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GENERAL INFORMATION

How To Use This Manual

Manual Organization.

Sections: the manual is organized into four sections. Subjects are organized alphabetically within the sections and numbered as follows (see Table of Contents):

General Information Section	0000-0999.
Procedures	1000-1999.
Protocols	2000-2999.
Drugs	3000-3999.

Subject: each individual subject is identified in the subject page header and footer by:

Subject Title:	Header.
Manual Title:	Footer, lower left.
Manual Revision Date:	Footer, lower left.
Manual Section:	Footer, lower right.
Subject Number:	Footer, lower right.

Table of Contents: Each Procedure, Protocol, and Drug is listed by section, in alphabetical and numerical order. Gaps in the number sequence allow future entries to be inserted in the correct order.

Protocol Organization and Definitions.

EMT and Parkmedic Protocols: each protocol is organized into “EMT” and “Parkmedic” sections, each of which contains “Standing Orders” followed by “Base Hospital Orders.” A “Special Considerations” section at the end of the protocol contains background information for the protocol. “Special Considerations” are for reference only.

Paramedic Protocols: each protocol is organized into sections, which contain “Standing Orders” followed by “Base Orders.” A “Special Considerations” section at the end of the protocol contains background information for the protocol. “Special Considerations” are for reference only.

Standing Orders: items under “Standing Orders” may be done prior to base contact. Unless otherwise stated, they are written to be completed sequentially.

Parks without Base Hospitals: a base hospital is defined as any communications center providing on-line medical direction (i.e. where medical consultation is available in real time by telephone or radio). Providers in a park without a base hospital essentially operate in constant communication failure. Their local medical adviser will establish policies identifying which base order interventions, if any, may be performed under these circumstances.

Communication Failure Orders: items labeled “Communication Failure Orders” may be performed by the EMT, Parkmedic, or Paramedic only after base contact and approval, OR base contact has been attempted and was unsuccessful. Reasonable attempts to contact base must be made, and communication failure documented.

Base Orders Only: items listed under “Base Orders Only” require base approval and may NOT be performed in communication failure.

Navigation: once a protocol is selected, care should be continuous under that protocol. Exceptions to this rule are:

GO TO: if an order directs you to “**GO TO PROTOCOL: XXXXX**” (protocol named in italics), then patient care should continue under the specified protocol, IF the patient meets the stated criteria. If the patient does not meet the criteria, then continue with the original protocol.

Cardiac Arrest/Dysrhythmia : if a patient experiences cardiac arrest/dysrhythmia while being cared for under another protocol, then the provider may immediately change to the appropriate cardiac arrest/dysrhythmia protocol without first making base contact. Base contact, however, should be attempted as soon as possible without compromising patient care.

REFERENCE: Additional relevant information is available in another protocol or procedure if an order directs you to “**REFERENCE PROTOCOL or PROCEDURE: XXXXX**” (protocol or procedure named in italics). This information is intended to supplement knowledge, but patient care should continue to follow the original protocol.

GENERAL INFORMATION

Protocols are chief complaint driven and are designed for patient care. Protocols contain orders for the appropriate care of the patient.

Procedures are step by step instructions in how to carry out a specific action in the care of a patient (e.g. IO needle insertion).

Drug Pages are designed to be informational. Therefore, as drug dosing may vary depending on the selected protocol, the range of dosing used throughout the manual is listed in the drug page; when caring for a specific patient, the administered dose is that designated in the protocol. Depending on the drug, the dose may be listed as mg/kg or ml/kg. Generic names are always used and in cases where the brand name is commonly used, this will also be listed (e.g. Midazolam/Versed).

Pediatric Patients: most protocols and procedures apply to both adults and children. Certain protocols apply only to pediatric patients, and are listed separately under Pediatric. Depending on the procedure, protocol, or drug dose, the age definition of pediatric varies; if age is not specifically defined, then assume that pediatric refers to the age range of 0-14 years.

Park Specific Scope of Practice Modifications.

In general this NPS EMS Field Manual is designed to be used unmodified as it is part of Reference Manual 51 (RM 51) and under Director's Orders 51 (DO 51), and thus carries the weight of NPS Policy. However, given the wide range of needs and unique environments within the NPS, some local modifications may be necessary and appropriate for specific parks or park areas. These modifications will be made and approved by the Local EMS Medical Advisor (LEMA) and are authorized within an individual park or park area under his/her medical license. For example parks with no high altitude areas, may have no need for the Altitude Protocols or Drug pages.

If any local (park specific) modifications are made to the NPS EMS Field Manual:

- The Field Manual should contain a copy of the local park's Scope of Practice Modifications (Procedures, Protocols, and Drugs), inserted in the appropriate section(s).

- Modified, deleted or added (Procedures, Protocols, and/or Drugs), should be listed and identified as such in the Table of Contents.

- Procedures and Protocols removed from practice at a local park should be included in the General Information section so that EMS Providers have access to the information should they be detailed to or transfer to another park.

- If a local park chooses to modify the Field Manual (Procedures, Protocols, and/or Drugs), these steps should be followed:

 - The modification must be approved in writing by the LEMA.

 - The modified version will include the local park acronym, e.g., SEKI, and revision date in the version data in the subject footer (i.e. Version SEKI 3/09).

 - The local version will have the same topic number if it is a modified version of an existing protocol or procedure (e.g. 2010.SEKI).

 - The modified version should be inserted into the NPS Field Manual, in numerical order, for local use.

 - The modified version should be listed in appropriate order on the Field Manual contents page.

 - For procedures or protocols that are additions to the Field Manual, these will be locally designated as above, but given a unique number that places them in appropriate alphabetic order in the local version of the Field Manual.

Manual Updates/Modification Guidelines.

Most organizations update their medical guidelines periodically (e.g. AHA). Although these updates will be reviewed and incorporated into the Field Manual if relevant, these changes will usually be adopted during the normal Field Manual revision cycle.

Submitting suggestions: Comments may be submitted through any local EMS Coordinator to the Branch Chief for EMS Services, WASO. The NPS has National Medical Advisors and maintains an NPS EMS oversight committee that meets periodically to consider recommended changes and updates to the NPS EMS Field Manual.

NPS Definitions.

Refer to RM-51 for provider levels.

General Information

Terms, Acronyms and Abbreviations

ABCs	Airway, Breathing, Circulation	MAD	Mucosal Atomizer Device
ACLS	Advanced Cardiac Life Support	MCI	Multi-Casualty Incident
AED	Automated External Defibrillator	MDI	Metered-Dose Inhaler
ALOC	Altered Level of Consciousness	MI	Myocardial Infarction
ALS	Advanced Life Support	MOI	Mechanism of Injury
AMA	Against Medical Advice	NEMA	National EMS Medical Advisor
AMS	Acute Mountain Sickness	NG	Naso-Gastric
ASA	Aspirin	NPS	National Park Service
BLS	Basic Life Support	NRM	Non-Rebreather Mask
BVM	Bag Valve Mask	NS	Normal Saline
C/C	Chief Complaint	NSAID	Non-Steroidal Anti-Inflammatory Drug
CHF	Congestive Heart Failure	NTG	Nitroglycerin
CNS	Central Nervous System	N/V	Nausea and Vomiting
CO	Carbon Monoxide	O2	Oxygen
COPD	Chronic Obstructive Pulmonary Disease	ODT	Oral Disintegrating Tablet
CO2	Carbon Dioxide	OTC	Over The Counter
CPAP	Continuous Positive Air Pressure	PCR	Patient Care Report
CPR	CardioPulmonary Resuscitation	PE	Pulmonary Embolism OR Physical Exam
CSM	Circulation, Sensory, Motor	PMH	Past Medical History
D50	Dextrose 50%	PO	<i>Per Os</i> (By Mouth)
DAN	Diver's Alert Network	POV	Privately-Owned/Operated Vehicle
DBP	Diastolic Blood Pressure	PRN	<i>Pro Re Nata</i> (As Needed)
DNR	Do Not Resuscitate	R/O	Rule Out
EMS	Emergency Medical Service	ROM	Range of Motion
EMT	Emergency Medical Technician	ROSC	Return of Spontaneous Circulation
ETT	Endotracheal Tube	RR	Respiratory Rate
FBO	Foreign Body Obstruction	SBP	Systolic Blood Pressure
GCS	Glasgow Coma Score	SC or SQ	Subcutaneous
GSW	Gun Shot Wound	SCUBA	Self-Contained Underwater Breathing Apparatus
GI	Gastro-Intestinal	SIVP	Slow IV Push
HACE	High Altitude Cerebral Edema	SL	Sublingual
HAPE	High Altitude Pulmonary Edema	SOB	Shortness of Breath
HHN	Held-Held Nebulizer	S/S	Signs and Symptoms
HR	Heart Rate	STD	Sexually Transmitted Disease
HTN	Hypertension	TAR	Treat and Release
IG	Infra-Glossal	TBSA	Total Body Surface Area
IM	Intramuscular	TCA	Tricyclic Antidepressant
IN	Intra-Nasal	TIA	Transient Ischemic Attack
IO	Intraosseous	TKO	To Keep (Vein) Open
IUD	Intrauterine Device	T-POD	Traumatic Pelvic Orthotic Device
IV	Intravenous	TTJI	Transtracheal Jet Insufflation
IVF	IV Fluids	UAO	Upper Airway Obstruction
IVP	IV Push	VS	Vital Signs
JVD	Jugular Venous Distention	>	Greater Than
LEMA	Local Emergency Medical Advisor	≥	Greater Than or Equal To
LMP	Last Menstrual Period	<	Less Than
LOC	Level of Consciousness OR Loss of Consciousness	≤	Less Than or Equal To
LR	Lactated Ringers		

June 11, 2012

NPS Paramedic Field Manual Cover Letter

TO: All Users

From: Geoff Stroh MD, Marc Shalit MD, Danielle Campagne MD, Megann Young MD

UCSF Fresno Emergency Medicine Program

Enclosed you will find the 2012 NPS Paramedic Field Manual. This manual was developed over the last year under the direction of the NPS EMS Advisory Committee. A subcommittee of NPS Paramedics chaired by Duane Grego and Danielle Campagne was created with the following mandate:

- Define an NPS Paramedic scope of practice
- Create NPS Paramedic protocols
- Maintain consistency with AHA guidelines when reasonable
- Maintain consistency with other NPS EMS Field Manuals
- Obtain LEMA and Paramedic/EMS-Coordinator comments/feedback on drafts
- Produce final NPS Paramedic Field Manual

All of the above was forwarded to the UCSF Fresno NPS EMS Medical Advisors who created drafts with input from the UCSF Fresno Residents, LEMA's, EMS Coordinators, NPS Paramedics, and the NPS EMS Advisory Committee. We thank all of the above for their thoughts and contributions to this project. The attached document represents the final product.

Several points need to be considered when reviewing/using this document:

- Although referred to as a final document, it is a living document and we expect future modifications based on field use and feedback.
- As a newly developed manual there are expected inconsistencies with the Parkmedic Manual and these inconsistencies will be addressed with the planned updated Parkmedic version.
- Although highly consistent with AHA guidelines there is some discordance with the NPS Paramedic Field Manual and this is intentional. Reasons include: AHA guidelines are not applicable in the NPS EMS/austere environment and the guidelines are simply silent on some issues. Finally there are some instances where we believe patient care is better served by not following the AHA guidelines, e.g. Pediatric Tachycardia was deliberately omitted from the Paramedic Field Manual.
- Some specific LEMA/EMS Coordinator suggestions were not incorporated, as these were felt to be better addressed at the local level, as opposed to nationally, e.g. pre-hospital therapeutic hypothermia in resuscitated arrest requires an infrastructure that can only be defined at local levels.

- There are additional items not in the current manual that remain under consideration and require further investigation, e.g. IO Lidocaine, and the management of cardiac arrest in the setting of hypothermia.

Feedback and comments on this manual should be sent to Duane_Gregg@nps.gov. These comments will be collected, reviewed, and considered for future modifications to this manual.

Acetaminophen (Tylenol)

Scope	EMT, Parkmedic, Paramedic.
Class	Antipyretic, analgesic.
Action	Elevates pain threshold and readjusts hypothalamic temperature-regulatory center.
Onset	PO/PR: 20 minutes.
Duration	4 hours.
Indications	Altitude illness. Febrile seizure. Fever. Mild pain.
Contraindications	Known hypersensitivity (rare).
Form	325 or 500 mg tablets. 160 mg/5 ml liquid.
Dosage	> 10-Adult: 1,000 (975)_mg PO every 4-6 hours. Do not exceed 4,000 mg in 24 hours. 0-10 yrs.: 15mg/kg PO every 4-6 hours, max dose 1,000mg. Do not exceed 4,000 mg in 24 hours.

Notes

Small quantities of Acetaminophen may be supplied to any person if requested for self-administration. The person should be offered an evaluation. A PCR does not need to be filled out if the person declines the evaluation and appears well.

REFERENCE PROCEDURE: *When to Initiate a PCR (Patient Care Report/Run Sheet).*

If the person appears acutely ill in your judgment, do your best to convince the person of the need for evaluation. A PCR shall be completed in this instance, even if the evaluation is declined.

In general, Acetaminophen and Ibuprofen are interchangeable. The decision should be based on patient preference and contraindications.

Cross Reference

Procedures:

When to Initiate a PCR (Patient Care Report/Run Sheet)

Protocols:

Altitude Illness
Bites and Stings
Burns
Childbirth
Electrical and Lightning Injuries
Eye Trauma
Frostbite
General Medical Illness - Adult
Minor or Isolated Extremity Trauma
Pediatric – Medical Illness/Fever
Respiratory Distress
Seizures
Vaginal Bleeding

Drugs:

Ibuprofen (Motrin, Advil)

Acetazolamide (Diamox)

Scope	Parkmedic, Paramedic.
Class	Sulfonamide. Carbonic anhydrase inhibitor.
Action	Increases urination (diuretic). Stimulates respiration.
Onset	PO: 1 hour.
Duration	12 hours.
Indications	Treatment of Acute Mountain Sickness (AMS) and High Altitude Cerebral Edema (HACE). Prevention of Altitude Illness in emergency personnel ascending rapidly to altitudes > 8,000 ft.
Contraindications	Sulfa allergies (examples: Bactrim or Septra). Severe kidney or liver disease.
Side Effects	Tingling in hands and feet (very common). Increased urination (nearly universal). Tinnitus (ringing in ears). Nausea/vomiting/diarrhea/taste disturbances.
Form	125mg or 250mg tablets.
Dosage	<p><u>Prophylaxis:</u> 125 mg orally every 12 hours Ideally dosing should begin 24 hours prior to ascent and continue for 72 hours once maximum altitude is attained, or until descent.</p> <p><u>For severe symptoms of Acute Mountain Sickness:</u></p> <p>Adults: 250mg PO every 12 hours. 9–12 yrs: 125mg PO every 12 hours. 6–9 yrs: 2.5mg/kg or ½ of 125mg pill PO every 12 hours. < 6 yrs: 2.5mg/kg or ¼ of 125mg pill PO every 12 hours. -All doses may be crushed and added to liquid. -All doses may be stopped once patient is asymptomatic or descended from altitude</p>
Notes	Hydration is very important in the treatment and prevention of AMS. As this medication promotes urination, particular attention must be paid to maintaining fluid intake.

Cross Reference

Protocols:

Altitude Illness

Altitude Illness Prophylaxis

Activated Charcoal

Scope	Parkmedic, Paramedic.
Class	Chemical adsorbent.
Action	Binds certain toxic substances, thereby reducing gastrointestinal absorption.
Onset	PO: Immediate.
Duration	12-24 hours.
Indications	For some life threatening oral ingestions within 1 hour.
Contraindications	Patient cannot follow commands or sit and sip water. Active seizures or post-ictal state. No gag reflex. Hydrocarbon ingestion (gasoline, kerosene, turpentine, etc). Acidic/caustic ingestion (acids, lye, oven cleaner, etc). An ingestion likely to cause a rapid decrease in mental status (cardiac or psychiatric drugs).
Side Effects	Vomiting, constipation, black stools.
Form	Premixed bottle: 50g in 240ml of water or sorbitol.
Dosage	Adult: 50g PO 1-14 yrs: 1 g/kg PO, (max dose 50g). < 1 yr: Base contact only, NOT in communications failure.
Notes	Base contact only, not in communications failure. Shake vigorously prior to administration. Activated Charcoal does not adsorb cyanide, ethanol, methanol, caustic alkali, potassium, lithium, iron or petroleum products, and should NOT be used if known to be an isolated ingestion of these agents.

Cross Reference

Procedures:

Nasogastric/Orogastric Tube Insertion
(LEMA approved optional scope item)

Protocols:

Ingestion/Poisoning

Adenosine (Adenocard)

Scope	Paramedic.
Class	Antidysrhythmic.
Action	Slows AV nodal conduction time—interrupts supra-ventricular tachycardias.
Onset	Immediate.
Duration	< 10 Seconds.
Indications	Narrow complex tachycardia
Contraindications	AV block w/o pacemaker Irregular Tachycardia (relative) Wide Complex Tachycardia Known hypersensitivity to adenosine Patients on Tegretol (carbamazepine), Persantine (Dipyridamol), heart transplant patients. Patients with history of WPW (Wolf, Parkinson White)
Side Effects	Common: flushing, dyspnea, chest pressure, nausea, headache, sense of doom, transient asystole Severe: Bradycardia, complete heart block, dysrhythmias
Dosage	<u>Adults:</u> 6mg rapid IV push (may follow with 12mg dose if necessary)

Cross Reference

Protocols:

Cardiac Arrest/Dysrhythmias - Tachycardia

Albuterol and Metaproterenol Sulfate

(Proventil HFA, Ventolin HFA, ProAir HFA)

Scope	Parkmedic, Paramedic.
Class	Sympathomimetic B2 agonist.
Actions	Relaxes bronchial smooth muscle, causing bronchodilation.
Onset	Immediate.
Duration	2-4 hours.
Indications	Respiratory distress with bronchospasm (allergic reaction, asthma, COPD). HAPE (REFERENCE PROTOCOL: <i>Respiratory Distress</i> in Special Considerations).
Contraindications	Relatively contraindicated in active heart disease, severe hypertension or within 6 weeks of a known MI.
Side Effects	Palpitations, tremor, and anxiety (uncommon when taken in recommended doses).
Forms	Metered Dose Inhaler (MDI): Approximately 90mcg per actuation. Hand-held Nebulizer (HHN): Vial, 2.5mg in 3ml LR/NS.
Dosage	<p><u>Nebulizer:</u> All ages: 2.5mg in 3ml of LR/NS premixed solution. Use with standard acorn-type jet nebulizer. For all patients, start oxygen at 10 l/min. If not improved by 3–5 minutes, increase oxygen to 15 l/min For patients who fail to respond to a single nebulized dose, repeat above dosing up to six times without allowing “acorn” to run dry.</p> <p><u>MDI:</u> All ages: 4 puffs on consecutive breaths during mid inspiration, then start 10-puff dose sequence (1 puff every minute for up to 10 minutes) if symptoms persist. Use spacer (Aerochamber) if available to increase inhaled dose.</p>
Notes	<p>Assess respiratory effort, distress level, breath sounds, and vitals before and after administration.</p> <p>Use nebulizer if age or respiratory distress precludes use of MDI.</p> <p>Albuterol and ipratropium solutions can be mixed in a single nebulized treatment.</p> <p>Albuterol and Metaproterenol are virtually identical medications and can be used interchangeably.</p> <p>No maximum dose for a young asthmatic.</p>

Cross Reference

Protocols:

Allergic Reactions
Altitude Illness
Respiratory Distress

Drugs:

Ipratropium (Atrovent)

Amiodarone (Cordarone)

Scope	Parkmedic and Paramedic Note: Indications for this medication differ slightly in the Parkmedic protocols; this is because Parkmedics generally do not have cardiac monitors.		
Class	Anti-arrhythmic.		
Action	Stabilizes cardiac conduction system. Has multiple sites of action but in IV form is predominately an AV nodal blocker.		
Onset	Immediate.		
Duration	10-20 minutes.		
Indications	Cardiac arrest due to Vfib or Vtach. Patient has been shocked by AICD Patient has ROSC after AED shock Ventricular Dysrhythmias (VFib, VTach)		
Contraindications	HR < 80. 2 nd and 3 rd degree heart block.		
Side Effects	Hypotension, rhythm disturbances, bradycardia, CHF, cardiac arrest, shock, respiratory depression, rash, anaphylaxis, vomiting.		
Form	150mg, 3mL vial (50mg/ml)		
Dosage	<u>Adults:</u>	<u>Actively Coding:</u>	IV/IO: 300mg (50mg/ml) IVP. Repeat 150 mg IVP x1.
		<u>ROSC:</u>	IV/IO: 150mg in 100ml NS over 10 minutes.
		<u>Re-arrest:</u>	IV/IO: 150mg IVP.
		<u>ROSC:</u>	IV/IO: 150mg in 100ml NS over 10 minutes.
		<u>Wide Complex Tachydysrhythmia:</u>	IV/IO: 150mg in 100ml NS over 10 minutes.
	Hold for HR < 80 as Amiodarone may worsen/induce bradycardia.		
	<u>1 mo-14 yrs:</u>	<u>Actively Coding:</u>	IV/IO: 5mg/kg IVP (max dose 300mg), repeat 2.5 mg/kg x 2
		<u>Re-arrest:</u>	IV/IO: 2.5mg/kg (max dose 150mg) IVP.
	<u>< 1 month:</u>	<u>Not Used</u>	
	Hold for HR < 80 as Amiodarone may worsen/induce bradycardia.		

