stroke Worksheet

Time of Symptom Onset:

Patients that awaken with symptoms, onset time is the last time a patient's neurological status was known to be normal, (e.g. evening before).
Last Known Well Time: _____

Facial Droop, (Have the patient smile and show their teeth).

_____ Normal – Both sides move equally well.

_____ Abnormal – One side does not move as well as the other.

Arm Drift, (Have the patient close their eyes and hold both arms out palm up).

_____ Normal – Both arms move the same or not at all.

_____ Abnormal – One arm drifts down or palm turns down compared to the other.

Speech, (Have the patient repeat "The sky is blue over Akron").

_____ Normal – Patient states correctly without slurring.

_____ Abnormal – Patient slurs their words, uses inappropriate words or is unable to speak.

Blood Glucose level: _____

EKG Rhythm: NSR SB ST AFib AFibRVR Other: _____

Taser Protocol, Additional Information

A TASER is a handheld device which shoots two metal electrodes, (probes), several feet, which then puncture the victim's skin. The electrode tips incorporate a "fish hook" design and are attached to the TASER unit by two thin wires. An electric shock may then be delivered to the victim, via the wires and electrodes, while maintaining a safe distance from the victim.

TASERs put out a high voltage, high frequency, electric shock which is designed to incapacitate the victim, while minimizing the risk of inducing an arrhythmia, apnea, syncope, seizure, or other undesired biophysiologic effects. Trauma, such as head injury or cervical spine injury, can occur as the result of the victim involuntarily falling to the ground when shocked. Iatrogenic injury can also occur from efforts to restrain the victim once they are temporarily incapacitated by the TASER.

The electrodes, wires, and the victim pose a risk to shocking rescuers if one comes in contact with them while the TASER is energized. EMS should insure that the device is on SAFETY if they are evaluating an individual who is still connected to the electrodes. Once the electrodes have been removed from the victim, the victim poses no further threat of shock to the rescuers.

DO NOT REMOVE:	**OK to REMOVE:**
• Face • Head • Neck, (above the collar bones) • Genital region • Wrists and Hands • Ankles and feet	• Chest • Back • Extremities (proximal to wrist and ankles) • Abdomen

Procedure – TASER Protocol	
1	Assure Scene and personal safety, Universal precautions.
2	If already removed, administer wound care per protocol.
3	To remove, firmly grasps the electrode and quickly tugging it out, perpendicular to the entry site.
4	Inspect the electrode to ensure the barb is intact. marking the skin puncture site with a pen if the barb is missing.
5	Mark the entry site of the electrode by drawing a circle around the puncture wound.
6	Treat as any other biohazard. Utilize your SHARPs container unless law enforcement requests the electrode be turned over to them.
7	Apply wound care as per protocol.
8	NO incision is to made at the electrode entry site.
9	Perform a neurological and cervical spine exam to assess for possible head and neck injuries.
10	History, physical exam and vitals are required.
11	EKG rhythm strip is required.
12	TASER related events require contact with OLMC.
13	These patients do not qualify for Medical Control contact exemption, even if only minor puncture wounds or no injuries at all, are noted.

Vagal Nerve Stimulation

Indications:

- Vagal maneuvers increase vagal nerve stimulation and can slow an SVT and may convert it to a normal sinus rhythm.
- Carotid Sinus Massage is only to be performed on patients ≤ 40 years of age.

Contraindication / Precaution:

- Carotid sinus massage is contraindicated in those with suspected carotid atherosclerosis and **those > 40 years of age.**
- Never attempt simultaneous bilateral carotid sinus massage.
- Ocular pressure is contraindicated.

Equipment Needed:

- EKG monitor/defibrillator
- Associated cables
- EKG patches

Procedure: Valsalva	
1	Treat patient per Tachycardia Protocol.
2	Identify rhythm on the cardiac monitor; record a strip.
3	Monitor the EKG and obtain a continuous readout.
4	Instruct patient to bear down, as if attempting to have a bowel movement.
5	Terminate Valsalva at the first sign of slowing of the heart rate or heart block.

Procedure: Carotid Sinus Massage	
1	Treat patient per Tachycardia Protocol.
2	Identify rhythm on the cardiac monitor; record a strip.
3	Position patient supine, slightly hyperextending the head.
4	Gently locate each carotid pulse. Auscultate each side for carotid bruits. Do not attempt carotid sinus massage if the pulse is diminished or if carotid bruits are present.
5	Monitor the EKG and obtain a continuous readout. Terminate massage at the first sign of slowing of the heart rate or heart block.
6	Tilt the patient's head to either side. Place your index and middle finger over one artery, below the angle of the jaw and as high up on the neck as possible.
7	Firmly massage the artery.
8	Maintain pressure for no longer than 5-10 seconds.
9	If the massage is ineffective, you may repeat it, preferably on the other side of the patient's neck.