Cross Reference

Protocols

Cardiac Arrest/Dysrhythmias
Pediatric – Cardiac Arrest/Dysrhythmias

Procedures

Intraosseous Access
IV Access and IV Fluid Administration

Aspirin (Acetylsalicylic acid)

Scope	EMT, Paramedic, and Paramedic.
Class	Analgesic. Anti-platelet (“Blood thinner”). Non-Steroidal Anti-Inflammatory Drug (NSAID).
Action	Analgesia. Inhibits prostaglandin synthesis for anti-inflammatory and anti-pyretic (fever) effect. Inhibits platelet aggregation and reduces chances of complete coronary artery blockage in an AMI, therefore reducing the death of heart muscle.
Onset	PO: 5-30 minutes.
Duration	Anti-inflammatory: 1-4 hours. Anti-platelet activity slowly decreases over 10 days.
Indications	Chest pain suggestive of acute myocardial infarction.
Contraindications	Allergy to Aspirin or other non-steroidal anti-inflammatory (Motrin, Ibuprofen). Active, uncontrolled bleeding. NOTE: Many people are told not to take aspirin because it upsets their stomach or they have a history of GI bleeding (e.g., ulcers). In the setting of cardiac chest pain this is NOT a contraindication – give them Aspirin.
Side Effects	Stomach irritation and/or nausea. Tinnitus (ringing in the ears) in an overdose situation. Bleeding with chronic use.
Form	81mg and 325mg tablets in various packaging.
Dosage	Adults: 325mg or 81 mg x 4 PO single dose; instruct the patient to chew the aspirin, then swallow.
Notes	Aspirin is the MOST important drug to give during an acute myocardial infarction (MI). The sooner Aspirin is given to a patient having an acute MI, the less potential for damage to the patient’s heart. If the patient takes Aspirin daily and has already taken it within the past 12 hours, do not give Aspirin. If there is any doubt, give Aspirin. If patient has a history of a bleeding disorder or is on anticoagulants (i.e. Coumadin, Warfarin, Lovenox, Pradaxa), contact base before administering Aspirin. If in communication failure, give Aspirin. An acute Aspirin overdose is potentially lethal. Signs and symptoms may include tinnitus, vomiting, rapid respirations, high fever, seizure, hypoglycemia, or altered mental status. For fever reduction use Acetaminophen (Tylenol) or Ibuprofen, NOT Aspirin.

Cross Reference

Protocols:

Chest Pain - Cardiac

Respiratory Distress

Atropine Sulfate

Scope	EMT per PROCEDURE: <i>NAAK/Mark I (Nerve Agent Antidote Kit)</i> . Parkmedic, Paramedic Note: Indications for this medication differ slightly in the Parkmedic protocols, this is because Parkmedics generally do not have cardiac monitors.
Class	Anticholinergic.
Action	Blocks the receptors of the parasympathetic nervous system (vagal) resulting in: Increased heart rate causing increased cardiac output. Decreased smooth muscle activity in stomach, intestine, and bladder causing decreased sweating, salivation, tears, and mucus secretions.
Onset	IV/IO/IM: Immediate.
Duration	4 hours.
Indications	Chest pain with <u>symptomatic</u> bradycardia (HR < 50 AND SBP < 90). Organophosphate poisoning.
Contraindications	None for emergency use.
Side Effects	Tachycardia, palpitations, hypertension, dry mouth, increased thirst, headache, nervousness, weakness, dilated pupils, and blurred vision.
Form	Preload (10ml syringe): 1mg in 10ml (0.1 mg/ml). Vial: 8mg in 20ml (0.4 mg/ml). Auto Injector: 2mg dose.
Dosage	<u>Chest pain with symptomatic bradycardia</u> (ALL present): HR < 50, SBP < 90, AND symptoms (active chest pain, shortness of breath, nausea/vomiting, OR altered mental status). Adults: IV/IO: 0.5mg every 5 min prn HR < 50, SBP < 90, AND symptoms (max 3mg). 0-14 yrs: Not indicated. <u>Organophosphate Poisoning:</u> (BASE CONTACT) Adults: IV/IO/IM: 2mg every 5 minutes prn secretions, no max total dose. 0-14 yrs: IV/IO/IM: 0.04mg/kg (0.4ml/kg) (minimum dose 0.1mg, max dose 2mg) every 5 minutes prn secretions, no max total dose.
Notes	May increase myocardial oxygen demand, thus precipitating angina or worsen acute MI. Low dose Atropine (< 0.1mg pediatric) can cause paradoxical bradycardia. Enhanced anticholinergic effects may occur with antihistamines, haldol, meperidine, procainamide, quinidine, and tricyclic antidepressants. Organophosphate poisoning requires large amounts of Atropine; there is no maximum dose. Call backup for more medication early. Titrate until bronchial secretions are controlled. REFERENCE PROCEDURE: <i>NAAK/Mark I (Nerve Agent Antidote)</i> for auto-injector dose.

Cross Reference

Procedures:

NAAK/Mark I (Nerve Agent Antidote Kit)

Protocols:

Cardiac Arrest/Dysrhythmias
Chest Pain (Cardiac)
Ingestion/Poisoning

Bacitracin Ointment

Scope	EMT, Paramedic, and Paramedic.
Class	Topical (skin) antibiotic.
Action	Inhibits bacterial growth, thereby helping to prevent infection.
Indications	Minor cuts, scrapes and partial-thickness burns (< 15% total body surface area).
Contraindications	Known hypersensitivity. Large deep wounds (any wound that you think may require stitches). Any full-thickness burn, partial-thickness burns > 15%, puncture wounds, animal bites.
Side Effects	Local allergy – rash. Systemic allergy – wheeze, diffuse rash, anaphylaxis.
Forms	Multi-use tube.
Dosage	After cleansing the area, apply thinly over affected part, and cover with bandage. Apply only once.
Notes	Application of Bacitracin Ointment may provide some pain relief.

Cross Reference

Procedures:
Wound Care

Protocols:
Burns
Minor or Isolated Extremity Trauma

Calcium Gluconate

Scope	Paramedic.
Class	Electrolyte.
Actions	Cation (Ca++) needed for maintenance of nervous, muscular and skeletal function. Increases cardiac contractility.
Onset	Immediate.
Duration	0.5 – 2 hours.
Indications	Suspected acute hyperkalemia (elevated potassium), suspected acute hypocalcemia (decreased calcium), calcium channel blocker (Nifedipine, Verapamil, etc.) overdose, reversal of Magnesium Sulfate toxicity.
Contraindications	Relative in patients taking Digitalis (may worsen arrhythmias).
Side Effects	Hypercalcemia, arrhythmias, syncope, nephrolithiasis, extravasation necrosis, hypotension, bradycardia, hypomagnesemia, dizziness, constipation, nausea.
Forms	10 ml vial containing 1 gm calcium gluconate.
Dosage	Adult: 1 – 3 gms (10 – 30 mls) equals 1 – 3 vials per dose (SIVP) In cardiac arrest give 3 gms (30 mls) IVP. Pediatrics: 60-100 mg/kg (0.6-1 ml/kg), max 3 gms (3 vials) per dose. Administered at a rate not to exceed 200mg/min.
Notes	Monitor ABC's and ECG during administration. IV line should be flushed between Calcium Gluconate and Sodium Bicarbonate administration. Tissue necrosis may result if Calcium Gluconate extravasates. Predispositions to hyperkalemia include renal failure, excited delirium and over exertion.

Cross Reference

Protocols:

Cardiac Arrest/Dysrhythmias

Ingestions/Poisoning

Pediatric – Cardiac Arrest/Dysrhythmias

Cefazolin Sodium (Ancef)

Scope	Parkmedic and Paramedic.
Class	Cephalosporin antibiotic.
Action	Prevents and treats infection.
Onset	IV: Immediate.
Duration	8 hours.
Indications	Severe wounds (deep, crushed, or exposed tendon; open fracture; heavy contamination) with > 2 hours between injury and arrival at hospital/clinic.
Contraindications	Allergy to cephalosporin antibiotics. Prior anaphylactic reaction to penicillin (simple rash/itching is <u>not</u> a contraindication).
Side Effects	Rare.
Form	Vial: 1g powder, reconstituted with 2ml sterile water when needed.
Dosage	> 12-Adult: 1g IV/IO (IM if no IV/IO access) every 8 hours. 6-12 yrs.: 500mg IV/IO (IM if no IV/IO access) every 8 hours. < 6 yrs.: 250mg IV/IO (IM if no IV/IO access) every 8 hours.
Notes	To reconstitute dose, add 2 ml of <u>sterile water</u> to vial and shake well to mix. IM: Inject into shoulder (deltoid) or thigh muscle (no more than 2 ml per injection). IV: Dilute the reconstituted dose in additional 10 ml of <u>normal saline</u> (from IV bag) and administer over 5 minutes.

Cross Reference

Procedures:

Intraosseous Access
IV Access and IV Fluid Administration
Wound Care

Protocols:

Bites and Stings
Eye Trauma
Minor or Isolated Extremity Trauma

Dexamethasone (Decadron)

Scope	Parkmedic and Paramedic.
Class	Steroid.
Action	Anti-inflammatory. Decreases cerebral edema.
Onset	IV/IO/IM: 15-30 minutes.
Duration	6 hours.
Indications	High Altitude Cerebral Edema (HACE). Prophylaxis against acute mountain sickness during rapid ascents to elevations above 8,000 feet in individuals with history of severe AMS or allergy to acetazolamide. Severe asthma exacerbation or allergic reaction with prolonged transport time. Non-mechanical upper airway obstruction.
Contraindications	None in the emergency setting.
Side Effects	Potential gastrointestinal bleeding, elevation of blood sugar.
Form	Vial: 10mg in 1ml; 4mg in 1ml.
Dosage	<u>Treatment of High Altitude Cerebral Edema (HACE), Asthma Exacerbation, Anaphylaxis, or Non-Mechanical Airway Obstruction:</u> ≥ 12-Adults: 8mg PO/IV/IO/IM, then 4mg every 6 hours. < 12 yrs: 4mg PO/IV/IO/IM, then 2mg every 6 hours. <u>Prophylaxis against Acute Mountain Sickness:</u> Adult Emergency Personnel only: 4mg PO every 12 hours. Do not stop taking until back to base elevation or a maximum of 10 days.
Notes	Protect medication from heat and light. IV/IO/IM liquid can be given PO

Cross Reference

Protocols:

Allergic Reactions
Altitude Illness
Altitude Illness Prophylaxis
Respiratory Distress

Drugs:

Acetazolamide (Diamox)

Dextrose 50% (D50)

Scope	Parkmedic and Paramedic.
Class	Carbohydrate (sugar).
Action	Provides sugar which is the principal form of carbohydrate utilized by the body for energy. Elevates blood glucose rapidly.
Onset	IV/IO: 1 minute.
Duration	Variable.
Indications	When directed by specific PROTOCOL, and blood glucose < 80.
Contraindications	None in the acute setting.
Side Effects	Tissue damage at IV/IO site (verify IV/IO is working; dilute drug as instructed below for pediatric patients). Hyperglycemia (not clinically significant). Osmotic diuresis (not clinically significant).
Form	25g/50ml Preload (ampule) of D50.
Dosage	<p>≥ 2 yrs: 1 amp D50 IV/IO (1 amp = 25g in 50ml).</p> <p>< 2 yrs: 2 ml/kg D25 IV/IO (12.5g in 50ml), up to a max of 100ml. (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).</p> <p>May repeat in 10 minutes if altered mental status/seizure persists and glucose still < 80.</p>
Notes	<p>Utilize as large a vein as possible.</p> <p>Do NOT give IM.</p> <p>Effects may be delayed in elderly patients or those with poor circulation.</p> <p>IV/IO Dextrose is preferred (first-line) for patients with altered mental status or seizure; second-line is PO Glucose Paste, and third-line is IM Glucagon.</p> <p>If unable to determine blood glucose, give only to patients whose altered mental status is more severe than disorientation to time or date.</p> <p>May substitute dose on Broselow Tape/ NPS Pediatric Resuscitation Tape for pediatric dose above.</p>

Cross Reference

Protocols:

Altered Mental Status/Altered
Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmias
General Medical Illness
Heat Illness
Hypothermia
Pediatric – Cardiac Arrest/
Dysrhythmias
Pediatric – Newborn Resuscitation
Seizures
Shock Without Trauma

Drugs:

Glucagon
Glucose Paste or Gel

Diltiazem (Cardizem)

Scope	Paramedic.
Class	Calcium Channel Blocker (Antiarrhythmics).
Action	Slows myocardial contraction time—Can slow irregular narrow QRS complex tachycardias. Weak vasodilator.
Onset	3 minutes.
Duration	1-3 hours.
Indications	Narrow complex tachycardia.
Contraindications	AV block (2 nd or 3 rd degree block) w/o pacemaker Hypotension. Known hypersensitivity to diltiazem. Wide Complex Tachycardia.
Side Effects	Edema, headache, AV block, bradycardia, hypotension.
Form	IV/IO solution 5mg/ml.
Dosage	10mg slow IV/IO, repeat x 1 (up to max of 20mg). Additional dosing per Base. Diltiazem drip: 5mg/hour and increase up to 10 mg/hr for a goal HR of 80-100. Hold for SBP < 90 or HR < 80. Make drip by inserting two 5mg/1 ml vials into 100 ml NS, and start at 50ml per hour to achieve 5mg/hour.

Cross Reference

Procedures:

Intraosseous Access
IV access and IV Fluid
Administration

Protocols:

Cardiac Arrest/Dysrhythmias

Diphenhydramine (Benadryl, Benacine)

Scope	Parkmedic and Paramedic
Class	Antihistamine.
Action	Blocks action of histamine, thereby suppressing allergic reactions. Has mild anti-nausea, sedative, and anticholinergic effects.
Onset	IV/IO/IM/PO: Variable.
Duration	4-6 hours.
Indications	Allergic reactions or Anaphylaxis. Motion sickness and nausea (Base Hospital approval). Dystonic reactions.
Contraindications	Patient taking MAO inhibitors (Nardil, phenelzine, Parnate, tranylcypromine): these medications can increase the anticholinergic effects. Concurrent use of alcohol may worsen drowsiness.
Side Effects	Tachycardia, thickening of bronchial secretions, sedation, dry mouth, and a paradoxical agitation (as opposed to the normal side effect of sedation).
Form	Preload: 50mg in 1ml. Tablet/Capsule: 25mg and 50mg.
Dosage	<u>Adults:</u> IV/IO/IM/PO: 50mg (over 1 minute if IV), may repeat every 6 hours. <u>0-14 yrs:</u> IV/IO/IM/PO: 1 mg/kg (over 1 minute if IV), max single dose 50mg, may repeat every 6 hours.
Notes	Use half regular dose if elderly or intoxicated. Contact base prior to administration if patient is hyperthermic or in a hot environment. Dystonic reactions can occur up to 48 hours after a patient has taken certain medications (commonly antipsychotic or antiemetic). The reaction often involves twisting of facial or neck muscles.

Cross Reference

Protocols:

Allergic Reactions
Dystonic Reactions

Dopamine (Intropin)

Scope	Paramedic.
Class	Catecholamine, adrenergic, vasopressor.
Action	Cardiovascular: Increases strength of heart muscle contraction, increases heart rate, increases systolic blood pressure.
Onset	1-2 minutes.
Duration	< 10 minutes.
Indications	Hypoperfusion due to inadequate cardiac output and/or low peripheral vascular resistance (SBP < 90 mmHg and/or decreased level of consciousness in the absence of trauma), including symptomatic bradycardia, 2 nd or 3 rd degree heart block, and other causes of non-traumatic hypotension.
Contraindications	Hypersensitivity to drug, tachydysrhythmias, volume depletion (e.g. dehydration)
Side Effects	Palpitations, tachycardia, vasoconstriction, dysrhythmias, angina.
Dosage	<p><u>Adults:</u> 10 mcg/kg/min, IV/IO drip. Titrate dosage to desired response. If there is insufficient improvement in hemodynamic status, the infusion may be increased until the desired therapeutic effects are achieved or adverse effects appear. (Maximum dosage is 20 mcg/kg/min.)</p> <p><u>Children:</u> 10 mcg/kg/min, IV/IO drip. Titrate dosage to desired response. If there is insufficient improvement in hemodynamic status, the infusion may be increased until the desired therapeutic effects are achieved or adverse effects appear. (Maximum dosage is 20 mcg/kg/min.)</p>
Patient monitoring	<p>Monitor blood pressure, pulse, ECG rhythm during administration. Inspect IV/IO site regularly for irritation. Avoid extravasation. (Monitor color and temperature of skin adjacent to IV site)</p> <p>Maintain infusion once therapeutic goal achieved. Contact base for further instructions. Rapidly taper/discontinue for dopamine-induced instability (severe hypertension, severe chest pain, malignant dysrhythmias).</p>

Cross Reference

Protocols:

Allergic Reactions
 Cardiac Arrest/Dysrhythmias
 Pediatric – Cardiac Arrest/Dysrhythmias
 Shock Without Trauma

Dopamine (Intropin)

Dopamine Drip Chart/400mg in 250cc = 1600mcg/ml
Chart indicates drops/minute using microdrip tubing of 60gtts = 1cc

	mcg/kg/min➤	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
pt weight (lbs)▼	pt weight (kg)▼																			
11	5	0	1	1	1	1	1	2	2	2	2	2	2	3	3	3	3	3	4	4
22	10	1	1	2	2	2	3	3	3	4	4	5	5	5	6	6	6	7	7	8
33	15	1	2	2	3	3	4	5	5	6	6	7	7	8	8	9	10	10	11	11
44	20	2	2	3	4	5	5	6	7	8	8	9	10	11	11	12	13	14	14	15
55	25	2	3	4	5	6	7	8	8	9	10	11	12	13	14	15	16	17	18	19
66	30	2	3	5	6	7	8	9	10	11	12	14	15	16	17	18	19	20	21	23
77	35	3	4	5	7	8	9	11	12	13	14	16	17	18	20	21	22	24	25	26
88	40	3	5	6	8	9	11	12	14	15	17	18	20	21	23	24	26	27	29	30
99	45	3	5	7	8	10	12	14	15	17	19	20	22	24	25	27	29	30	32	34
110	50	4	6	8	9	11	13	15	17	19	21	23	24	26	28	30	32	34	36	38
121	55	4	6	8	10	12	14	17	19	21	23	25	27	29	31	33	35	37	39	41
132	60	5	7	9	11	14	16	18	20	23	25	27	29	32	34	36	38	41	43	45
143	65	5	7	10	12	15	17	20	22	24	27	29	32	34	37	39	41	44	46	49
154	70	5	8	11	13	16	18	21	24	26	29	32	34	37	39	42	45	47	50	53
165	75	6	8	11	14	17	20	23	25	28	31	34	37	39	42	45	48	51	53	56
176	80	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	60
187	85	6	10	13	16	19	22	26	29	32	35	38	41	45	48	51	54	57	61	64
198	90	7	10	14	17	20	24	27	30	34	37	41	44	47	51	54	57	61	64	68
209	95	7	11	14	18	21	25	29	32	36	39	43	46	50	53	57	61	64	68	71
220	100	8	11	15	19	23	26	30	34	38	41	45	49	53	56	60	64	68	71	75
231	105	8	12	16	20	24	28	32	35	39	43	47	51	55	59	63	67	71	75	79
242	110	8	12	17	21	25	29	33	37	41	45	50	54	58	62	66	70	74	78	83
253	115	9	13	17	22	26	30	35	39	43	47	52	56	60	65	69	73	78	82	86
264	120	9	14	18	23	27	32	36	41	45	50	54	59	63	68	72	77	81	86	90

Epinephrine

Scope	EMT (per Local Medical Advisor approved extended scope of practice), Parkmedic and Paramedic.	
Class	Catecholamine, Sympathomimetic.	
Action	Cardiovascular: Increases strength of heart muscle contraction, increases heart rate, increases systolic blood pressure. Respiratory: Bronchodilation.	
Onset	IV/IO: Immediate.	IM: 3-5 minutes.
Duration	IV/IO: 5-60 minutes.	IM: 1-4 hours.
Indications	Anaphylaxis/Allergic reaction. Asthma exacerbation. Medical cardiac arrest.	
Contraindications	There are no contraindications to Epinephrine if a patient is hypoxic secondary to anaphylaxis or asthma, or in cardiac arrest.	
Relative Contraindications	Severe hypertension. Coronary artery disease. Cocaine use.	
Side Effects	Tachycardia, palpitations, hypertension, headache, anxiety.	
Forms	Auto-injector: 0.3mg or 0.15mg in a single metered dose (1:1000). Ampule: 1mg in 1ml (1:1000). Preload: 1mg in 1ml (1:1000). Preload: 1mg in 10ml (1:10,000). NOTE: IM: 1:1000 = 1mg/ml concentration. IV/IO: 1:10,000 = 1mg/10ml concentration.	
Dosage	<u>EMT:</u> Allergic reactions/Asthma (severe) All ages: 0.3 ml (0.3 mg) of 1:1000 IM. Repeat dose every 5–10 minutes per protocol. <u>Parkmedic/Paramedic:</u> Respiratory distress (infectious upper airway obstruction, allergic reactions, asthma): > 10 years: 0.3 ml (0.3 mg) of 1:1000 IM . 4–10 years: 0.2 ml (0.2 mg) of 1:1000 IM. < 4 years: 0.1 ml (0.1 mg) of 1:1000 IM. All ages: Repeat dose every 5–10 minutes per protocol. Severe Respiratory Distress/Severe Anaphylaxis/Shock: All ages: 1ml (0.1mg) of 1:10,000 IV/IO every 1-2 min until relief. Flush with 20 ml LR/NS after each dose. Adult Cardiac Arrest: 10ml (1mg) of 1:10,000 IV/IO. Pediatric Medical Arrest: 0.1ml/kg (0.01mg/kg) of 1:10,000 IV/IO. Newborn Resuscitation: 0.3ml/kg (0.03mg/kg) of 1:10,000 IV/IO.	

Epinephrine

Notes

IV epinephrine should be limited to near-death situations because of higher risk from cardiac side effects.
Do not administer Epinephrine concurrently with alkaline solution (e.g. Sodium Bicarbonate).
Check type of solution, concentration (IM=1:1000 vs. IV/IO=1:10,000), and route.

Cross Reference

Procedures:

Epinephrine Auto-Injector
IV Access and IV Fluid Administration

Protocols:

Allergic Reactions
Cardiac Arrest/Dysrhythmias
Pediatric – Cardiac Arrest/Dysrhythmias
Pediatric – Newborn Resuscitation
Respiratory Distress
Shock Without Trauma

Erythromycin Ophthalmic Ointment (Eye)

Scope	Parkmedic and Paramedic
Class	Topical antibiotic (eye).
Action	Inhibits bacterial growth.
Indications	Minor eye trauma (corneal abrasions).
Contraindications	Globe penetration, impaled objects, known hypersensitivity.
Side Effects	Local allergy: irritation. Systemic allergy: wheeze, anaphylaxis (rare).
Form	Multi-dose tube (single patient).
Dosage	1-cm ribbon to inside lower eyelid.

Cross Reference

Protocols:
Eye Trauma

Fentanyl (Sublimaze)

Scope	Parkmedic, Paramedic
Class	Narcotic analgesic/synthetic opioid agonist
Action	Analgesic with short duration of action. Minimal histamine release with minimal hemodynamic compromise and minimal nausea/vomiting
Onset	<div> <div>IV/IO: Immediate</div> <div>Duration: 0.5 – 1 hour (all routes)</div> </div> <div> <div>IM: 7-8 minutes</div> <div>Peak Effect: IV/IO/IN: 5 min IM: 10-12 min</div> </div> <div> <div>IN: 1-2 minutes</div> </div>
Indications	Severe pain in hemodynamically STABLE patients. See individual protocols. Analgesia after ALS airway (see ETT / King Tube procedures)
Contraindications	Altered mental status Shock/hypotension Allergy to Fentanyl
Side Effects	Respiratory depression, bradycardia, hypotension, nausea and vomiting. Hypertension and rigid chest syndrome are rare.
Form	Ampule: 250 mcg in 5ml
Dosage – all protocols except Cardiac Chest Pain:	
Adult:	<p>If severe pain, SBP > 100, and normal mental status.</p> <p>IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.</p> <p>Subsequent doses (2 max) every 30 minutes.</p> <p>i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.</p> <p>IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.</p> <p>i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>
Pediatric:	<p>IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.</p> <p>Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.</p> <p>IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain.</p> <p>Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>
Cardiac Chest Pain:	<p>If ongoing pain, SBP > 100, and normal mental status.</p> <p>IV/IO/IN: 25-50 mcg. Repeat in 10 min x1 prn pain.</p> <p>Subsequent doses (2 max) every 20 minutes.</p> <p>i.e. Fastest possible dosing schedule would be; time 0, 10, 30, 50 min.</p> <p>IM: 50 - 100 mcg every 20 minutes. Repeat in 20 min x2 prn pain.</p> <p>i.e. Fastest possible dosing schedule would be; time 0, 20, 40 min.</p>
Notes	<p>Some indications require prior base contact (see specific protocols).</p> <p>Should be given prior to a joint reduction if possible and if patient meets indications.</p> <p>Monitor blood pressure, respirations, and mental status carefully.</p> <p>Be prepared for respiratory depression. Have equipment to assist respirations, and Naloxone (Narcan) prepared for drug reversal if necessary.</p> <p>Hypotension after Fentanyl should be treated with fluids.</p>

Fentanyl (Sublimaze)

Use with caution:

Multi-system trauma

Patients in whom respiratory depression should be avoided (asthma/COPD)

Patients in whom CNS (mental status) depression should be avoided (head injury)

At altitudes > 8,000 ft, respiratory depression may be exacerbated

Elderly patients generally require smaller doses and are more susceptible to hypotension.

Side effects are increased by alcohol or drugs that are CNS depressants and other narcotics.

Cross Reference

Protocols:

Abdominal Pain

Bites and Stings

Burns

Chest Pain – Cardiac

Eye Trauma

Fracture/Dislocation Management

Frostbite

Major Trauma

Minor or Isolated Extremity Trauma

Mucosal Atomizer Device

Pediatric – Major Trauma

Vaginal Bleeding

Procedures:

Endotracheal Intubation

King Tube

Drugs:

Naloxone (Narcan)

Glucagon

Scope	Parkmedic and Paramedic.
Class	Pancreatic islet hormone. Hyperglycemic agent.
Action	Increases blood glucose levels through release of glycogen stores from the liver. Counteracts the action of insulin.
Onset	5-20 minutes.
Duration	Variable.
Indications	When directed by specific PROTOCOL, and blood glucose < 80. Beta blocker overdose.
Contraindications	None.
Side Effects	Nausea/vomiting. Hyperglycemia (not clinically significant).
Form	Two-vial kit: (a) 1 mg powder, and (b) 1 ml special diluent. Add diluent to powder (1 mg in 1 ml).
Dosage	<p><u>Hypoglycemia:</u></p> <p>Adults: 1mg IM</p> <p>0-14 yrs: 0.03mg/kg IM, max dose 1mg.</p> <p>May repeat once in 15 minutes if ALOC persists and glucose remains < 80.</p> <p>Note: May be given IV/IO. However, only if no D50 available and PO Glucose Paste contraindicated.</p> <p><u>Beta-Blocker Overdose:</u></p> <p>Adults: 2mg IV/IO/IM every 5 min prn bradycardia/hypotension (shock).</p> <p>0-14yrs: 0.06mg/kg IV/IO/IM (max 2mg) every 5 min prn bradycardia/hypotension (shock).</p> <p>Maximum cumulative dose is based on patient symptoms.</p>
Notes	Use only diluent supplied by manufacturer in glucagon kit. IV/IO Dextrose is preferred (first-line) for patients with altered mental status or seizure; second-line is PO Glucose Paste, and third-line is IM Glucagon.

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
 Cardiac Arrest/Dysrhythmias
 Heat Illness
 Hypothermia
 Major Trauma (Adult)
 Pediatric – Cardiac Arrest/Dysrhythmias
 Pediatric – Newborn Resuscitation
 Seizures
 Shock Without Trauma
 Trauma Arrest (Adult and Pediatric)

Glucose Paste or Gel (Glucose)

Scope	EMT, Parkmedic, Paramedic.
Class	Carbohydrate (sugar).
Action	Elevates blood glucose rapidly.
Onset	PO: Within one minute.
Duration	Variable.
Indications	When directed by specific PROTOCOL, If glucose < 80, or ALOC and unable to determine glucose.
Contraindications	None.
Side Effects	May be aspirated if patient is unable to protect airway (i.e. is unable to swallow). Hyperglycemia (not clinically significant).
Form	15g per tube.
Dosage	Administer 1 tube of Glucose (15g) squeezed into mouth and swallowed. If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. May repeat in 10 minutes if altered mental status/seizure persists and glucose still < 80.
Notes	Oral glucose is preferred for patients able to protect their airway (i.e. able to swallow). Do not overfill mouth because it will increase the potential for aspiration. IV/IO Dextrose is preferred (first-line) for patients with altered mental status or seizure; second-line is PO Glucose Paste, and third-line is IM Glucagon.

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
 Cardiac Arrest/Dysrhythmias
 General Medical Illness - Adult
 Heat Illness
 Hypothermia
 Major Trauma (Adult)
 Pediatric – Cardiac Arrest/Dysrhythmias
 Pediatric – Newborn Resuscitation
 Seizures
 Shock Without Trauma

Hydromorphone (Dilaudid)

Scope	Parkmedic, Paramedic
Class	Narcotic analgesic/synthetic opioid agonist
Action	Analgesic with long duration of action. Minimal histamine release with minimal hemodynamic compromise and minimal nausea/vomiting.
Onset	IV/IO: 5 minutes Duration: 4-5 hours (all routes) IM: variable Peak Effect: IV/IO 10-20 minutes IM: variable
Indications	Severe pain in STABLE patients with extended transport times (i.e., greater than 2 hours). See individual protocols. Analgesia after ALS airway (see ETT / King Tube procedures)
Contraindications	Altered mental status. Shock/hypotension, or concern for falling blood pressure. Allergy to Dilaudid.
Side Effects	Respiratory depression, bradycardia, hypotension, nausea and vomiting. Hypertension is rare.
Form	1mg/1ml
Dosage	Adult: If severe pain, SBP > 100, and normal mental status. IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg) IM: 1mg (1ml) every 30 min prn pain (max 2mg). Pediatric: <u>Base Hospital Order ONLY</u> , NOT in communication failure. (> 5yo) IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg IM: 0.015mg/kg (0.015ml/kg). Max 1mg Some indications require prior base contact (see specific protocols). Monitor blood pressure, respirations, and mental status carefully. Be prepared for respiratory depression. Have equipment to assist respirations, and Naloxone (Narcan) prepared for drug reversal if necessary. Hypotension after Dilaudid should be treated with fluids Use with caution in the following situations: Head injury Multi-system trauma Patients in whom respiratory depression should be avoided (asthma/COPD) Patients with altered mental status. At altitudes > 8,000 ft, respiratory depression may be exacerbated Side effects are increased by alcohol or drugs that are CNS depressants and other narcotics.

Cross Reference

Protocols:

Abdominal Pain
Bites and Stings
Burns
Chest Pain – Cardiac
Eye Trauma
Frostbite
Major Trauma
Minor or Isolated Extremity Trauma
Pediatric – Major Trauma
Vaginal Bleeding

Procedures:

Endotracheal Intubation
King Tube

Drugs:

Naloxone (Narcan)

Ibuprofen (Motrin, Advil)

Scope	EMT, Parkmedic, Paramedic.
Class	Antipyretic. Analgesic. Non-Steroidal Anti-Inflammatory Drug (NSAID).
Action	Prostaglandin synthetase inhibition.
Onset	PO: 20 minutes.
Duration	6–8 hours.
Indications	Fever Pain.
Contraindications	Known hypersensitivity. Pregnancy. Known ulcer or GI bleeding. Trauma other than isolated extremity. Known renal disease.
Side Effects	GI upset.
Form	200mg tablet. 100mg/5ml liquid.
Dosage	<u>Adult:</u> 600 mg PO every 6 hours <u>10-14 yrs:</u> 200mg tablet PO every 6 hours. <u>6mo-10yrs:</u> 10 mg/kg (max dose 200mg) liquid PO every 6 hours.
Notes	Small quantities of Ibuprofen may be supplied to any person if requested for self-administration. The person should be offered an evaluation. A PCR does not need to be filled out if the person declines the evaluation and appears well. REFERENCE PROCEDURE: When to Initiate a PCR (Patient Care Report/Run Sheet). If the person appears acutely ill in your judgment, do your best to convince the person of the need for evaluation. A PCR shall be completed in this instance, even if the evaluation is declined. In general, Ibuprofen and Acetaminophen are interchangeable. The decision should be based on patient preference and contraindications.

Cross Reference

Procedures:

When to Initiate a PCR (Patient Care Report/Run Sheet)

Protocols:

Bites and Stings
Burns
Electrical and Lightning Injuries
Frostbite
General Medical Illness – Adult
Minor or Isolated Extremity Trauma
Pediatric Medical Illness/Fever

Drugs:

Acetaminophen (Tylenol)

Ipratropium (Atrovent)

Scope	Parkmedic and Paramedic.
Class	Anticholinergic. Parasympatholytic.
Action	Inhalation aerosol bronchodilator.
Onset	15 minutes.
Duration	3-6 hours. Peak Effect: 1-2 hours.
Indications	Respiratory distress secondary to bronchospasm (COPD/Asthma).
Contraindications	Known hypersensitivity. Peanut, soy or lecithin allergy.
Side Effects	CNS: nervousness, dizziness, headache, delirium, psychosis, paresthesias, tremor. Palpitations, GI distress, blurred vision, dry mouth, cough/exacerbation of symptoms.
Forms	Metered Dose Inhaler (MDI): Approximately 18mcg per actuation. Each unit contains sufficient quantity to deliver 200 inhalations. Hand-Held Nebulizer (HHN): 500mcg in 2.5ml NS per unit-dose vial.
Dosage	<u>MDI:</u> 2 puffs (approx. 36mcg) at mid-inspiration (use spacer if available). If still symptomatic, repeat dose every 4 hours. <u>HHN:</u> 500mcg (one vial) via standard acorn-type jet nebulizer with 15-L Oxygen. If still symptomatic, repeat dose every 4 hours.
Notes	In 2-6% of cases, Ipratropium may cause cough or worsening of respiratory distress. However, the more likely cause is simply the COPD/asthma getting worse. If patient gets significantly worse within 60 seconds of starting Ipratropium or starts coughing (and was not previously coughing) then stop Ipratropium. Albuterol, however, should be continued. Ipratropium is to be given only every 4 hours, as opposed to albuterol, which may be used continuously. Ipratropium and albuterol solutions can be mixed in a single nebulized treatment.

Cross Reference

Protocols:
Respiratory Distress

Drugs:
Albuterol

Magnesium Sulfate 50%

Scope	Parkmedic and Paramedic.
Class	Anticonvulsant. Electrolyte replacement.
Action	CNS depressant. Raises the blood level of magnesium, thereby decreasing CNS, cardiac and muscle irritability. Shortens the QT interval. Increases the seizure threshold. Anticonvulsant properties produced by decreasing the amount of acetylcholine liberated from motor nerve terminals, leading to peripheral neuromuscular blockade. Excessive dosages cause vasodilation by ganglionic blockade and direct action on blood vessels by relaxing the smooth muscle. Excessive dosages cause respiratory depression by neuromuscular blockade.
Onset	IV: Immediate.
Duration	3–4 hours.
Indications	Eclampsia: In third trimester patients with hypertension and active seizures, administer Midazolam (Versed) to stop the seizure prior to administering Magnesium. Pre-Eclampsia: Base hospital may order Magnesium for pre-eclampsia (severe hypertension/headache) as a prophylactic therapy, or for patients who have suffered a seizure secondary to eclampsia. Torsades de Pointes, Refractory Ventricular Fibrillation/Ventricular Tachycardia
Contraindications	Hypersensitivity, heart block, severe renal disease.
Side Effects	CV: <u>Hypotension</u> , circulatory collapse, reduced heart rate. CNS: <u>Depression</u> , <u>flushing</u> , <u>drowsiness</u> , hypothermia. RESP: <u>Depression</u> , failure. INTEG: Feeling of warmth, <u>sweating</u> .
Form	Preload: 5g in 1ml.
Dosage	<u>Adult (Pre-eclampsia/Eclampsia)</u> : 5g in 250ml LR/NS IV infusion over 20 minutes. <u>0–14 yrs</u> : Not indicated. NOTE: If a pediatric patient is pregnant or has recently given birth (< 4 weeks postpartum), treat as an adult, regardless of age. For Torsades/refractory V Fib: <u>Adult</u> : 2g SIVP over 1-2 minutes, repeat if arrhythmia not resolved.
Notes	CNS depressant effects may be increased when used with barbiturates, narcotics or hypnotics. Observe closely for symptoms indicative of Magnesium overdose: hypotension, heart block (bradycardia), and respiratory paralysis. Do not leave patient unsupervised - monitor respirations (rate and depth), pulse, BP, and EKG (if available). Calcium chloride should be readily available as a reversal agent if respiratory depression ensues.

Cross Reference

Protocols:
Cardiac Arrest/Dysrhythmias
Seizures

Drugs:
Midazolam (Versed)

Midazolam (Versed)

Scope	Parkmedic and Paramedic.
Class	Benzodiazepine. Sedative/hypnotic. Anticonvulsant. Muscle relaxant.
Action	Suppresses the spread of seizure activity through the brain. Depresses level of consciousness. Causes amnesia.
Onset	IV/IO/IN: 1-2 minutes. IM: 7-8 minutes.
Duration	20-30 minutes.
Indications	Active seizures. Chest pain associated with cocaine use. Behavioral emergencies: extreme agitation or combativeness. Sedation for cardioversion and cardiac pacing discomfort Sedation after ALS airway (see ETT / King Tube procedures)
Contraindications	None, if actively experiencing seizures. Hypotension. Respiratory depression.
Side Effects	Respiratory depression (increased in elderly, COPD, or other CNS depressants on board). Hypotension. Altered mental status.
Form	Vial: 10mg in 2ml.
Dosage	<p><u>> 10yrs–Adults:</u> IV/IO/IN: 2mg every 3-5 minutes, max dose per individual protocols. IM: 5-10mg every 10-15 minutes max dose per individual protocols.</p> <p><u>< 10yrs:</u> IV/IO/IN: 0.1 mg/kg (max dose 2mg) every 3 minutes, up to 5 doses. IM: 0.15 mg/kg (max dose 5mg) every 10 minutes, up to 4 doses.</p> <p>NOTE: For combative (NOT seizing) patients < 10yrs, Base Hospital Orders Only.</p>
Notes	<p><u>All patients should be on oxygen if possible.</u> Support respirations as needed. Monitor mental status, blood pressure, respirations, and oxygen saturation closely. Base Hospital Physician may alter dose and/or frequency based on patient's clinical presentation.</p> <p>In communication failure, titrate IV/IO/IN or IM doses to control active seizures without maximum, while carefully monitoring vitals.</p> <p>Use of Midazolam for behavioral emergencies in children < 10 years of age, or for cocaine-associated chest pain, is by Base Hospital Order only.</p> <p>Effects may be more pronounced in the elderly, in those with COPD, known liver disease, and in those with CNS depressants on board (e.g. alcohol, narcotics). Use with caution in these settings.</p> <p>Midazolam dosing varies depending on the protocol.</p>

Cross Reference

Protocols:

Altered Mental Status/Altered
Level of Consciousness (ALOC)
Chest Pain – Cardiac
Seizures

Procedures:

Endotracheal Intubation
King Tube
Transcutaneous Pacing

Morphine Sulfate

Scope	Parkmedic and Paramedic.		
Class	Narcotic analgesic.		
Action	Acts on specific receptors in the brain to relieve pain, depress mental status, and depress respiratory drive. Peripheral vasodilation causing decreased venous return to the heart, decreased systemic vascular resistance, and hypotension. All decrease oxygen demand of the heart.		
Onset	IV: Immediate. IM: 10-30 minutes.	Duration: Peak effect:	3-4 hrs (all routes). IV: 20 min, IM: 40-60 min.
Indications	Chest pain unrelieved by nitroglycerin and Fentanyl. Severe pain in hemodynamically STABLE patients. Analgesia after ALS airway (see ETT / King Tube procedures)		
Contraindications	Patients in whom respiratory depression or histamine release should be avoided (asthma/COPD). Patients in whom CNS (mental status) depression should be avoided (head injury). Shock/hypotension. Allergy to morphine. Altitude Illness – HAPE.		
Side Effects	Hypotension, flushing, sedation, dizziness, respiratory depression, nausea, vomiting.		
Form	Preload: 10mg in 1ml.		
Dosage	Adults: If severe pain, SBP > 100, and normal mental status. IV/IO: 4–10mg (0.4-1ml) every 30 min prn pain (max 20mg) IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). Pediatric: <u>Base Hospital Order ONLY</u> , NOT in communication failure. IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain		
Notes	Some indications require prior base contact (see specific protocols). Do NOT use without base order if any other systems injured (e.g., traumatic abdominal pain, altered mental status). Monitor blood pressure, respirations, and mental status carefully. Be prepared for respiratory depression. Have equipment to assist respirations, and Naloxone (Narcan) prepared for drug reversal if necessary. Hypotension from Morphine should be treated with fluids, Use with caution: At altitudes > 8,000 ft, respiratory depression may be exacerbated. Elderly patients generally require smaller doses and are more susceptible to hypotension. Side effects are increased by alcohol or drugs that are CNS depressants and other narcotics.		

Morphine Sulfate

Cross Reference

Protocols:

Abdominal Pain
Bites and Stings
Burns
Chest Pain – Cardiac
Childbirth
Eye Trauma
Frostbite
Major Trauma
Minor or Isolated Extremity Trauma
Pediatric – Major Trauma
Respiratory Distress
Vaginal Bleeding

Procedures:

Endotracheal Intubation
King Tube

Drugs:

Naloxone (Narcan)

Naloxone (Narcan)

Scope	Parkmedic and Paramedic.																		
Class	Narcotic Antagonist.																		
Action	Competes with narcotics for opiate receptor sites in the brain that affect pain and breathing, thereby reversing the respiratory depressant effects of narcotic drugs.																		
Onset	IV/IO: 2 minutes. IN/IM: 5 minutes.																		
Duration	1- 4 hours.																		
Indications	Suspected narcotic intoxication with altered mental status AND apnea or slow shallow breathing.																		
Contraindications	None																		
Side Effects	Acute withdrawal syndrome in patients addicted to opiates (pain, nausea, vomiting, diarrhea, hypertension, tachycardia, tremors).																		
Form	Ampule: Various sizes: 1mg, 2mg, 10mg. Preload: 2mg in 2ml.																		
Dosage	IN Route preferred > 10-Adults: IV/IO: 2mg every 2 minutes prn ALOC (max 10mg). IN/IM: 2mg every 5 minutes prn ALOC (max 10mg). < 10 yrs: IV/IO: 0.1mg/kg (max 2mg per dose) every 2 minutes (max 10 mg). IN/IM: 0.1mg/kg (max 2mg per dose) every 5 minutes (max 10 mg).																		
Notes	Pinpoint pupils are the classic sign of narcotic use/overdose, but with multi-drug intoxications, pupil findings may be variable. Naloxone has no side effects in the absence of narcotics. It is remarkably safe, so do not hesitate to use if indicated. Naloxone has a shorter duration of action than many narcotics, so observe closely for re-sedation. Repeat doses may be necessary. Some agents (e.g. Darvon, Fentanyl) may require higher than usual doses for reversal. Examples of narcotic preparations (natural and synthetic): <table> <tr> <td>Butorphanol (Stadol)</td><td>Loperamide (Immodium)</td></tr> <tr> <td>Codeine (Tylenol #2,3,4)</td><td>Meperidine (Demerol)</td></tr> <tr> <td>Dezocine (Dalgan)</td><td>Methadone (Dolophine)</td></tr> <tr> <td>Diphenoxylate (Lomotil)</td><td>Morphine (MS Contin, Oramorph, Roxanol)</td></tr> <tr> <td>Fentanyl (Duragesic Patch)</td><td>Nalbuphine (Nubain)</td></tr> <tr> <td>Heroin</td><td>Oxycodone (Percodan, Roxicodone, Tylox, Percocet, Roxicet)</td></tr> <tr> <td>Hydrocodone (Anexsia, Lorcet, Lortab, Vicodin, Vicoprofen)</td><td>Pentazocine (Talwin, Talacen)</td></tr> <tr> <td>Hydromorphone (Dilaudid)</td><td>Propoxyphene (Darvon, Darvocet)</td></tr> <tr> <td>Levorphanol (Levo-Dromoran)</td><td></td></tr> </table>	Butorphanol (Stadol)	Loperamide (Immodium)	Codeine (Tylenol #2,3,4)	Meperidine (Demerol)	Dezocine (Dalgan)	Methadone (Dolophine)	Diphenoxylate (Lomotil)	Morphine (MS Contin, Oramorph, Roxanol)	Fentanyl (Duragesic Patch)	Nalbuphine (Nubain)	Heroin	Oxycodone (Percodan, Roxicodone, Tylox, Percocet, Roxicet)	Hydrocodone (Anexsia, Lorcet, Lortab, Vicodin, Vicoprofen)	Pentazocine (Talwin, Talacen)	Hydromorphone (Dilaudid)	Propoxyphene (Darvon, Darvocet)	Levorphanol (Levo-Dromoran)	
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Levorphanol (Levo-Dromoran)																			

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Hypothermia
Ingestions/poisoning
Near Drowning

Nifedipine (Adalat, Procardia)

Scope	Parkmedic and Paramedic.
Class	Calcium channel blocker.
Action	Vasodilation – systemic and pulmonary (decreases blood flow to lungs). Decreases cardiac contractility.
Onset	PO: 5-20 minutes.
Duration	6-8 hours.
Indications	Severe High Altitude Pulmonary Edema (HAPE).
Contraindications	SBP < 100.
Side Effects	Hypotension. Nausea/vomiting/diarrhea. Dizziness. Flushing. Increased heart rate/palpitations.
Form	Capsule: 10mg.
Dosage	<u>Adults:</u> 10mg capsule chewed until capsule broken, then swallowed. If patient unable to chew, capsule may be punctured and contents squeezed under tongue. <u>6-10 yrs:</u> ½ of capsule squeezed under tongue. <u>< 6 yrs:</u> ¼ of capsule squeezed under tongue. Repeat age-appropriate doses every 20 minutes (up to 3 doses), or until SBP drops by 20mmHg, SBP < 100, or symptoms resolve.

Cross Reference

Protocols:
Altitude Illness

Nitroglycerin

Scope	EMT – encourage/assist patients to take their own. Parkmedic and Paramedic.	
Class	Vasodilator.	
Action	Increases cardiac output primarily by decreasing preload, but also decreases afterload and dilates coronary arteries.	
Onset	Tablet/Spray: Immediate to 2 minutes.	Paste: 10 minutes.
Duration	Tablet/Spray: 10-30 minutes.	Paste: 24 hours.
Indications	Cardiac chest pain (angina or acute myocardial infarction). Pulmonary edema from CHF (NOT HAPE or non-cardiogenic).	
Contraindications	Hypotension (SBP < 100). Cerebral edema or increased intracranial pressure. Erectile dysfunction drug use in past 24 hours.	
Side Effects	Headache, dizziness, hypotension, tachycardia, flushing, diaphoresis, rash.	
Form	Tablet/Spray: 0.4 mg per tablet/spray. Paste: Multi-dose or single dose tube.	
Dose	<p><u>Chest Pain:</u> <u>Tablet/Spray:</u> 0.4mg tablet SL or one spray PO every 5 minutes (max 8 tablets/sprays) prn chest pain. Check vitals/symptoms before and 2-3 min after each dose. Repeat doses may only be given if patient has ongoing chest pain, SBP > 100, AND normal neuro exam/mental status.</p> <p><u>Paste:</u> One inch on special paper and applied to anterior chest wall. Only apply if SBP > 100. If SPB goes below 90, wipe paste off.</p> <p><u>CHF:</u> <u>Tablet/Spray:</u> If SBP 100-120: 0.4mg (1 tab/spray) SL. If SBP 120-200: 0.8mg (2 tabs/sprays) SL. If SBP > 200: 1.2mg (3 tabs/sprays) SL and call base. Dose may be repeated per PROTOCOL: <i>Respiratory Distress</i>.</p> <p><u>Paste:</u> One inch on special paper and applied to anterior chest wall. Only apply if SBP > 100. If SPB goes below 90, wipe paste off.</p>	
Notes	<p>Nitroglycerin is not indicated for children. Patient should not chew or swallow tablets. They are designed to dissolve under the tongue. Recheck blood pressure, vitals, mental status and symptoms 2-3 minutes after each dose. Date bottle after opening. It is good for 2 months once opened. Protect it from heat and light. Patients taking nitrates chronically may develop a tolerance to them and require higher doses. Nitropaste is absorbed through the skin. Always wear gloves when handling Nitropaste as it can cause your blood pressure and you to drop. Place Nitropaste away from potential AED pad sites.</p>	

Cross Reference

Protocols:

Chest Pain – Cardiac
Respiratory Distress

Ondansetron (Zofran)

Scope	Parkmedic and Paramedic.
Class	Antiemetic.
Action	Selective serotonin (5-HT ₃) receptor antagonist. Treats and prevents nausea and vomiting.
Onset	IV/IO/IM/ODT: 2–5 minutes.
Duration	IV/IO/IM/ODT: 5–6 hours.
Indications	Nausea/vomiting or history of vomiting with narcotics
Contraindications	Hypersensitivity to Ondansetron Prolonged QTc
Side effects	Headache, sedation, diarrhea, dry mouth.
Form	2ml vial: 2 mg/ml, total 4mg. 4 mg tablet/ODT
Dosage	<p>Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea. ODT: 4mg, repeat in 15 min x2 prn nausea. IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.</p> <p>3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea. ODT: ½ tab (2mg) <u>if age 4–14</u> IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.</p> <p>0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP. IM: Contraindicated for patients < 3 months of age.</p>
Notes	Monitor cardiovascular status. Rare cases of tachycardia and angina have been reported.

Cross Reference

Protocols:

Abdominal Pain
Altitude Illness
Bites and Stings
Burns
Chest Pain – Cardiac
Electrical & Lightning Injuries
Eye Trauma
Frostbite
Major Trauma – Adult
Minor or Isolated Extremity Trauma
Pediatric – Major Trauma
Respiratory Distress
Vaginal Bleeding

Oxytocin (Pitocin®)

Scope	Parkmedic and Paramedic.
Class	Synthetic posterior pituitary hormone.
Action	Stimulates uterine contractions.
Onset	IV/IO: Immediate. IM: 3-5 minutes.
Duration	IV/IO: Less than one hour. IM: 2-3 hours.
Indications	Postpartum uterine bleeding.
Contraindications	Hypersensitivity. Incomplete delivery (twins and/or placenta).
Side Effects	Anaphylaxis. Nausea, vomiting, abdominal pain. Uterine hypertonicity. Cardiac arrhythmias. Entrapment of twin or placenta by uterine contraction.
Form	Ampule: 10units in 1ml.
Dosage	<u>IV/IO</u> : 20units (2ml) in 1000ml of LR/NS to run at 500ml/hr after delivery of placenta. <u>IM</u> : 10units (1ml) if no IV access.
Notes	It is essential to ensure that the placenta has been delivered and there are not twins prior to administration. Attempt uterine fundal massage and allow the baby to breast feed first. Monitor vitals every 15 minutes; watch for hypertension and irregular heart beat. Oxytocin is incompatible with other drugs through the same IV tubing. Before giving any other medications through the IV tubing, the Oxytocin infusion must be stopped, and the line flushed with LR/NS.

Cross Reference

Protocols:
Childbirth

Pralidoxime Chloride (2 PAM)

Scope	EMT, Parkmedic, and Paramedic (For both levels as part of NAAK/Mark I procedure).
Class	Cholinesterase reactivator (acts via dephosphorylation).
Action	Reverses organophosphate poisoning by regenerating cholinesterase. Detoxifies remaining organophosphate molecules.
Onset	IM: 10–40 minutes.
Duration	IM: 6 hours.
Indications	Organophosphate poisoning/Nerve gas exposures with multiple AB-SLUDGEM symptoms.
Contraindications	None for emergency use.
Side Effects	Dizziness, headache, nausea, tachycardia, weakness, hypertension, blurred vision.
Form	Auto-Injector: 600mg.
Dosage	IM: 600mg auto-injection. REFERENCE PROCEDURE: <i>NAAK/Mark I (Nerve Agent Antidote Kit)</i> for repeat dosing.
Notes	<p>Acts synergistically with atropine to treat cholinergic excess. Repeat doses may be needed in severe poisonings. Not to be used for prophylaxis.</p> <p>“AB-SLUDGEM” Mnemonic for organophosphate poisoning.</p> <ul style="list-style-type: none"> A: Altered mental status. B: Bronchorrhea, Breathing difficulty or wheezing, Bradycardia. S: Salivation, Sweating, Seizures. L: Lacrimation (tearing). U: Urination. D: Defecation or Diarrhea. G: GI upset (abdominal cramps). E: Emesis (vomiting). M: Miosis/Muscle Activity (twitching).

Cross Reference

Procedures:
NAAK/Mark I (Nerve Agent Antidote Kit)

Protocols:
Ingestion/Poisoning

Sodium Bicarbonate

Scope	Parkmedic and Paramedic.
Class	Alkalinizing Agent.
Action	Buffers the acids present in the body during and after severe hypoxia or ischemia. Counteracts cardiac effects of Tricyclic Antidepressants (TCAs). Alkalinizes urine to enhance elimination of some drugs (TCAs, Aspirin). Lowers serum potassium
Onset	IV: Immediate.
Duration	IV: 30 minutes.
Indications	Cardiac arrest/dysrhythmias Suspected hyperkalemia Suspected tricyclic antidepressant or aspirin ingestion with abnormal vital signs (Base order only). Consider in excited delirium.
Contraindications	None.
Side Effects	Hypoventilation, volume overload, muscle cramps, pain, tetany.
Form	Preload: 50mEq in 50ml (1 amp).
Dosage	Adult: 1 amp IV/IO. 0-14 yrs.: 1 meq/kg, maximum 50 meq, IO/IV Contact Base Hospital for repeat doses.
Notes	When Sodium Bicarbonate is administered, patient must be adequately ventilating and oxygenating, either on their own or with assistance. Monitor ABCs during administration. May worsen CHF. <u>Flush IV line before and after administration of any other drugs.</u> Severe tissue necrosis may result if Sodium Bicarbonate extravasates. Although no longer recommended in routine cardiac arrest, sodium bicarbonate may be indicated with a history of toxicologic exposure, renal failure or excessive exertion

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmias
Ingestion/Poisoning
Pediatric – Cardiac Arrest/Dysrhythmias

12 Lead Electrocardiogram (ECG)

Scope of Practice	Paramedic
Indications	Chest pain of likely cardiac origin Shortness of breath in the setting of possible pulmonary edema Suspected cardiogenic shock (hypotension) Return of spontaneous circulation Do not unreasonably delay treatment or transport of the unstable patient if supplies are not readily available.
Contraindications	None
Equipment	12-lead ECG
Procedure	Apply 12-lead ECG in accordance with manufacturer's guidelines. Relay any relevant read (e.g. ***AMI***) to base hospital
Notes	

Cross Reference

Protocols:

Cardiac Arrest/Dysrhythmia
Chest Pain (Cardiac)
General Medical Illness
Respiratory Distress
Shock Without Trauma

Automated External Defibrillator (AED)

Scope of Practice	Any person, but a certified EMS provider (First Responder, EMT-B, Paramedic, Paramedic) is preferred.
Indications	<p>Any patient > 28 days old in cardiac arrest (unresponsive, not breathing, and pulseless). If you suspect but cannot confirm arrest for any reason (e.g., possible agonal breathing), attach and turn on the AED.</p> <p>If a non-arrested patient is at risk for arrest, bring the AED to the patient's side. Do not attach the AED to the patient unless the patient becomes unresponsive.</p> <p>Do not delay treatment or transport (per Step 2), in order to bring the AED to the scene.</p>
Contraindications	Patient is not in cardiac arrest; patient is < 28 days old; patient is a victim of obviously fatal trauma, meets the criteria for declaration of death, or has a known DNR.
Equipment	Automated External Defibrillator (AED).
Procedure	<ol style="list-style-type: none"> FOLLOW PROTOCOL: <i>Cardiac Arrest/Dysrhythmias; Pediatric – Cardiac Arrest/Dysrhythmias</i> Provide 2 minutes of CPR prior to using the AED; if the AED can be applied within 4 minutes of a known sudden collapse, skip initial CPR and proceed to Step 3. Turn on AED and follow prompts (<i>attach pads, analyzing, shock advised/not advised</i>, etc). After each “<i>Shock Delivered</i>” or “<i>No Shock Advised</i>” message, immediately provide CPR until AED prompts for next analysis (approx. two minutes). Check pulse only if prompted by PROTOCOL. After pulse check: if <u>pulse present</u> turn AED off but leave it attached to the patient in case of re-arrest; continue PROTOCOL. If <u>pulse absent</u> continue CPR until AED prompts for next analysis; continue PROTOCOL.
Notes	<p>Minimize number and duration of interruptions to CPR. No interruption longer than 10 seconds. Provide CPR while AED charges, if possible. Deliver other interventions (airway, IV, medications) during CPR.</p> <p>Before applying pads: move patient from water and dry off wet/sweaty skin. Remove transdermal medication patches and wipe off medication (e.g. Nitropaste). Place pads at least one inch from an implanted pacemaker.</p> <p>For adults, use adult pads with adult energy doses only. For children, (for AED use, defined as age 1 – 8; for CPR, defined as age 1 – 14). Child pads with child energy doses are preferred if available, otherwise use adult pads with adult energy doses. Do not use adult energy doses with child pads or child energy doses with adult pads. Do not allow pads to touch each other. If pads are too large to both fit on the front of the patient without touching, place one pad on right upper chest and the other on the left back (see package for diagram).</p> <p>Do not use AED in moving vehicles. Stop vehicle to prevent interference with AED analysis. Do not focus only on the AED. Monitor patient for signs of resuscitation (e.g. color change, pupil response, spontaneous respirations).</p> <p>AEDs may have different programming. If AED prompts conflict with PROTOCOL, follow the PROTOCOL.</p> <p>If declaration of death, leave pads attached to patient.</p> <p>Save data stored by the AED regardless of patient outcome.</p>

Cross Reference

Protocols:

Abdominal Pain
Allergic Reactions
Altered Mental Status/Altered Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmia
Chest Pain – Cardiac
Electrical and Lightning Injuries
Hypothermia

Protocols:

Ingestion/Poisoning
Near Drowning
Pediatric – Cardiac Arrest/Dysrhythmia
Respiratory Distress
Seizures
Shock Without Trauma

Base Contact Criteria

General

Base contact is to be made as specified in individual protocols.

Base contact should be attempted if no protocol exists for an individual patient's particular complaint.

At medic discretion Base contact is always an option but is NOT required in the following circumstances:

- Patients transported with normal vital signs, normal mental status and a non-life-threatening complaint.

- Patients signed out "Against Medical Advice" with normal vital signs, normal mental status and a non-life-threatening complaint.

- Patients treated and released (TAR) per criteria in specific PROTOCOL.

If base contact is indicated but cannot be made, proceed by individual PROTOCOL and use your best judgment. Make base contact as soon as possible. Document inability to contact base.

Blood Glucose Determination

Scope	EMT, Parkmedic, Paramedic.
Indications	Altered mental status in any PROTOCOL. Seizure. Patients with symptoms of hypoglycemia, especially those with a history of diabetes. Patients with diabetes (in any protocol).
Contraindications	None.
Equipment	Test strips, cotton ball, lancet, alcohol pad, glucose measuring device (Accu-check®, glucometer).
Complications	Bleeding, infection.
Procedure	<ol style="list-style-type: none">1. Follow instruction manual in conjunction with instructions below.2. Venous blood from an IV catheter, before attaching IV tubing, may be used or go to Step 3.3. Swab finger with an alcohol pad. Allow finger to dry before attempting fingerstick.4. Prick the side of the finger with the lancet. Dispose of lancet in sharps container.5. Test blood sample in accordance with instruction manual.6. Reassess the patient. If you are unable to obtain an accurate blood glucose reading for any reason, and the patient has ALOC or seizure, administer dextrose, glucose, or glucagon according to PROTOCOL as if the patient were hypoglycemic.
Notes	Device may need calibration or control test before use on patient, per instruction manual. Check expiration date of test strips and control solution (both may have different opened and unopened expiration dates).

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Altitude Illness
Cardiac Arrest /Dysrhythmias
Heat Illness
Hypothermia
Ingestion/Poisoning
Major Trauma – Adult
Near Drowning
Pediatric – Cardiac Arrest/Dysrhythmias
Pediatric – Major Trauma
Seizures
Shock Without Trauma

Capnography

Scope of Practice: Paramedic

Introduction: Capnography is the measurement of expired CO₂ from the patient. This provides an important measurement of patient ventilation (i.e., clearance of CO₂). This also is an important confirmation technique for proper airway (ETT. or King Tube placement).

Indications: Intubated patients
All patients requiring assisted ventilations
Altered patients (e.g. suffering from an inhaled poison, toxin, or overdose)

Contraindications: None

Procedure:

1. Attach capnography sensor to the endotracheal tube, or oxygen delivery device.
2. Observe CO₂ level and waveform.
3. The capnometer should remain in place throughout the transport.
4. Any loss of CO₂ detection or waveform indicates an airway problem or device malfunction.

Notes Do not delay medication administration to apply capnography.

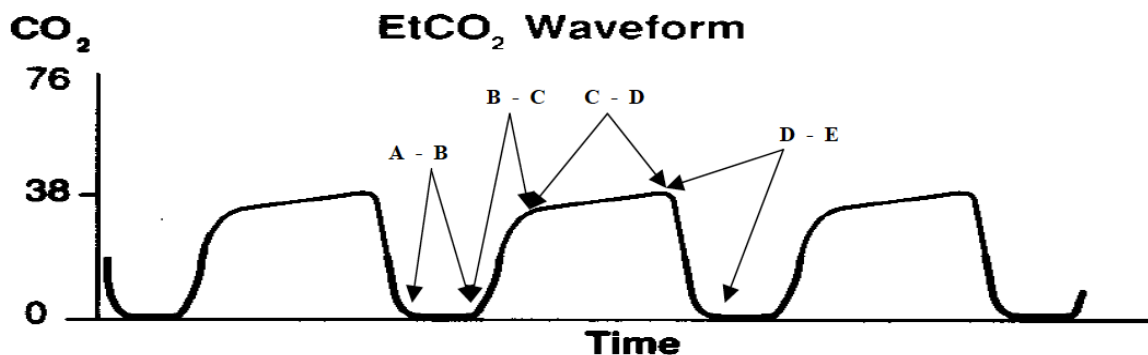
*The below section borrowed from
mcb.com/Operations/EMS/protocols/als_protocols/ALS_III_30_Capnography.pdf*

Interpreting Capnography:

The figure below shows a normal capnography waveform display. There are 4 phases of the waveform that require analysis. The flat **A – B** baseline segment (Respiratory Baseline) represents the beginning of exhalation of CO₂ – free gas that is contained in dead space from the conduction airways (trachea, bronchi). This value normally is zero. The **B – C** segment (Expiratory Upstroke), a sharp rise, represents exhalation of a mixture of dead space gases and alveolar gases. The **C – D** segment represents the alveolar plateau, characterized by exhalation of mostly alveolar gas. Point **D** is the end-tidal (EtCO₂) value that is recorded and displayed by the monitor, (peak concentration of CO₂ occurring at the end of expiration). The **D – E** segment (Inspiratory Downstroke), a sharp fall, reflects the inhalation of gases that are CO₂ – free (room air or supplemental oxygen). Alterations of the normal capnograph or EtCO₂ values are the result of changes in metabolism, circulation, ventilation, or equipment function.

A normal range for EtCO₂ is **35 – 45 mmHg**, similar to the range of CO₂ in arterial blood.

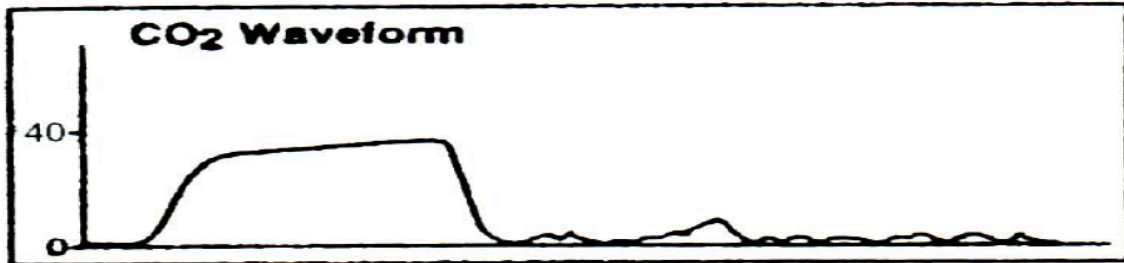
Normal Waveform:



Capnography

Abnormal Waveforms

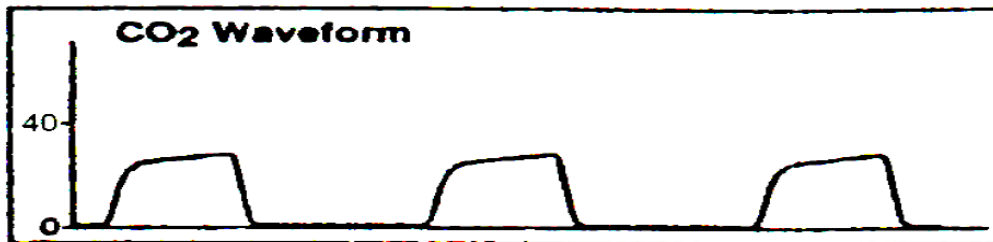
Sudden loss of ETCO₂ to zero or near zero:



Possible Causes:

1. **Endotracheal tube in esophagus**
2. **Apnea**
3. Endotracheal tube or King Tube not connected to oxygen supply/capnography detector.
4. Total obstruction/mucus plugging
5. Capnography malfunction - if abnormal waveform persists with change in capnography adaptor, the endotracheal tube or King Tube *MUST* be withdrawn and intubation or King Tube placement reattempted

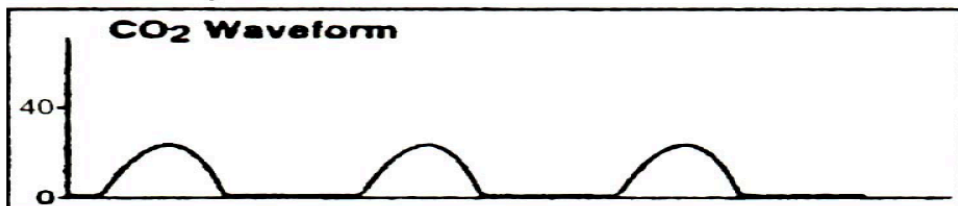
Sustained low ETCO₂ with good alveolar plateau:



Possible Causes:

1. Hyperventilation (due to underlying illness/injury or excessive assisted ventilations)
2. Hypothermia (Decrease in Metabolism)

Sustained low ETCO₂ without alveolar plateau:

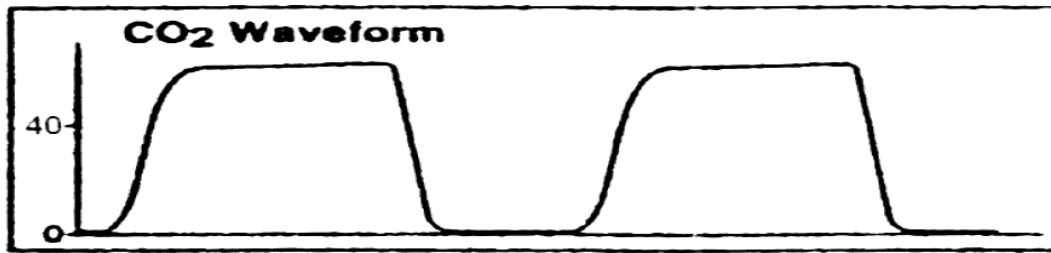


Possible causes:

1. Bronchospasm of asthma or COPD exacerbation
2. Incomplete obstruction/mucus plugging

Capnography

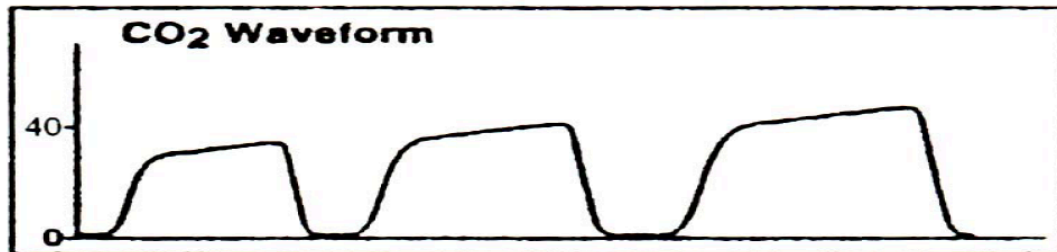
Elevated ETCO_2 with good alveolar plateau:



Possible causes:

1. Hypoventilation (due to underlying illness/injury or inadequate assisted ventilations)
2. Hyperthermia, pain, shivering (Increase in Metabolism)

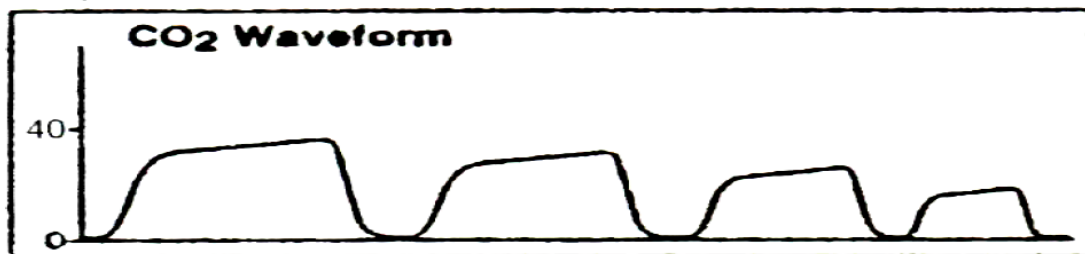
Gradually increasing ETCO_2 :



Possible causes:

1. Hypoventilation (due to underlying illness/injury or inadequate assisted ventilations)
2. Rising body temperature, increasing pain (Increasing Metabolism)

Exponential decrease in ETCO_2 :

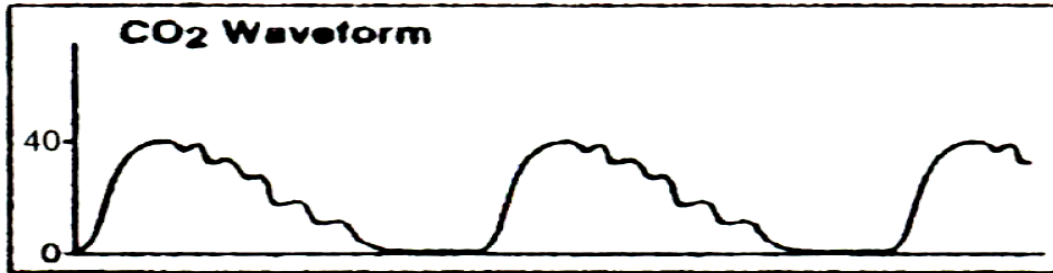


Possible causes

1. Cardiopulmonary arrest
2. Pulmonary embolism
3. Sudden hypotension, massive blood loss

Capnography

Cardiogenic oscillations:



Cardiogenic oscillations are caused by changes in thoracic volume secondary to expansion and contraction of the myocardium with each heartbeat. They are usually seen in patients with small tidal volumes and slow respiratory rates, and are of little physiologic consequence. Spontaneous breathing efforts may be evident on the CO₂ waveform display. The patient on the top demonstrates poorer quality spontaneous breathing effort than the patient on the bottom.

Cross Reference

Procedures:

Endotracheal Intubation

Protocols:

Drugs:

Cardioversion/Defibrillation

Scope of Practice

Paramedic with cardiac monitor

Introduction

Cardioversion is the process of providing electrical shock to a beating heart in order to “reset” the rhythm. This procedure can be used in patients with a variety of presenting rhythms. The type of cardioversion will depend on the underlying rhythm. Unsynchronized cardioversion (defibrillation) is used for pulseless ventricular tachycardia or ventricular fibrillation. Synchronized cardioversion is timed off the peak of the QRS wave and is used for regular stable or semi-stable rhythms. Note that with synchronized cardioversion, there is a pause between hitting the button and the actual cardioversion.

In the pre-hospital setting stable patients should be monitored and transported; unstable patients should receive cardioversion/defibrillation as indicated below; and patients with borderline vitals should generally have base contact for consultation prior to any electrical therapy.

Unsynchronized Cardioversion (defibrillation)

Indications

Pulseless ventricular tachycardia.
Ventricular fibrillation.
Other rhythms that are unstable with pulses to which the defibrillator cannot sync to provide shock.

Procedure

1. Assess patient, ensure patient is pulseless and/or unstable.
 2. Print a baseline rhythm strip.
- Note:** Place ECG electrodes on arms and legs to avoid interference with pads on the chest.
3. Pad placement, anterior/posterior preferred. Set the defibrillator to defib (or unsynchronized) set the joules to the either the manufacture recommended setting or the maximum setting (usually 200 joules for biphasic). Refer to the manufacturer’s guidelines as necessary.
Pediatric dosing: 1st shock, 2 joules/ kg; subsequent shocks 4 joules/kg.
 4. Ensure all personnel are clear of the patient.
 5. Press “shock” button.
 6. Continue with CPR as indicated per the treatment protocol.
 7. Examine patient and monitored rhythm for changes. If rhythm changes present or patient condition changes, treat according to appropriate protocol.
 8. Reassesses between each shock and treat any changes in patient condition per appropriate protocol.
 9. Consider air transport for these patients.
 10. Document procedure and responses.

Cardioversion/Defibrillation

Synchronized Cardioversion

Indications

Ventricular Tachycardia with pulses

With base contact only: Supraventricular tachycardia (SVT), Atrial Fibrillation, Atrial Flutter.

Procedure

1. Assess patient and initiate IV per appropriate protocol if the patient is stable.
2. Print a baseline rhythm strip.
Note: place ECG electrodes on arms and legs to avoid interference with pads on the chest.
3. Pad placement should be the same as for defibrillation.
4. Premedicate with Midazolam per drug protocol.
For patients in Ventricular Tachycardia or Supraventricular Tachycardia set Beginning energy level at 100J.
For patients in Atrial Flutter or Fibrillation set beginning energy level at 100J.
Consider onset of symptoms before cardioverting these patients.
5. Press the sync button and visually assure that the monitor has synced with the heart rate. Refer to the manufacturer's guidelines as necessary.
6. Ensure all personnel are clear of the patient.
7. Press and hold the "shock" button until the energy is delivered.
8. Examine patient and monitored rhythm for changes. If rhythm changes present or patient condition changes, treat according to appropriate protocol.
9. If the patient's condition is unchanged after the initial cardioversion, repeat steps above but increase joules to 200. Reassesses between each shock and treat any changes in patient condition per appropriate protocol.
10. Consider air transport for these patients.
11. Document procedure and responses.

Continuous Positive Airway Pressure (CPAP)

Scope of Practice	Paramedic
Indications	<p>Severe shortness of breath (bronchospasm including COPD and asthma).</p> <p>Severe shortness of breath with pulmonary edema (including congestive heart failure).</p> <p>Severe shortness of breath with pneumonia.</p> <p>Severe shortness of breath with HAPE.(Base contact).</p> <p>Conscious, breathing spontaneously, and able to follow commands.</p>
Contraindications	<p>Pediatric patients (less 14 years old).</p> <p>Actively vomiting.</p> <p>Hypotensive (systolic blood pressure less 90).</p> <p>Suspected of having a pneumothorax.</p> <p>An inability to achieve a good facial seal with the CPAP mask.</p> <p>Actively coughing.</p>
Procedure	<p>The patient must be continuously monitored for development of respiratory failure or vomiting</p> <p>CPAP will be delivered at a continuous pressure of 5 up to 10 cm H₂O utilizing 100% oxygen.</p> <ol style="list-style-type: none"> Start CPAP at 10 cm H₂O and decrease if possible. Start oxygen at 100% and titrate for oxygen saturation greater than 95% if possible. <p>CPAP may introduce transient hypotension via decreased venous return secondary to elevated intrathoracic pressure.</p> <ol style="list-style-type: none"> If systolic blood pressure falls to less than 80 mmHG, remove CPAP. If systolic blood pressure falls between 80-100 mmHG, decrease CPAP to 5 cm H₂O if possible.
Notes	<p>In hypertensive, CHF patients. Do not delay initial sublingual nitroglycerin administration to apply CPAP. You may remove mask temporarily for repeated nitroglycerin doses.</p> <p>If patients vomits, develops respiratory failure, or is persistently coughing, remove the CPAP circuit, clear the airway as necessary to prevent any aspiration, and provide respiratory assistance with either BVM or other advanced airway adjunct.</p> <p>See specific protocols for recommendations regarding Ondansetron, base contact, and possible resumption of CPAP.</p>

Cross Reference

Procedures:
Oxygen Administration

Protocols:
Altitude Illness (HAPE)
Respiratory Distress

Drugs:
Nitroglycerin

Electronic Control Device (ECD) Dart Removal

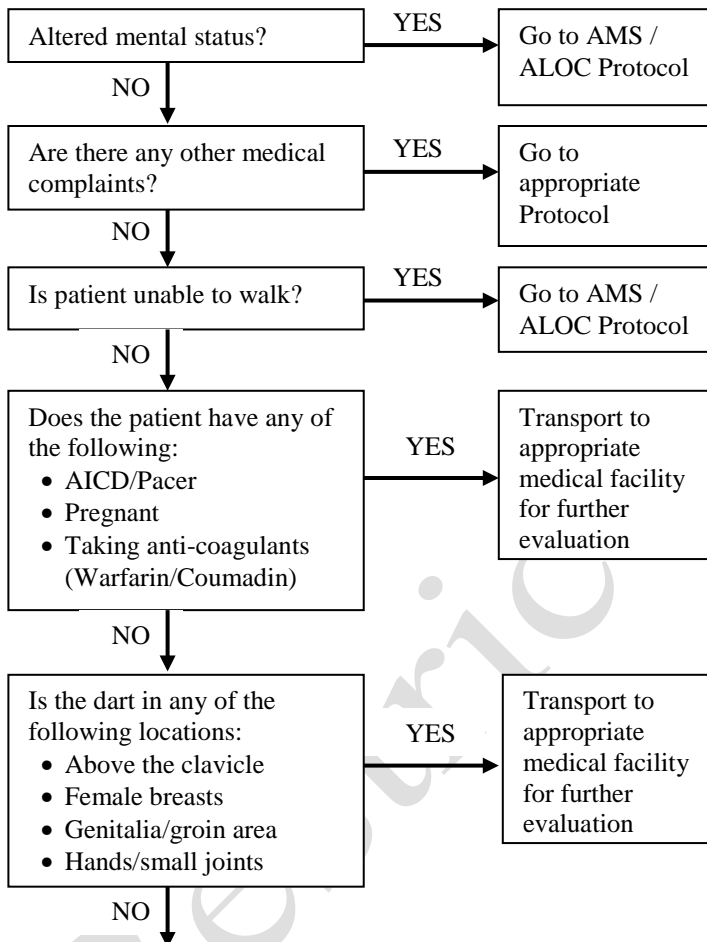
Scope of Practice EMT, Parkmedic, Paramedic

Indication Status post electrical control device (ECD) application with retained barbs.

Contraindications None.

Equipment Gloves.

Pre-Procedure Assessment



ACTUAL SCALE / SIZE:

Barb is a straight #8 fishhook with a length of 4mm and the entire dart length is less than 1 cm.

Procedure

Use universal precautions.

Confirm that wire is cut or disconnected from the ECD device.

Use one hand (usually non-dominant) to pull and spread skin around the wound area in a taut manner, while keeping fingers at least one inch away from the puncture site.

Use other hand to grasp barb, apply forceful in-line traction and quickly pull out.

Clean wound area and apply dressing as needed.

Dispose of dart barb as a "contaminated sharp".

Check patient's tetanus status and advise as needed.

If "yes" to any of the above questions, document a Patient Care Report (PCR). If "no" to all above questions, no PCR is required.

Post-procedure treatment and release vitals:

- Release if $[50 < \text{HR} < 110]$ and $[100 < \text{SBP} < 160]$;
- If HR not within normal range, call base hospital. If SBP is between 160-200, wait 10 minutes and repeat vitals. If SBP > 200 or between 160-200 after 10 minute recheck, call base.

Electronic Control Device (ECD)

Dart Removal

Special Considerations/Notes:

Review differential (see Behavioral Emergency Section from ALOC protocol) Re: why the patient may have needed the use of an ECD to begin with: causes include drug and alcohol intoxication, psychiatric illness, developmental delay, head injury and any causes of ALOC (e.g. hypoglycemia, hypoxia, infection, etc.)

Excited Delirium Syndrome – potentially lethal emergency which may be seen in patients with persistently violent/bizarre/agitated behavior, restraints, and/or drug intoxication. The pathogenesis is not well understood, but is likely multi-factorial, including positional asphyxia, hyperthermia, drug toxicity, and/or catecholamine-induced arrhythmias. Treatment should focus on reduction of stress (minimize noise/light/patient stimulation), pharmacologic therapy (midazolam (Versed) and rapid monitored transport. Refer to Behavioral Emergency Section of AMS/ALOC (Protocol 2020).

Re-examine patient thoroughly, looking for any other primary or secondary injuries that may have occurred directly from the electrical discharge, from the resulting fall or any physical struggle before or after patient immobilization.

Primary electrical injuries are very rare and there are no confirmed reports of death directly related to ECD induced malignant arrhythmias.

Secondary injuries may include, but are not limited to: (1) fall-related injuries such as fractures, lacerations/abrasions, sprains, and intracranial hemorrhage; (2) muscle contraction related injuries such as rhabdomyolysis, renal failure; and (3) any other injuries related to subduing an agitated individual. Anti-coagulated patients (Warfarin/Coumadin/Pradaxa, etc.) or patients on anti-platelet agents (aspirin, Plavix, etc.) are at increased risk for these secondary injuries.

Pregnant Patients – should be transferred to a medical facility for further medical evaluation. Abdominal palpation of the uterus size/height (umbilicus = 20 weeks) can provide an estimate of gestational age. Size can be misleading in presence of multiple pregnancy, uterine fibroids, or a full bladder.

Patients with AICD/Pacer are potentially at higher risk of cardiac dysrhythmias or damage to the AICD/Pacer. These patients should be transported for evaluation and assessment of AICD/Pacer function.

Cross Reference

Protocols:

Altered Mental Status/Altered
Level of Consciousness (AMS/ALOC)

Drugs:

Midazolam (Versed)

Endotracheal Intubation

Scope of Practice	Paramedic
Indications	<p>ALL must be present:</p> <p>GCS \leq 6.</p> <p>Apneic or agonal respirations \leq 6 per minute.</p>
Contraindications	<p>Do not use if ANY are present:</p> <p>Suspected narcotic overdose prior to administration of Naloxone; endotracheal intubation may be attempted in suspected narcotic overdose if unresponsive to Naloxone.</p> <p>The patient has a Do Not Resuscitate (DNR) order.</p> <p>Intact gag reflex</p>
Equipment	Cuffed or Un-cuffed Tracheal Tube (size dependent of patient age and height), syringe to inflate balloon (10ml), laryngoscope handle, laryngoscope blade (Macintosh or Miller blade size dependent on patient age and height), suction, capnography and pulse oximetry.
Procedure	<ol style="list-style-type: none"> 1. Maintain C-spine precautions if indicated. 2. Have suction equipment available and ready. 3. Pre-oxygenate with BVM and oxygen at 15 L/min for minimum one minute prior to endotracheal intubation. 4. Choose appropriate-sized tube based on patient age and size. 5. Check integrity of balloon by fully inflating it briefly; deflate prior to insertion. 6. Endotracheal Tube placement: <ul style="list-style-type: none"> Lubricate tube (optional). If present, remove dentures, broken teeth or OPA. Lift tongue and lower jaw with the laryngoscope blade in Left hand, directing force 45° from the patient with gentle upward and forward lift. Hold Endotracheal Tube in Right hand so that distal tip curves up. Visualize the epiglottis and vocal cords. Introduce Endotracheal Tube tip from the corner of the mouth, careful not to obscure view of the vocal cords, and advance until cuff is past the cords. Endotracheal intubation should occur within 30 seconds. If unable to properly place tube within 30 seconds, stop, insert OPA/NPA, ventilate for one minute with BVM, and reattempt intubation. Do not make more than 3 attempts total (including those with Endotracheal Introducer) per patient to place ETT. An attempt is defined as any cessation in ventilation in order to perform laryngoscopy. If either unsuccessful after 3 attempts, or intubation is not felt possible, proceed to King Tube placement IF patient is >1 year of age. If patient is < 1 year of age, use Bag Valve Mask (BVM) with BLS airway adjuncts. 7. Fully inflate balloon on Cuffed Endotracheal Tubes. 8. Ventilate patient with bag-valve and 15L/min oxygen. 9. Verify ETT placement: <ul style="list-style-type: none"> Look for chest rise and assess ease of ventilation. Check for color (purple to yellow) change of End Tidal CO₂ Device or capnography waveform. Listen with stethoscope for absence of epigastric air entry while bagging. Listen with stethoscope for breath sounds in both axillae while bagging. Look for fogging of ETT. If unable to ventilate with ETT, quickly troubleshoot (suction, kinks, biting, obstruction) remove tube, insert OPA/NPA, ventilate with BVM and consider placement of King Tube <u>IF patient is > 1 year old</u>. If still unable to ventilate, consider Transtracheal Jet Insufflation.

Endotracheal Intubation

10. Secure ETT as soon as possible.
11. In **most** patients, a properly placed ETT will have a depth measuring the product of 3 times the tube size in centimeters (ie: size 7 tube would show the 21cm mark at the level of the teeth).
12. Reassess adequate tube placement every time patient is moved, per **Step 9**.

Medications:

With base consultation, sedation (Midazolam) and analgesic (Fentanyl, Morphine, Hydromorphone) administration may be indicated for hemodynamically stable patients who become agitated or combative following intubation.

Notes:

Do not delay BLS airway, CPR, or AED in order to place an ETT.

Esophageal intubation is common when you do not have direct visualization of the tube passing through the vocal cords. **Failing to recognize esophageal intubation is the most common and dangerous error.** If you cannot verify correct tube placement, remove the tube and oxygenate the patient until another intubation attempt can be made.

Placement of an oversized ETT can lead to subluxation (incomplete or partial dislocation) of the arytenoid cartilage acutely, and subglottic stenosis chronically. If resistance is felt upon inserting the tube through the vocal cords, then the tube is probably too large and should be removed and a smaller size tube placed.

Vomiting and aspiration can occur during intubation of patient with an intact gag reflex. Endotracheal Intubation does not block the esophagus, and allows the insertion of up to an 18 Fr diameter OG tube into the esophagus and stomach.

Tube Sizing:

Age	ET size	Blade size (Mac & Miller)
Preemie	2.5	0
Neonate	3	0-1
6 mos	3.5	1
1-2 yrs	4	1-2
4-6 yrs	5	2
8-12 yrs	6	2-3
Adult	7-7.5	3-4

Cross Reference

Procedures:

Capnography
Endotracheal Tube Introducer
King Tube
Transtracheal Jet Insufflation

Protocols:

Allergic Reactions
Altered Mental Status/Altered Level of Consciousness (ALOC)
Altitude Illness
Bites and Stings
Burns
Cardiac Arrest/ Dysrhythmias
Electrical and Lightning Injuries
Heat Illness
Hypothermia
Ingestion/Poisoning
Major Trauma – Adult
Near Drowning
Pediatric – Cardiac Arrest/ Dysrhythmias
Pediatric – Major Trauma
Respiratory Distress
Seizures
Shock Without Trauma
Trauma Arrest (Adult and Pediatric)

Drugs:

Fentanyl
Hydromorphone (Dilaudid)
Midazolam (Versed)
Morphine
Naloxone (Narcan)

ENDOTRACHEAL TUBE INTRODUCER

Scope of Practice

Paramedic

Introduction

The Endotracheal Tube Introducer is used to facilitate difficult intubations. It should not be confused with a more ridged stylet, which is inserted into the Endotracheal Tube to alter its shape prior to intubation. The Endotracheal Tube Introducer (gum-elastic bougie) is much softer, maneuverable and blunter than a stylet. Proper technique is considered to be an atraumatic procedure.

Indications

Suspected difficult intubation or failed intubation

Short, thick (bull) neck

Pregnancy

Laryngeal edema (anaphylaxis, burns)

Normal anatomical variation

Supra-glottic neoplasms

Inability to position patient appropriately (e.g. entrapment, confined space)

Trauma to the neck

Precautions

Vomiting

Laryngospasm

Excessive force beyond the carina may cause trauma.

Endotracheal Tube should not be threaded over the introducer without the laryngoscope in place.

Contraindications

ETT sizes < 6

Procedure

1. On a difficult intubation, consider going directly to the King Tube.
2. Lubricate lower portion of introducer.
3. Perform laryngoscopy, if cords are not visible; identify all landmarks to aid intubation.
4. Place introducer into the pharynx and direct into the larynx. You may bend the introducer to negotiate the bend. Correct placement confirmed by detection of tracheal "clicks" or the resistance at the carina.
5. Leave the laryngoscope in place while assistant threads Endotracheal Tube over introducer into the trachea. If the tube sticks, rotate gently 90 degrees counterclockwise.
6. Hold the Endotracheal Tube firmly in place while withdrawing the introducer.
7. Remove laryngoscope and assess for proper ETT placement.
8. Endotracheal Tube may be placed over the introducer prior to intubation, instead of a stylet.

Notes

Sellick's or BURP maneuver may improve visualization/ease of passing Endotracheal Tube Introducer

If unsuccessful with Endotracheal Intubation immediately go to King Tube.

Cross Reference

Procedures:

Endotracheal Intubation

Foreign Body Airway Obstruction

Epinephrine Auto-Injector

Scope	EMT, Parkmedic, and Paramedic.
Indications	Allergic reactions. Respiratory distress.
Procedure	<p>Refer to specific PROTOCOL for indications and dosages.</p> <ol style="list-style-type: none">1. Confirm patient is appropriate candidate to receive Epinephrine.2. Inform patient that they will be receiving an injection to make them feel better. Advise them it may make them feel shaky and their heart pound.3. Clean skin of the outer thigh with alcohol prep.4. Familiarize yourself with the unit.5. Grasp unit, with the black tip pointing downward.6. Form a fist around the auto-injector (black tip down).7. With your other hand, pull off the gray activation cap.8. Hold black tip near outer thigh.9. Jab firmly into outer thigh so that auto-injector is perpendicular (at a 90 degree angle) to the thigh.10. Hold firmly in thigh for several seconds.11. Remove unit, massage injection area for several seconds.12. Check black tip: if needle is exposed the patient received the dose, if not repeat Steps 8 – 11.13. Note that most of the liquid (~90%) stays in the auto-injector and cannot be reused.14. Bend the needle back against a hard surface.15. Carefully put the unit (needle first) back into the carrying tube (without the gray activation cap).16. Recap the carrying tube.17. Observe patient for improvement or worsening of condition. Repeat exam and vitals after each dose.18. Document procedure, vitals and response to treatment.
Notes	<p>Parkmedics/Paramedics are approved to use the Epinephrine Auto-Injector per the EMT protocol if their ALS supplies are not immediately available.</p> <p>Never put thumb, fingers, or hand over black tip.</p> <p>Do not remove gray activation cap until ready to use.</p>
Diagrams	See package insert.

Cross Reference

Protocols:
Allergic Reactions
Respiratory Distress

Foreign Body Airway Obstruction (Advanced Management)

Scope of Practice	Paramedic, Parkmedic (with intubation skills) (Additional ALS skills added – Laryngoscopy, Magill Forceps)
Indications	Unresponsive patient
Contraindications	Patient with an intact gag reflex Patient < 1 year old
Equipment	Laryngoscope Magill Forceps Pulse Oximeter Suction Device BVM and Oxygen
Procedures	<p>BLS Maneuvers:</p> <ol style="list-style-type: none">1. Initiate basic life support treatment measures, including suction and removal of foreign material from oropharynx if visible.<ol style="list-style-type: none">a. Visualize the oropharynx to see if the obstruction has been removed or dislodged.b. If unable to remove the foreign body or ventilate using basic airway maneuvers, give thirty chest compressions hard and fast in an effort to dislodge the foreign body.c. If the foreign body is now visible in the oropharynx, attempt to remove it. <p>ALS Maneuvers:</p> <ol style="list-style-type: none">2. If the foreign body is not evident, visualize the entire upper airway using a laryngoscope.<ol style="list-style-type: none">a. If the foreign body is visualized by laryngoscopy, attempt to grasp and remove it using Magill forceps. You <i>must visualize</i> the foreign body before attempting to remove it. Do not blindly probe the pharynx with your Magills. If the foreign body is removed, withdraw the laryngoscope and attempt to ventilate with a BVM. Continue basic life support protocols and prepare for immediate transport. If patient's mental status does not improve despite successful foreign body removal and basic airway maneuvers (OPA/NPA/BVM), proceed to advanced airway maneuvers (King Tube placement or Endotracheal Intubation).b. If the foreign body remains visible but cannot be removed. Perform Transtracheal Jet Insufflation (TTJI) REFERENCE Transtracheal Jet Insufflation and transport immediately.c. If no foreign body is visible. Proceed to advanced airway maneuvers (King Tube placement or Endotracheal Intubation).3. Monitor and reassess patient's airway and vital signs en route.4. Notify receiving facility of patient's condition and maneuvers used.
Notes	Interruptions to patient ventilations should not exceed 30 seconds in duration. A maximum of two separate, 30 second attempts at laryngoscopy can be made prior to transport.

Cross Reference

Procedures:

Endotracheal Intubation
Endotracheal Tube Introducer
King Tube
Oxygen Administration
Transtracheal Jet Insufflation (TTJI)

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)
Respiratory Distress

Fracture and Dislocation Management

(Reduction and Splinting)

Scope of Practice

EMT, Paramedic, and Paramedic.

PROCEDURE: Reduction of Fracture per PROTOCOL: *Minor or Isolated Extremity Trauma, Major Trauma – Adult or Pediatric – Major Trauma.*

1. Identify site of injury.
2. Assess distal circulation, sensation and motor function.
3. Irrigate open fractures per PROCEDURE: *Wound Care*. Use LR/NS or sterile water if available, otherwise potable water.
4. Provide analgesia if available per appropriate PROTOCOL.
5. Grasp extremity above and below injury (use two rescuers if available).
6. Apply steady gentle traction below (distal to) injury in direction of long axis of extremity.
7. Continue until patient complains of intolerable pain, resistance is felt, or reduction is accomplished.
8. Apply splint.
9. Reassess distal circulation, sensation and motor function.
10. Document procedure.

Note: for deformed femur fractures, reduction is best performed with application of a traction splint.

PROCEDURE: Splinting per PROTOCOL: *Minor or Isolated Extremity Trauma, Major Trauma – Adult or Pediatric – Major Trauma.*

1. Assess distal circulation, sensation and motor function.
2. Irrigate and dress open wounds per PROCEDURE: *Wound Care*.
3. Reduce potential fractures if indicated per **Reduction of Fracture**.
4. Immobilize the joint if the joint is the site of primary injury. Immobilize joints above and below long bone injuries.
 - Suspected mid-shaft femur fractures are best immobilized with a traction splint.
 - Suspected hip fractures may be immobilized on a long board.
 - Suspected pelvic fractures may be immobilized per PROCEDURE: *Pelvic Stabilization*.
 - Suspected pelvis, bilateral femur or multiple lower extremity fractures may be immobilized with MAST antishock trousers per PROCEDURE: *Pelvic Stabilization*.
5. Splint must be well-padded.
6. Toes or fingers must be accessible for repeated assessment.
7. Injury should be elevated above the level of the heart if practical.
8. Reassess distal circulation, sensation and motor function.
9. Document procedure.

PROCEDURE: Reduction of Dislocated Digit (finger or toe) per PROTOCOL: *Minor or Isolated Extremity Trauma, Major Trauma – Adult or Pediatric – Major Trauma.*

1. Assess other injuries, digits and distal circulation, sensation, and motor function.
2. Confirm indications (ALL must be present):
 - Greater than two hours transport time to hospital or clinic.
 - For all reductions (digit/shoulder/patella), base hospital order or documented communication failure.
 - History of “jamming” finger.
 - Clear deformity to proximal or distal interphalangeal joint.
 - Patient with limited ability to bend finger because of pain.
 - Procedure does not delay care or transportation of life-threatening injuries.
3. If laceration or exposed bone irrigate thoroughly per PROCEDURE: *Wound Care*.
4. Grasp distal portion of finger securely with gauze.
5. Stabilize proximal portion of finger and hand per included diagram.
6. Apply gentle, firm, steady, longitudinal traction while gently pushing distal bone back into place.
7. Reduction is confirmed by “clunk”, resolution of deformity and pain, and return of motion.
8. If successful, digit should be buddy taped and padded.
9. If unsuccessful or not attempted, finger should be splinted in the position it was found.
10. Reassess distal circulation, sensation and motor function.
11. Document procedure.

Fracture and Dislocation Management

(Reduction and Splinting)

PROCEDURE: Reduction of Dislocated Shoulder per PROTOCOL: *Minor or Isolated Extremity Trauma, Major Trauma – Adult or Pediatric – Major Trauma.*

1. Assess other injuries, shoulder and distal circulation, sensation and motor function.
2. Confirm indications (ALL must be present):
 - Greater than two hours transport time to hospital or clinic.
 - For all reductions (digit/shoulder/patella) , base hospital order or documented communication failure.
 - History of indirect “lever-type” trauma to arm rather than blow directly to shoulder.
 - Clear deformity to shoulder (loss of rounded appearance of lateral shoulder).
 - No physical findings of direct shoulder trauma (e.g. shoulder contusions/abrasions).
 - No other suspected fractures to same arm.
 - Patient with limited ability to move shoulder because of pain.
 - Procedure does not delay care or transportation of life-threatening injuries.
3. Place patient on unaffected side.
4. Provide analgesia if available per appropriate PROTOCOL.
5. Continually remind patient to relax shoulder muscles.
6. Apply gentle steady traction away from shoulder by grasping wrist and slowly lifting entire arm away from body to 90 degrees per attached diagram. Slowly lift patient using their body weight for counter-traction. This may take several minutes. Maintain traction at all times.
7. Continue steady traction until reduction is felt/heard, patient reports relief, or 5 minutes have elapsed.
8. If reduction is accomplished, arm should be easily moveable into position against body. Apply sling and swath per attached diagram.
9. If reduction is not accomplished, arm should be slowly moved into original position, padding applied in space between arm and body, and arm secured in position for transport.
10. Reassess distal circulation, sensation and motor function.
11. Document procedure.

PROCEDURE: Reduction of Dislocated Patella (kneecap) per PROTOCOL: *Minor or Isolated Extremity Trauma, Major Trauma – Adult or Pediatric – Major Trauma.*

1. Assess other injuries, knee and distal circulation, sensation and motor function.
2. Confirm indications (ALL must be present):
 - Greater than two hours transport time to hospital or clinic.
 - For all reductions (digit/shoulder/patella) , base hospital order or documented communication failure.
 - History of indirect “lever-type” trauma to knee rather than direct blow.
 - Obvious lateral displacement of knee cap to outside.
 - Knee held flexed (bent) and patient with limited ability to straighten knee voluntarily because of pain.
 - No physical findings of direct knee trauma (e.g. knee lacerations/contusions/abrasions).
 - Procedure does not delay care and transportation of life-threatening injuries.
3. Apply steady, gentle pressure from lateral (outside) to medial patella and simultaneously straighten leg.
4. If successful, knee should be immobilized in extension (straight).
5. If there are no other extremity injuries that prevent walking, patient may ambulate with immobilization (e.g. ensolite pad wrapped and secured around leg). Minimize walking unless necessary to facilitate evacuation and patient states there is no significant pain.
6. If unsuccessful, time/injuries do not permit reduction, or all indications not met, knee should be immobilized in the position it was found.
7. Reassess distal circulation, sensation and motor function.
8. Document procedure.

Notes

Deformities (fractures and/or dislocations) with distal neurovascular compromise should be reduced ASAP in an attempt to regain circulation.
For dislocated joints listed above (patella, digit, shoulder), reduction attempts are permissible even with intact distal neurovascular exams.

Fracture and Dislocation Management

(Reduction and Splinting)

Cross Reference

Procedures:

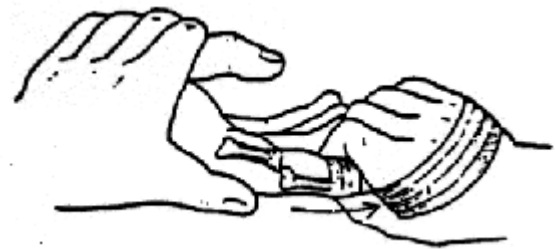
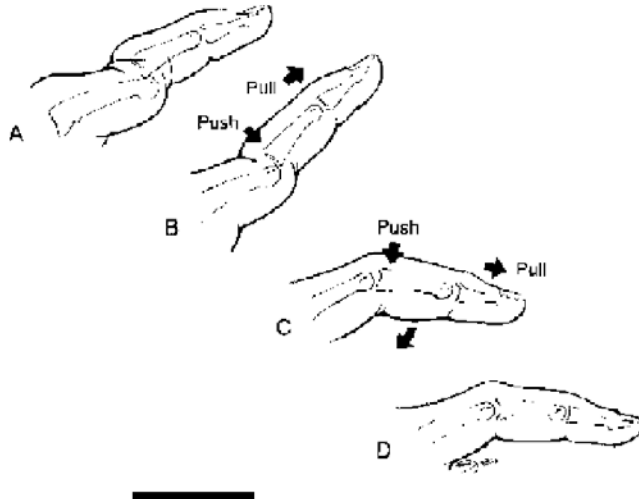
Pelvic Stabilization
Wound Care

Protocols:

Bites and Stings
Electrical and Lightning Injuries
Major Trauma – Adult
Minor or Isolated Extremity Trauma
Pediatric – Major Trauma

Fracture and Dislocation Management (Reduction and Splinting)

Pictures courtesy of Harcourt Health



Sciences/Clinical Procedures in Emergency Medicine, 3rd Ed.

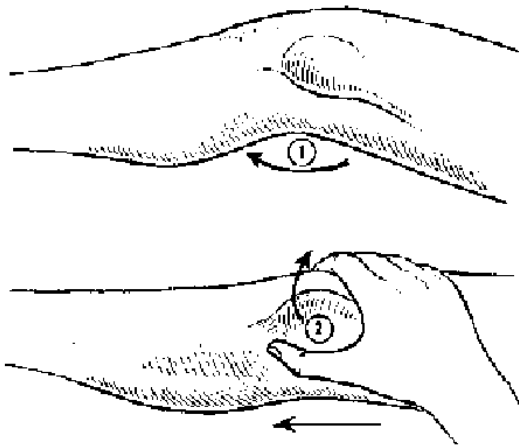


Figure 52-44 Manipulative reduction of a lateral patellar dislocation. Extend the knee gradually (1) while medially directed pressure is applied on the patella (2), pushing it over the lateral femoral condyle. (From DePalma AF: Management of Fractures and Dislocations. Philadelphia, WB Saunders, 1970, p 1665. Reproduced by permission.)

Pictures courtesy of Harcourt Health Sciences/Clinical Procedures in Emergency Medicine, 3rd Ed.

Fracture and Dislocation Management

(Reduction and Splinting)



Note deformity



Gamow Bag

Scope of Practice	EMT, Parkmedic and Paramedic (per Local Medical Advisor approved extended scope of practice).
Indications	High Altitude Illness (HACE, HAPE).
Contraindications	Patient unable to protect their airway.
Equipment	Gamow Bag.
Procedure	<p>Confirm indication for Gamow Bag use per PROTOCOL: <i>Altitude Illness</i>. Confirm that descent is not immediately available. <u>Confirm that patient can protect their own airway.</u> Explain procedure to patient. Establish an emergency signal indicating need to get out of bag. Tell patient to notify you of ear or facial pain (because of increased pressure). Have patient void if able. Place bag on as smooth a surface as possible. If patient has orthopnea, bag can be situated with the head propped up. Attach pump to gray intake valve. Ensure valve stem is in closed position. Place patient in bag. Use clothing and/or sleeping bag to ensure warmth. If patient is in severe distress, they may be placed on low-flow oxygen per PROCEDURE: <i>Oxygen Administration</i> while in the bag. Place the oxygen tank inside the bag with the patient, with the regulator dial visible. If pulse oximeter is available titrate oxygen delivery to saturation > 94%. NOTE: The enriched oxygen supply inside the bag increases the risk of combustion. <u>Maintain meticulous precautions against sparks and fire.</u> Tell patient to breath normally. Have them clear their ears by swallowing. Advise them that if the bag should accidentally deflate they should exhale. Pull zipper completely closed. Begin inflation with foot pump. Check that nylon straps are not twisted and are in proper location. Inflate to 1.5 PSI on gauge. <u>Maintain eye contact with patient at ALL times.</u> <u>Continue pumping 15 times per minute at ALL times to clear excess CO2.</u> Continue treatment until patient has returned to baseline or is being evacuated. Patient may be removed from the bag for a few minutes every hour to allow them to void and have vitals reassessed. To deflate, depress and turn valve stem to locked down position, and allow air escape. Undo zipper. Re-evaluate patient. Return valve stem to closed position. Document procedure (indications, duration, pressure, etc.), vital signs and response to treatment.</p>

Cross Reference

Protocols:
Altitude Illness

Intraosseous Access

Manual IO

Scope of Practice	Parkmedic and Paramedic.
Indications	All ages: IV and IO should be considered equivalent (see specific protocols). In code situations begin with IO.
Contraindications	Do not place IO in a bone that is known to be fractured. Do not place IO if there is an obvious infection at the site of insertion. Do not place IO if the site of insertion is grossly contaminated.
Relative Contraindications	Placement in a bone that is suspected to contain a fracture. Previous knee replacement on the leg being considered for IO insertion. Areas that are burned. An IO or EZ-IO placed in the same bone within the past 24 hours. Inability to locate anatomical landmarks due to significant edema at the site. Excessive tissue at insertion site (obese or excessive muscle tissue). Osteomyelitis (bone infection). Osteogenesis imperfecta (a genetic abnormality resulting in extremely brittle bones). Note: fracture of another bone (e.g. femur) proximal to the bone being considered as the insertion site is not a contraindication to use of the site as long as perfusion distal to the fracture site can be confirmed.
Equipment	16 or 18 gauge IO needle, 5ml syringe, 60ml syringe, IV fluid.
Complications	Fracture of bone or damage to the growth plate; bleeding from insertion site; neurovascular injury; infection of skin or bone.
Procedure	<p><u>Proximal Tibia</u>. (Preferred choice in children)</p> <p>Support the leg with towel under the knee.</p> <p>Identify the target area. Mark 2cm below and medial to the tibial tuberosity so you are on the flat, medial aspect of the bone. Clean the skin with alcohol pad or Betadine.</p> <p>Stabilize the 16 or 18 gauge IO needle in your palm with your index finger on the skin.</p> <p>Enter the bone with the needle directed toward the foot along the axis of the bone at a 60-degree angle with the skin.</p> <p>Advance the needle firmly with a twisting motion until you feel a decrease in resistance and a crunching, indicating penetration into the bone marrow cavity. THIS DISTANCE IS USUALLY NO MORE THAN 1cm from the skin surface in pediatrics or healthy weight adults.</p> <p>Remove the stylet and see if the needle stands without support. If it does, use a 5ml syringe to aspirate. Aspiration of blood indicates successful placement, but this may not occur. If blood is not aspirated, try infusing with syringe 2-3ml of NS/LR. Successful placement is indicated by successful infusion of fluid without extravasation (skin swelling).</p> <p>If resistance is met to fluid infusion, advancing and/or withdrawing the needle 1– 3mm may improve flow.</p> <p>If no success with third attempt, pull needle out, apply pressure dressing over site and try the other leg.</p> <p>If fluid pushes easily, continue with manual bolus or medications per specific PROTOCOL.</p> <p>Secure needle with tape, dressing (leg board in children). Reassess frequently.</p> <p><u>Distal Anterior Femur</u>: Same procedure as above, only after both tibial sites have been excluded.</p>

Intraosseous Access

Insertion point is 3cm above the patella on the anterior femur, midline above the knee.

Angle needle toward patient's head along the axis of the bone at a 60-degree angle (reference diagram).

Distance from skin surface to marrow cavity varies but is usually greater than 1cm.

Humerus: (third choice site in children): insertion site

is slightly anterior to the lateral midline of the arm at the greater tubercle.

Keep patient supine with the elbow bent and shoulder exposed. Adduct the patient's arm so that their hand is resting on their umbilicus.

Firmly palpate the humeral shaft, progressing superiorly toward the humeral head until the greater tubercle is palpated. Insert needle slightly anterior to the lateral midline of the arm at the greater tubercle.

Notes

The "Needle" is the hollow, steel needle that is left in place, and also the needle/stylet combination. The "Stylet" is the solid wire core that is removed after placement.

The term "Catheter" is sometimes used in the literature to mean the "Needle."

Once needle is in place, secure or it may become dislodged.

Medication and Fluid delivery: passive gravity infusions will not work with IO lines.

Use a 60ml syringe to give fluid/boluses. All IV medications can be administered through the IO line. Flush all medications with 10ml NS/LR.

Continue attempts at IV access. If IV established, use it for fluids and medications, but keep IO backup.

Intraosseous Access

EZ – IO

Scope of Practice	Parkmedic and Paramedic.
Indications	All ages: IV and IO should be considered equivalent (see specific protocols). In code situations begin with IO.
Contraindications	Do not place EZ-IO in a bone that is known to be fractured. Do not place EZ-IO if there is an obvious infection at the site of insertion. Do not place EZ-IO if the site of insertion is grossly contaminated.
Relative Contraindications	Placement in a bone that is suspected to contain a fracture. Previous knee replacement on the leg being considered for EZ-IO insertion. Areas that are burned. An IO or EZ-IO placed in the same bone within the past 24 hours. Inability to locate anatomical landmarks due to significant edema at the site. Excessive tissue at insertion site (obese or excessive muscle tissue). Osteomyelitis (bone infection). Osteogenesis imperfecta (a genetic abnormality resulting in extremely brittle bones). Note: fracture of another bone (e.g. femur) proximal to the bone being considered as the insertion site is not a contraindication to use of the site as long as perfusion distal to the fracture site can be confirmed.
Equipment	EZ-IO Insertion kit, IV fluid.
Complications	Fracture of bone or damage to the growth plate; bleeding from insertion site; neurovascular injury; infection of skin or bone.
Procedure	<p>Prepare EZ-IO driver and needle set.</p> <p>Open EZ-IO cartridge and attach needle set to driver; a “snap” should be felt as magnet connects.</p> <p>Remove needle set from cartridge.</p> <p>Remove safety cap from needle set. Grasp and rotate clockwise to remove.</p> <p>Locate appropriate insertion site (reference attached diagrams).</p> <p><u>Proximal Tibia:</u> find the tibial tuberosity and insert IO 2cm inferior and medial, on the flat anteromedial aspect of the tibia. (Preferred choice in children).</p> <p><u>Distal Anterior Femur:</u> insertion point is 3cm above the patella on the anterior midline femur.</p> <p><u>Humerus:</u> (third choice site in children): insertion site is slightly anterior to the lateral midline of the arm at the greater tubercle.</p> <p>Keep patient supine with the elbow bent and shoulder exposed. Adduct the patient’s arm so that their hand is resting on their umbilicus.</p> <p>Firmly palpate the humeral shaft, progressing superiorly toward the humeral head until the greater tubercle is palpated. Insert needle slightly anterior to the lateral midline of the arm at the greater tubercle.</p> <p>Sterilize or disinfect the skin over the insertion site.</p> <p>Stabilize the patient’s leg/arm as appropriate near insertion site.</p> <p>Position EZ-IO driver at insertion site with needle at 90° angle to the surface of the bone and power needle through skin until bone is encountered.</p> <p>Verify that 5mm mark on catheter is visible. If mark is not visible there may be excessive tissue at the site making needle too short to penetrate the IO space.</p>

Intraosseous Access

Continue insertion by maintaining 90° angle to bone surface and applying firm steady pressure as the needle is powered through the outer surface of the bone. Stop when the needle flange contacts skin, or when a sudden decrease in resistance is felt.

Remove stylet from catheter by grasping hub with one hand and rotating stylet counterclockwise to unscrew it from the catheter. Properly dispose of stylet.

Proper placement of the catheter is confirmed through any one of the following:

- Catheter stands at 90° angle to the skin and is firmly seated.

- Blood at hub of catheter.

- Free flow of fluid with no evidence of extravasation under the skin.

If proper insertion cannot be confirmed or catheter appears to be blocked and cannot flush, repeat procedure at another site; do not remove existing EZ-IO until successful IV/IO has been established.

Connect primed extension set to EZ-IO hub. Do not attach syringe or flow set directly to EZ-IO catheter.

Using a 10ml syringe, rapidly flush catheter with 5-10ml NS/LR.

Connect primed flow set and begin infusion. Use only for IV push and not gravity drips.

Properly dress and secure catheter with bulky gauze and cross-tape.

Notes

The “Needle” is the hollow, steel needle that is left in place, and also the needle/stylet combination. The “Stylet” is the solid wire core that is removed after placement.

The term “Catheter” is sometimes used in the literature to mean the “Needle.”

Once needle is in place, secure or it may become dislodged.

Medication and Fluid delivery: passive gravity infusions will not work with IO lines.

Use a 60ml syringe to give fluid/boluses. All IV medications can be administered through the IO line. Flush all medications with 10ml NS/LR.

Continue attempts at IV access. If IV established, use it for fluids and medications, but keep IO backup.

Cross Reference

Procedures:

IV Access and IV Fluid
Administration
Pelvic Stabilization
Transcutaneous Pacing

Protocols:

Abdominal Pain
Allergic Reactions
Altered Mental Status/Altered Level
of Consciousness
Bites and Stings
Burns
Chest Pain (Cardiac)
Childbirth
Frostbite
General Medical Illness – Adult
Heat Illness
Hypothermia
Ingestion/Poisoning
Major Trauma (Adult)
Near Drowning
Pediatric – Major Trauma
Pediatric – Medical Illness/Fever
Respiratory Distress
SCUBA/Dive Injury
Shock without Trauma
Trauma Arrest (Adult and Pediatric)
Vaginal Bleeding

Drugs:

Amiodarone
Cefazolin (Ancef)
Diltiazam
Lidocaine

IV Access and IV Fluid Administration

Scope of Practice	Parkmedic and Paramedic.
Indications	IV fluid or medications.
Contraindications	None.
Relative Contraindications	IV placement in an extremity with a <u>suspected</u> fractured bone.
Complications	Bleeding, infection, vein or tissue damage from extravasation.
Vascular Access	<p>Adults: TKO or maintenance fluids: one 18–20 gauge IV catheter. Signs/symptoms/high risk for shock: two 14–18 gauge IV catheters.</p> <p>Pediatrics: Medications: One IV catheter appropriate size for vein. Volume resuscitation: Two largest age-appropriate IV catheters.</p>
Fluid Delivery	<p>Adults: All IV's: macrodrip set (10–15 drops/ml). All IO's: Use a 60ml syringe to give fluid/boluses.</p> <p>Pediatrics: All IV's: measured-volume solution administration set (Volutrol). All IO's: Use a 60ml syringe to give fluid/boluses, not Volutrol.</p>
IV Fluid	<p><u>Saline lock or TKO</u>: may generally use interchangeably if fluid or medication not currently required but may be needed in the future (exceptions are noted in specific PROTOCOLS). Saline lock avoids IV line entanglement during complex extrications, however TKO allows for immediate administration of fluids as needed.</p> <p><u>Maintenance fluids</u>: stable patients with no contraindications to fluid (pulmonary edema):</p> <p>Adults: 120ml/hr (macrodrip 1 drop every 2-3 seconds).</p> <p>Pediatrics: 2 ml/kg/hr or reference NPS Pediatric Resuscitation Tape / Broselow tape.</p> <p><u>Fluid challenge</u>:</p> <p>Adults (SBP 80-100 or HR >100): 500ml bolus (recheck vitals after bolus).</p> <p>Pediatrics: Bolus only - no challenge indicated.</p> <p><u>Fluid bolus</u>:</p> <p>Adults: (SBP < 80): 1-L bolus wide open under pressure. Repeat SBP < 80: Repeat bolus once, then contact base.</p> <p>Pediatrics: Shock, indicated by protocol: 20ml/kg bolus. If no improvement: Repeat bolus once then contact base.</p> <p>Pediatric Shock: SBP < (70+2x age in years) per PROTOCOL: <i>Pediatric Parameters</i>.</p> <p>In the case of fluid challenge or bolus: Contact base as soon as possible. If communication failure, continue per guidelines to a <u>maximum of 3-L in adults and 60ml/kg in pediatrics</u>.</p>

	<u>TKO</u> Stable	<u>Maintenance</u> Stable	<u>Challenge</u> At risk	<u>Bolus</u> Shock	<u>Maximum</u> Shock
ADULT	TKO	120ml/hr	SBP80–100 or HR > 100 500ml bolus	SBP < 80 1-L bolus	3-L
0-14 yrs	TKO	2 ml/kg/hr or NPS/Broselow	No challenge; use bolus	SBP < (70+2x age in years) 20ml/kg	60ml/kg

IV Access and IV Fluid Administration

Fluid Challenge or Bolus Procedure

Check vitals and lung exam after each fluid challenge/bolus.

As vitals change refer back to the table above for fluid guidelines (i.e. initial SBP=80, give 1-L bolus; recheck SBP=90, give 500ml bolus; recheck.)

If signs of pulmonary edema (crackles, respiratory distress, increased respiratory rate) develop during IV fluid administration, decrease to TKO and contact base for fluid orders.

Notes

If PROTOCOL orders IV fluid, refer to this PROCEDURE for gauge, number of IV's, and fluid rate. If IV fluid orders differ from this it will be indicated in the specific PROTOCOL.

If it is likely that patient will not be transported, contact base prior to IV attempts.

Cross Reference

Procedures:

Intraosseous (IO) Access

Protocols:

Abdominal Pain

Allergic Reactions

Altered Mental Status/Altered Level of Consciousness (ALOC)

Altitude Illness

Bites and Stings

Burns

Cardiac Arrest /Dysrhythmias

Chest Pain – Cardiac

Childbirth

Electrical and Lightning Injuries

Eye Trauma

Frostbite

Heat Illness

Hypothermia

Ingestion/Poisoning

Major Trauma – Adult

Minor or Isolated Extremity Trauma

Near Drowning

Pediatric – Cardiac Arrest/Dysrhythmias

Pediatric – Medical Illness/Fever

Pediatric – Major Trauma

Pediatric – Newborn Resuscitation

Respiratory Distress

Seizures

Shock Without Trauma

Trauma Arrest (Adult and Pediatric)

Vaginal Bleeding

King Tube

Scope of Practice	EMT (per Local Medical Advisor approved extended scope of practice), Paramedic, and Paramedic.
Indications	<p>ALL must be present:</p> <p>Unable to place endotracheal tube.</p> <p>GCS \leq 6</p> <p>Apneic or agonal respirations \leq 6 per minute.</p>
Contraindications	<p>Do not use if ANY are present:</p> <p>Known esophageal pathology (e.g. cancer).</p> <p>Suspected hydrocarbon or caustic ingestion.</p> <p>Suspected narcotic overdose prior to administration of Naloxone; King Tube may be attempted in suspected narcotics overdose if unresponsive to Naloxone.</p> <p>Upper airway obstruction.</p>
Equipment	<p>King LT(S)-D Tube (size, 3, 4 or 5),</p> <p>King LTD Tube (size 2 or 2.5)</p> <p>Appropriately sized syringe to inflate balloon</p> <p>Suction.</p>
Procedure	<ol style="list-style-type: none"> Maintain C-spine precautions if indicated. Have suction equipment available and ready. Pre-oxygenate with BVM and oxygen at 15 L/min for minimum one minute prior to King Tube placement. Choose appropriate-sized tube based on patient height: <ul style="list-style-type: none"> 35 – 45in, Size 2 LTD 41 – 51 in. Size 2.5 LTD 4–5 ft: Size 3 LT(S)-D. 5-6 ft: Size 4 LT(S)-D. > 6 ft: Size 5 LT(S)-D. Check integrity of balloon by fully inflating it briefly. King Tube placement: <ul style="list-style-type: none"> Lubricate tube with KY jelly or water. If present, remove dentures, broken teeth or OPA. Lift tongue and lower jaw with non-dominant hand (grip tongue with gauze). Hold King Tube in dominant hand so that distal tip curves up. With the King Tube rotated laterally 45-90° such that the blue orientation line is touching the right corner of the mouth, introduce tip into mouth and advance behind the base of the tongue. As the King Tube tip passes over and behind the tongue, rotate the tube back to midline (blue orientation line faces chin). Advance King Tube until base of connector aligns with teeth or gums. King Tube should be placed within 30 seconds. If unable to properly place tube within 30 seconds, stop, insert OPA/NPA, pre-oxygenate for one minute, and reattempt tube placement. <p>Note: If during placement of king tube, patient begins gagging, and/or vomiting remove king tube, suction as needed, and reassess mental status prior to further attempts.</p> <ol style="list-style-type: none"> Fully inflate balloon using the maximal volume of the syringe included in the kit. King Tube may retract ½ to 1 cm during this process or tube may be manually retracted approximately 1 cm to ensure proper “seat”. Ventilate patient with bag-valve and 15L/min oxygen.

King Tube

9. Verify King Tube placement:

Look for chest rise.

Listen with stethoscope for absence of epigastric air entry while bagging.

Listen with stethoscope for breath sounds in both axillae while bagging.

If air is leaking around balloon and out of patient's mouth, add small quantities of air to the balloon (5-10ml at a time) to ensure oropharyngeal seal.

If unable to ventilate with King Tube, remove tube, insert OPA/NPA and ventilate with BVM.

If still unable to ventilate, consider TTJI per PROCEDURE: *Transtacheal Jet Insufflation*.

10. Secure King Tube as soon as possible.

11. Reassess adequate tube placement every time patient is moved, per **Step 9**.

Medications:

With base consultation, sedation (Midazolam) and analgesic (Fentanyl, Morphine, Hydromorphone) administration may be indicated for hemodynamically stable patients who become agitated or combative post King Tube placement.

Notes Do not delay BLS airway, ventilations, CPR, or AED in order to place King Tube.

The gastric access lumen allows the insertion of up to an 18 Fr diameter OG tube into the esophagus and stomach.

If unable to fully insert the King Tube despite changing the angle of insertion, remove the tube, coil it tightly to increase its curvature, and then reinsert it quickly before it fully uncoils.

If narcotic overdose is suspected as the cause of ALOC, give Naloxone (Narcan) per PROTOCOL: *Altered Mental Status/Altered Level of Consciousness (ALOC)* prior to inserting the King Tube. If no effect, insert tube as indicated.

Cross Reference

Procedures:

Endotracheal Intubation
Transtacheal Jet Insufflation

Protocols:

Allergic Reactions
Altered Mental Status/Altered Level of Consciousness (ALOC)
Altitude Illness
Bites and Stings
Burns
Cardiac Arrest/Dysrhythmias
Electrical and Lightning Injuries
Heat Illness
Hypothermia
Ingestion/Poisoning
Major Trauma – Adult
Near Drowning
Pediatric – Cardiac Arrest/Dysrhythmias
Pediatric – Major Trauma
Respiratory Distress
Seizures
Shock Without Trauma
Trauma Arrest (Adult and Pediatric)

Drugs:

Naloxone (Narcan)

Mucosal Atomizer Device (MAD)

Scope of Practice	Parkmedic and Paramedic.
Indications	Administration of approved medications intranasally.
Contraindications	None, although administration may be less effective with nasal obstruction.
Side Effects	Possible choking.
Equipment	Mucosal Atomizer Device; 3ml syringe, medication.
Procedure	Fill syringe with desired medication. Attach Mucosal Atomizer Device to tip of syringe. Insert Mucosal Atomizer Device into one nostril and depress syringe with sufficient force to atomize medication. The Mucosal Atomizer Device may be used in all body positions. If giving multiple doses, repeat the dose in the other nostril unless obviously obstructed.

Cross Reference

Protocols:

Abdominal Pain
Altered Mental Status/Altered Level of Consciousness (ALOC)
Bites and Stings
Burns
Chest Pain (Cardiac)
Electrical and Lightning Injuries
Eye Trauma
Frostbite
Hypothermia
Ingestion/Poisoning
Major Trauma
Minor and Isolated Extremity Trauma
Pediatric – Major Trauma
SCUBA/Dive Injury
Seizures
Vaginal Bleeding

Procedures:

Electronic Control Device
Transcutaneous Pacing

Drugs:

Fentanyl
Midazolam (Versed)
Naloxone (Narcan)

Multi-Casualty Reporting Format

I. INDICATION:

Incident where the **number of patients cannot be fully managed** by the on-scene personnel.

II. INITIAL MULTI-CASUALTY CALL IN:

Done by the first EMS provider on the scene (or relayed by dispatch).

Includes the following items **only**:

1. Mobile Unit/ EMT/ Parkmedic/ Paramedic/ First Responder Identification
2. Location/ Environment/ Elevation
3. Nature of Incident
4. Estimate of Casualties (Color Code/Triage designation if known)
5. Request additional help as needed.

III. MULTI-CASUALTY PATIENT REPORT:

To be called in to base or designated disaster control facility, after patients ready for transport. Information to be utilized to determine patient destination only. **Do not include specifics of physical exam nor requests for additional therapy unless transport will be delayed.**

1. Mobile Unit/ EMT/ Parkmedic/ Paramedic/ First Responder Identification
2. Triage tag number
3. Patient Profile (Age, Sex ONLY)
4. Color Code/Triage designation
5. Primary Injury
6. Destination unless redirected by Base Hospital
7. Transporting Unit
8. ETA/ Departure Time

IV. MULTI-CASUALTY PATIENT REPORT (LARGE DISASTER):

Shortened report given during large disaster (with Base Hospital permission).

1. Mobile Unit/ EMT/ Parkmedic/ Paramedic/ First Responder Identification
2. Triage tag number
3. Color Code/Triage designation
4. Destination
5. Transporting Unit

V. DEFINITIONS:

MCI – any incident with 5 or more patients or when the number and acuity of patients overwhelms the rescuer's ability to provide care in the usual manner.

ICS – Incident Command System

Triage –

1. The separation of large numbers of patients into smaller groups for the purpose of organization.
2. The prioritization of care based either on acuity or need to provide the most benefit for the greatest number of patients.

START Triage – a specific triage system (Simple Triage and Rapid Treatment) designed for very large scale disasters. Patients are each given a triage tag (see below) and a designation to a color group (green, yellow,

Multi-Casualty Reporting Format

red, or black) representing acuity on the basis of a 30 second or less assessment of airway, respiratory rate, capillary refill/radial pulse and mental status only. See diagram.

Jump START – A complementary triage system designed to be used with children (defined as shorter than the Broselow tape, generally about age 8). See diagram.

Triage tag – cards designed to be used with the START/Jump START system, but may be used with any triage system. One tag is placed on each patient. Each tag has a number by which patients may be identified and removable colored strips corresponding to the colors below.

Red/Immediate – designation for patients that are critically ill but potentially salvageable are given top priority for treatment and transportation.

- When using the START system this includes patients requiring airway maneuvers but who are breathing spontaneously, respiratory rate greater than 30, altered mental status, and capillary refill longer than 2 seconds or no radial pulse.
- When not using START/Jump START system this category would include patients with respiratory distress, shock, altered mental status, multi-system trauma, severe chest or abdominal pain or tenderness, suspected spinal cord injury, hypothermia, fractures with vascular compromise and significant burns.

Yellow/Delayed – designation for delayed care. Indicates patient with significant injury that will require further care and transportation to the hospital but is unlikely to result in immediate loss of life or limb without immediate treatment.

- When using the START/Jump START system this would include any patient who does not meet the criteria for either the green, red, or black categories.
- When not using the START/Jump START system, this category would include patients not meeting criteria for the Red group with open fractures, isolated femur fractures or dislocations with normal circulation, mild chest or abdominal pain or tenderness with normal vital signs, possible neck or back injuries without neurologic deficit, and history of loss of consciousness but normal mental status.

Green/Minor – designation for ambulatory patients with minor complaints such as simple closed fractures and lacerations and abrasions with bleeding controlled.

Black/Deceased – designation for patients who are dead or determined to have no reasonable chance for survival despite intervention.

Acuity – severity of illness or injury.

Futility – when a patient's condition is so critical that their chance of survival despite maximum intervention is remote.

MCI call-in format: Call in procedure unique to MCIs. See call-in procedure.

Procedure:

1. “Size up.” The first rescuer on scene shall make a rapid assessment of the number and acuity of patients, scene safety and a “reasonable overestimation” of the number of resources needed. This information shall be conveyed immediately to dispatch.
2. The first rescuer shall simultaneously make a personal determination of whether they are “overwhelmed” by the number and acuity of patients, taking into account the E.T.A. of backup.
3. If overwhelmed, the rescuer shall either take a purely command role or shall begin triage based on START/Jump START criteria, stopping only to make simple life-saving interventions such as opening an

Multi-Casualty Reporting Format

airway or controlling bleeding. Bystanders and walking wounded should be utilized to help when possible or segregated to a specific area.

4. If not overwhelmed the rescuer shall address each patient individually. Triage (including the assignment of colors) shall be performed on the basis of a routine primary and secondary survey and consideration of specific injuries and vital signs. Treatment shall proceed according to standard treatment protocols.
5. Patients shall be separated into distinct treatment areas according to color designation when practical based on number of patients/rescuers and geography.
6. Triage tags and the MCI call-in format will be used whenever there are more than five patients.
7. As additional rescuers arrive on scene a clear determination of an Incident Commander shall be made based on rank, experience, and/or medical training.
8. The Incident Commander, using the incident command system, shall either assume responsibility for, or delegate someone to be responsible for, the following functions as needed depending on the size and complexity of the incident:
 - Triage team leader
 - Transportation Coordinator
 - Supply Coordinator
 - Communications Officer
 - Treatment team leaders (green, yellow and red)
 - Morgue Coordinator
 - Public Relations Officer
 - Extrication Officer
 - Staging Area Coordinator
 - Food Supplier
 - Law enforcement/Traffic control
 - Fire suppression Coordinator
 - Investigation Coordinator
 - Liaison Officer (outside agencies)
9. Base contact should be made as soon as possible and definitely before patients are transported off scene to help distribute patients to the available hospitals to avoid relocating the disaster.
10. Using the Jump START algorithm

Step 1 – All children who are able to walk are directed to the area designated for minor injuries, where they will undergo secondary (more involved) triage. At a minimum, secondary triage should consist of the respirations, pulse, mental status, (RPM) components of the Jump START algorithm. Infants who are developmentally unable to walk should be screened at the initial site (or at the secondary triage site for green patients if carried there by others), using the Jump START algorithm. If they satisfy all of the physiologic “delayed” criteria (i.e., fulfill no “immediate” criteria) and appear to have no significant external injury, infants may be triaged to the minor category.

NOTE: Children with special health care needs are often chronically unable to ambulate. These children can be triaged similarly to infants who are developmentally unable to walk. Respiratory and circulatory parameters remain unchanged, although those with chronic respiratory problems may routinely have elevated respiratory rates. Neurological status may be difficult to judge due to lack of knowledge of a given patient’s baseline function. A caregiver with knowledge of the children involved would be of invaluable assistance in this case, usually in the secondary triage stage. Be on the lookout for information about special needs children; there is a trend favoring brief medical data cards to be stored in the driver’s area of buses and other vehicles routinely transporting children with special health care needs.

Multi-Casualty Reporting Format

Step 2A – Nonambulatory pediatric patients are initially assessed for presence/absence of spontaneous breathing. Any patient with spontaneous respirations is then assessed for respiratory rate (see **Step 3**). Any patient with absolute apnea or intermittent apnea (periods of more than 10 secs) must have their airway opened by conventional positional techniques, including (limited) BLS airway foreign body (FB) clearance *only* if there is an obvious FB. If the patient resumes spontaneous respirations, a red ribbon (immediate) is applied and the triage officer moves on.

Step 2B – If upper airway opening does not trigger spontaneous respirations, the rescuer palpates for a pulse (carotid, radial, brachial, pedal). If there is no pulse, the patient is tagged as deceased (black ribbon) and the triage officer moves on.

Step 2C – If there is a palpable pulse, the rescuer gives 5 breaths (about 15 sec.) using mouth-to-mask/barrier technique. This is the pediatric “jumpstart.” One mask (with one-way valve) should be available on every potential first – in EMS unit. (An adult mask may be used for a child if inverted.) Ventilatory face shields such as those marketed for CPR classes and public use may also be used. Cross-contamination is a minimal issue, as this is already occurring because triage personnel do not change gloves between patients. Also, children are somewhat less likely to have dangerous transmissible diseases and the number of children satisfying the criteria for a ventilatory trial will be relatively small. If the ventilatory trial fails to trigger spontaneous respirations, the child is classified as deceased. If spontaneous respirations resume, the patient is tagged as immediate and the triage officer moves on without providing further ventilations. The child may or may not still be breathing on arrival of other non-triage personnel. Appropriate intervention can then be determined based upon the resources available at the designated treatment site.

Step 3 – All patients at this point have spontaneous respirations. If the respiratory rate is roughly 15 – 45 breaths/min proceed to **Step 4** (assess perfusion).

If the respiratory rate is less than 15 (slower than one breath every 4 seconds) or faster than 45 or very irregular, the patient is classified as immediate (red ribbon) and the triage officer moves on.

Step 4 – All patients at this point have been judged to have “adequate” respirations. Assess perfusion by palpating pulses on an (apparently) uninjured limb. This has been substituted for capillary refill (CR) because of the variation in CR with body and environmental temperature and because it is a tactile technique more adaptable to poor environmental conditions.

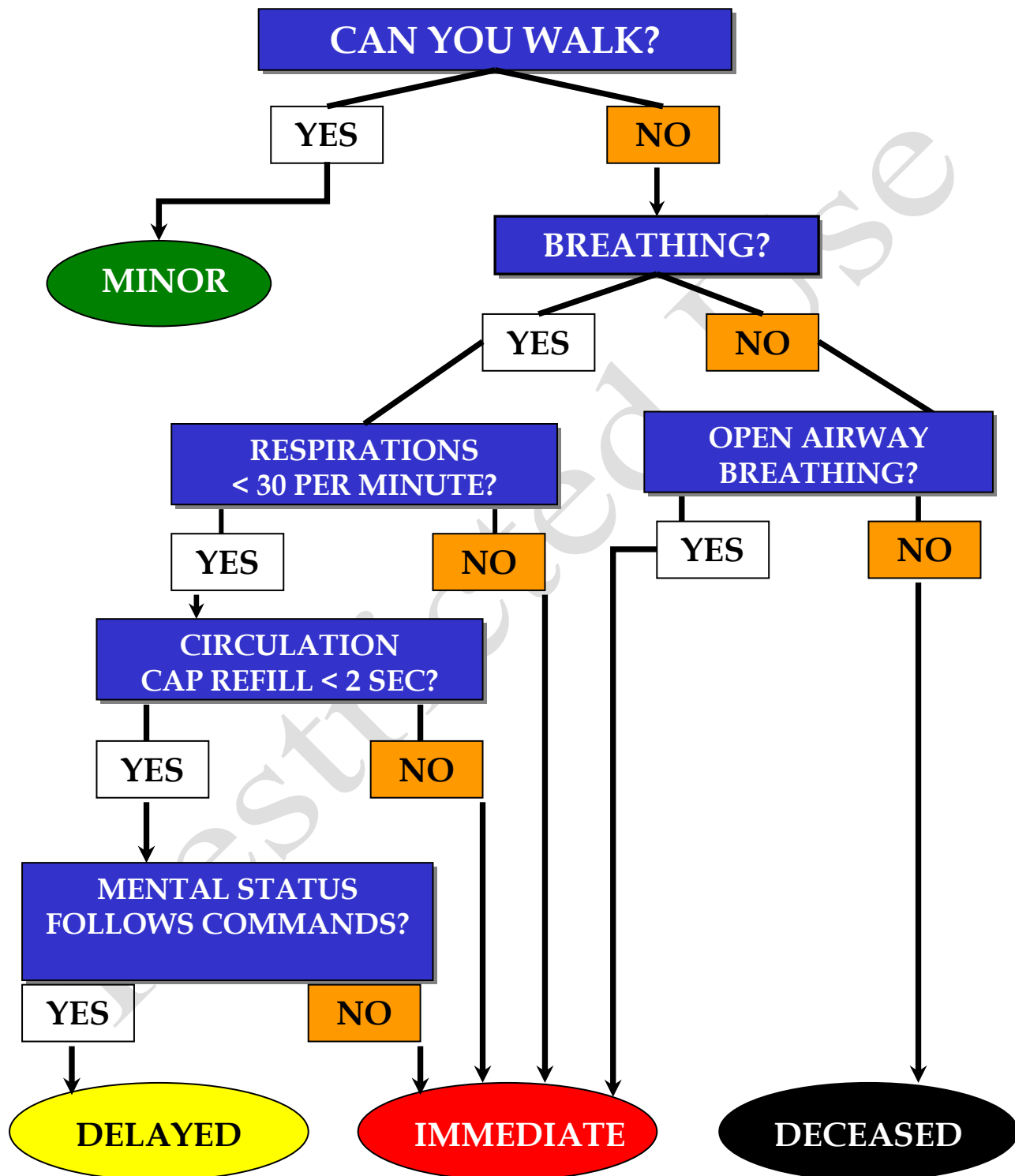
If there are palpable pulses, the rescuer assesses mental status (**Step 5**). If there are no pulses, the patient is categorized as an immediate patient and the triage officer moves on.

Step 5 – All patients at this point have “adequate” ABC’s. The rescuer now performs a rapid “AVPU” assessment, keeping in mind the apparent developmental stage of the child. If the patient is alert, responds to voice, or responds appropriately to pain (localized stimulus and withdraws or pushes it away), the patient is triaged in the delayed category (yellow ribbon).

If the child does not respond to voice and responds inappropriately to pain (only makes a noise or moves in a nonlocalizing fashion), has decorticate or decerebrate posturing, or is truly unresponsive, a red ribbon (immediate) is applied and the triage officer moves on.

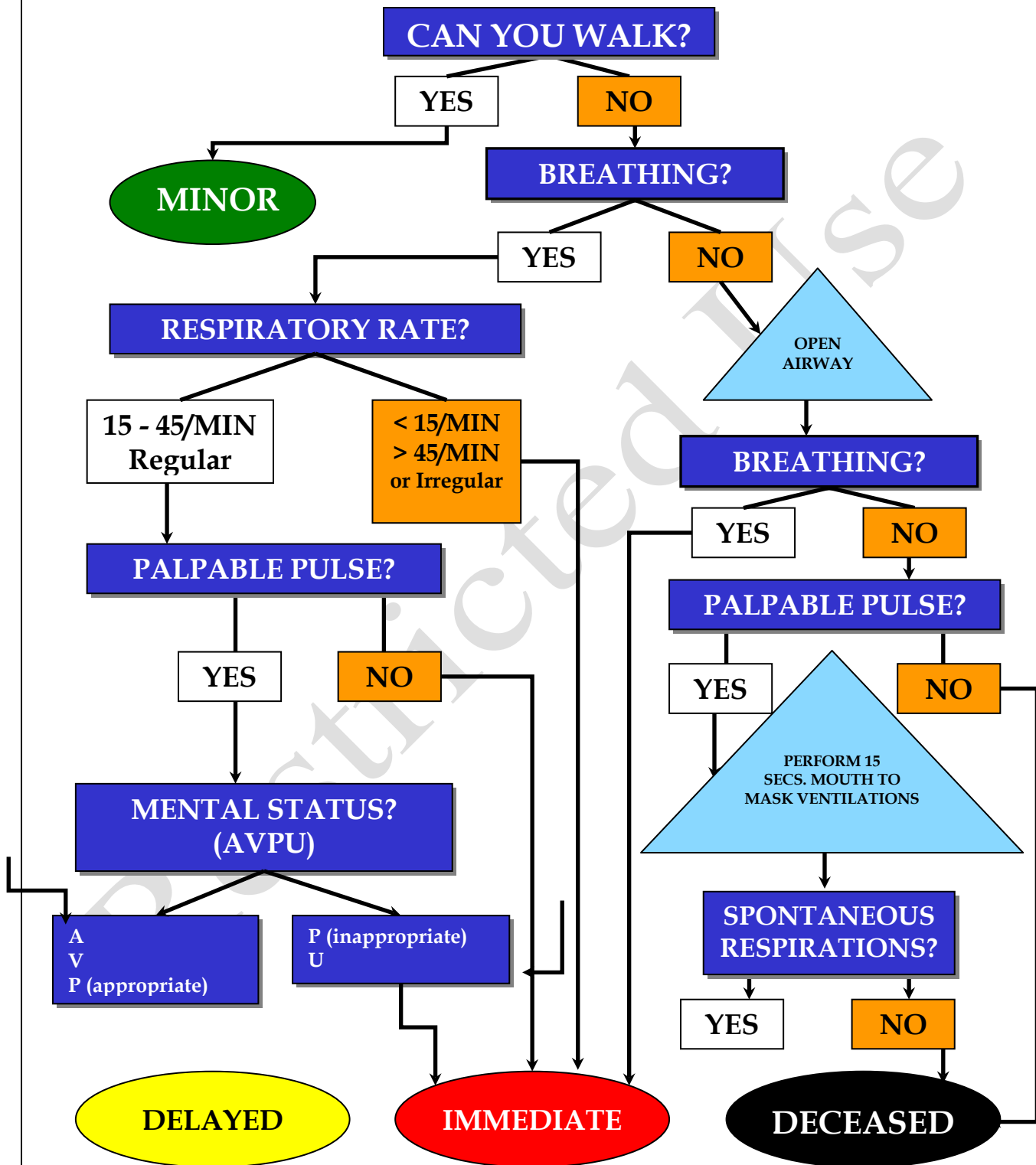
Multi-Casualty Reporting Format

Simple Triage And Rapid Treatment



Multi-Casualty Reporting Format

Jump START Field Pediatric Multicasualty Triage System



A=Alert
V=Responds to voice
P=Responds to pain (appropriate or inappropriate)
U=Unresponsive

NAAK/MARK I

Scope of Practice	EMT, Paramedic, and Paramedic.
Indications	<p>Patient or provider who is exposed to <u>and</u> symptomatic from nerve agent or organophosphate with multiple symptoms of the toxidrome: AB-SLUDGEM (Altered mental status; Bronchorrhea, Breathing difficulty or Bradycardia; Salivation, Sweating or Seizures; Lacrimation; Urination; Defecation or Diarrhea; GI upset (abdominal cramps); Emesis; Miosis/Muscle twitching).</p> <p>Multiple patients with multiple symptoms makes the diagnosis more likely.</p>
Contraindications	<p>Use of NAAK/Mark I kit in patients who in fact do not have nerve agent/organophosphate exposure.</p> <p>A single symptom of AB-SLUDGEM will almost certainly not be due to a poisoning.</p> <p>As prophylaxis against suspected nerve agents/organophosphate exposure (The kit will <u>not</u> protect from an anticipated exposure).</p>
Equipment	<p>NAAK/Mark I kit: Atropine 2mg (one dose/auto-injector).</p> <p>2 PAM (Pralidoxime Chloride), 600mg (one dose/auto-injector).</p>
Complications	<p>Atropine: tachycardia, headache, ALOC, agitation, hypertension, fever, blurred vision.</p> <p>2 PAM: dizziness, weakness, tachycardia, headache, hypertension, nausea, blurred vision.</p>
Procedure	<p>Referencing attached diagram, remove NAAK/Mark I from its storage location. With the NON-DOMINANT HAND, hold the auto-injectors by the plastic clip so the large auto-injector is on top and the kit is positioned in front at eye level.</p> <p>With the other hand, check the injection site (buttocks or thigh) for buttons or other objects that might interfere with injections.</p> <p>Grasp the Atropine auto-injector (green-tipped, marked with "1") with the thumb and first two fingers of the dominant hand then pull the auto-injector away from the plastic clip in a smooth motion.</p> <p>Hold the auto-injector like a pen or pencil (between the thumb and first two fingers).</p> <p>Position the green tip of the auto-injector against the injection site (thigh or buttocks).</p> <p>Holding injector in dominant hand, apply firm, even pressure (not a jabbing motion) to the injector until it pushes the needle into the thigh or buttocks. Hold the injector in place for at least ten (10) seconds (estimated by counting "one-one-thousand, two-one-thousand" and so forth). Carefully remove the auto-injector from the injection site and place into a sharps container.</p> <p>Pull the 2-PAM auto-injector out of the plastic clip and inject using the procedure described above for Atropine.</p> <p>For moderate symptoms give two stacked doses of both components of NAAK/Mark I kit. For severe symptoms give three stacked doses of both components of NAAK/Mark I kit.</p> <p>Return to <i>PROTOCOL: Ingestion/Poisoning</i>.</p> <p>Do not administer charcoal in <i>PROTOCOL: Ingestion/Poisoning</i>.</p>
Notes	<p>Attempt base contact for all suspected nerve agent/organophosphate exposures.</p> <p>For persistent symptoms, certified providers should give Atropine (preferably IV, alternatively IM) 2mg every 5 minutes until no respiratory secretions per <i>PROTOCOL: Ingestion/Poisoning</i>.</p> <p>Attend to scene safety. Do not enter any area where nerve agent or massive quantity of organophosphate is suspected/present without proper personal protection.</p> <p>If you or your partner are exposed AND symptomatic, evacuate from the area per HAZMAT procedures.</p> <p>Remove all clothing from any symptomatic person.</p> <p>NAAK = Nerve Agent Antidote Kit</p>

NAAK/MARK I

Cross Reference

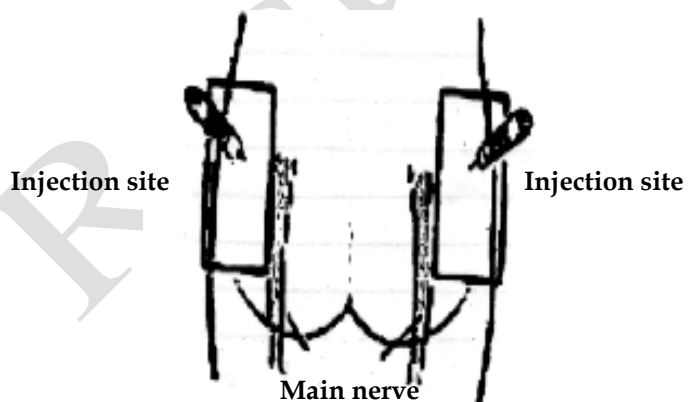
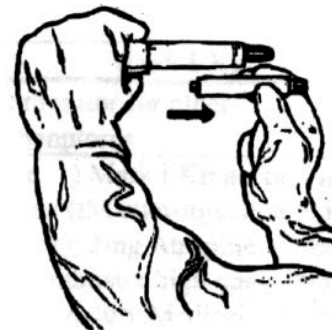
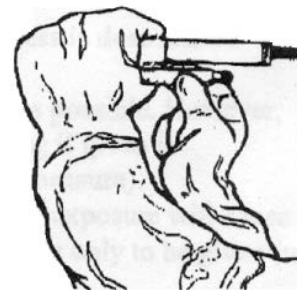
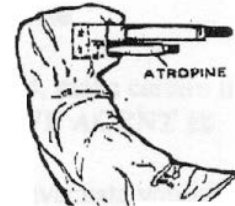
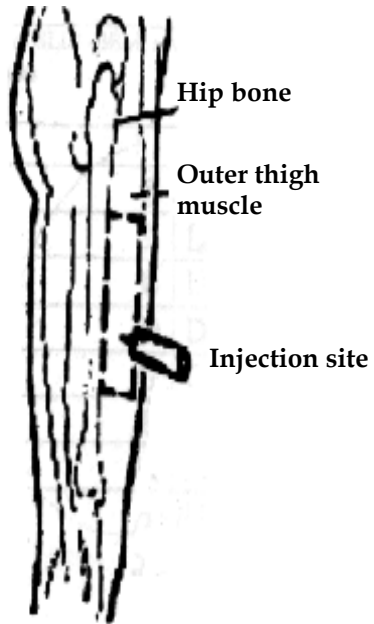
Protocols:

Ingestion/Poisoning

Drugs:

Atropine

Pralidoxime Chloride (2 PAM)



Nasogastric/Orogastric Tube Insertion

Scope of Practice	Parkmedic and Paramedic per Local Medical Advisor approved extended scope of practice.
Indications	Administration of charcoal in ingestion/poisoning patients with base hospital approval. Post intubation for stomach deflation (if King Tube in use, place NG tube through gastric port in the King Tube).
Contraindications	GCS < 14. Severe facial trauma. Anterior neck surgery, tumors, injuries, etc. Known caustic or hydrocarbon ingestion. Known esophageal pathology.
Equipment	18 French Nasogastric tube, lubricant.
Complications	Misplacement into trachea; possible misplacement into cranial vault (brain) if facial trauma.
Procedure	<p>Measure the length of tube to be inserted by placing the tip of the tube over the approximate area of the stomach and extending it to the patient's ear and from the ear to the tip of the nose. Note the marks on the tube used for measurement.</p> <p>Lubricate the tip and the first 2–3 inches of the tube with a water-soluble lubricant.</p> <p>Place the patient in a high Fowler's position and instruct the patient to lean forward and to flex his or her neck (chin to chest).</p> <p>Instruct the patient to swallow on command during the procedure. This assists passage of the tube.</p> <p>Insert the tube along the <u>floor</u> of an unobstructed nostril. The tube passes straight into the nostril perpendicular to the face. Do not pass the tube in an upward direction. If the patient has a deviated septum, choose the nostril with the most open channel.</p> <p>Gently and slowly advance the tube while having the patient continue to swallow until the tube is at a level previously noted by the marks.</p> <p>After the tube has been fully inserted to its predetermined length, verify placement in the stomach by injecting 20–30ml of air into the tube while auscultating the epigastric region for the sound of air movement (gurgling).</p> <p>Secure the tube with tape to the nose and forehead/cheek.</p> <p>Aspirate with syringe any stomach contents.</p> <p>Administer Activated Charcoal slowly, using a large syringe attached to the NG tube.</p>
Notes	Tube placement is uncomfortable for awake patients. Pass tube gently and stop if patient coughs, chokes, or cannot speak. Resume attempts once patient can speak and is not coughing or choking.

Cross Reference

Protocols:
Ingestion/Poisoning

Procedure:
Endotracheal Intubation
King Tube

Drugs:
Activated Charcoal

Needle Thoracostomy

Scope of Practice	Parkmedic and Paramedic.
Indication	<p>Traumatic cardiac arrest: perform bilateral needle thoracostomies.</p> <p>Clinical situation:</p> <ul style="list-style-type: none"> Penetrating Chest Trauma or Suspected pneumothorax from blunt trauma or Suspected spontaneous pneumothorax from COPD/Asthma <p>If one of the above clinical situations exists and patient is not in traumatic arrest, <u>all of the following must be present</u>:</p> <ul style="list-style-type: none"> Severe respiratory distress (> 8-Adults: RR < 10 or > 24; 0-8yrs: RR < 10 or > 40). Hemodynamic compromise (> 8-Adults: SBP < 80; 1-8yrs: SBP < 60, 0-1yr: SBP < 50). Decreased or absent breath sounds on the side of the chest with suspected tension. Either distended neck veins or tracheal deviation away from the side with tension
Note:	Tension pneumothorax is a rare, but life threatening condition and is often difficult to assess clinically. Early base contact is advised if tension pneumothorax is suspected and patient does not meet all of the above criteria.
Contraindications	None, if above conditions are satisfied.
Equipment	<p>ADULT:</p> <p>14 gauge IV catheter > 3.25 inches long; consider one-way flutter device or valve constructed with finger of a glove. (10-14 gauge needles are all acceptable if > 3.25 inches in length.</p> <p>PEDIATRIC: < 8 yrs.</p> <p>14 gauge IV catheter 2 inches</p>
Procedure	<p>Prep site with betadine unless patient in traumatic arrest.</p> <p>If using glove fingertip for one-way valve, place on IV catheter prior to insertion.</p> <p>Insert the catheter immediately above the third rib (second intercostal space), mid-clavicular line, on the side of the decreased breath sounds, opposite the side of tracheal deviation (i.e. if the trachea is deviated to the left, needle should be inserted in the right chest).</p> <p>Once air returns, simultaneously remove the needle and advance only the catheter to the hub.</p> <p>If catheter hub reaches chest wall without an air rush, remove needle and leave catheter in place. Needle thoracostomy may be attempted one additional time, with manual displacement of chest wall tissue (may occur with obese or extremely muscular patients). Site of second attempt should be within 1cm of original site.</p> <p>Stabilize the catheter perpendicular to the chest. Consider flutter valve constructed of glove finger.</p> <p>Reassess the patient, including distress, breath sounds and vital signs.</p>
Notes	Use caution when placing catheter thru second intercostal space to avoid nerve, vein, and artery on the underside of the second rib. Keep catheter as close to the upper edge of the third rib as possible.

Cross Reference

Protocols:

Major Trauma – Adult

Pediatric – Major Trauma

Trauma Arrest (Adult and Pediatric)

Oxygen Administration

Scope of Practice	EMT, Paramedic and Paramedic.
Indications	<p>Abnormal respiratory rate:</p> <p>Adult: RR < 10 or RR > 24.</p> <p>Pediatric: Per PROTOCOL: <i>Pediatric Parameters</i>.</p> <p>Respiratory distress, cyanosis, inhalation injuries, or aerosol exposure.</p> <p>Chest pain of possible cardiac or pulmonary cause.</p> <p>An