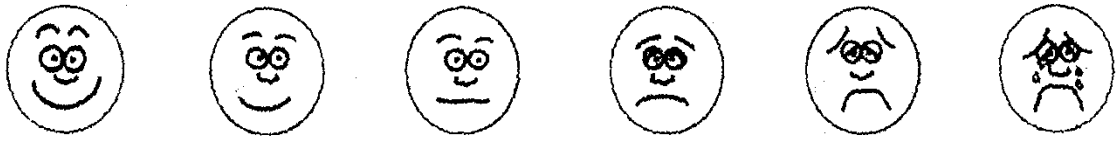
Procedures Addendum

Pediatric Tables

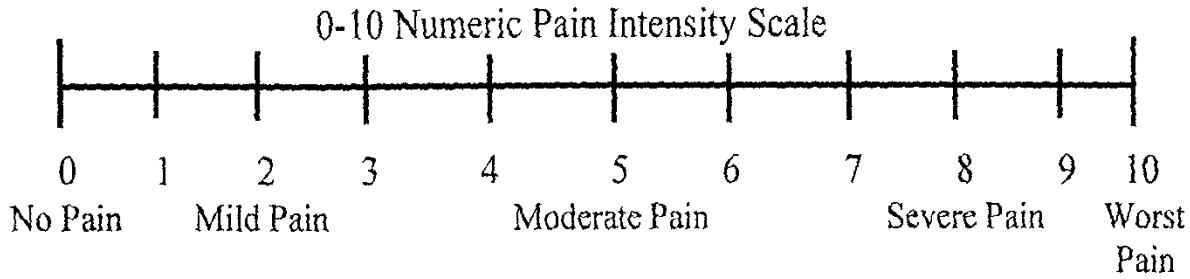
Pain Scale

Pain Scales

CHOOSE THE FACE THAT BEST DESCRIBES HOW YOU FEEL



0	2	4	6	8	10
No Hurt	Hurts Little Bit	Hurts Little More	Hurts Even More	Hurts Whole Lot	Hurts Worst



Purdue Pharma L.P., Are you In Pain?, (1999) Chart depicting scales from the American Pain Society and Wong D., Whaley Essentials of Pediatric Nursing (1997)

Pediatric Vital Signs and ETT Size

WEIGHT AND VITAL SIGNS BY AGE:

Age:	**Weight (Kg):**	**HR:**	**RR:**	**SBP:**
Premies:				
< 40 wks.	< 3.3	100 - 180	30 - 50	MAP = Gest. Age.
Newborn:	3.3	100 - 180	30 - 50	54 - 75
Infant:				
< 1 yoa	7.5	100 - 180	30 - 40	75 - 100
Toddler:				
1 yoa	10	100 - 180	25 - 32	90 - 130
2 yoa	12			
3 yoa	14			
Child:				
4 yoa	17	60 - 150	22 - 28	95 - 135
6 yoa	20			
8 yoa	25			
10 yoa	33	50 - 100	20 - 24	95 - 140
12 yoa	40			
14 yoa	50	50 - 100	12 - 20	95 - 140
16 yoa	60			

PEDIATRIC INTUBATION ET TUBE SIZES, BY AGE:

Age:	**ET Tube:**	**OG/NG**	**Suction Cath**	**Chest Tube**
Premie	2.5 - 3.0	5	6	10 - 14
Term NB	3.0 - 3.5	5 - 8	6	12 - 18
6 mo	3.5 - 4.0	8	8 - 10	14 - 20
1 yoa	4.0 - 4.5	10	10	14 - 20
2 yoa	4.5	10	10	16 - 24
4 yoa	5.0	10 - 12	10	20 - 28
6 yoa	5.5	10 - 12	14	20 - 32
8 yoa	6.0*	14 - 18	14	28 - 34
10 yoa	6.5*	14 - 18	14	28 - 38
Teen	7.0 - 8.0*	14 - 18	14	28 - 42

* No cuff for kids < = 6 yoa.

Estimated ETT size for > 1 yoa: ((Age (yrs))/4) + 4 = ET ID size.

Notes: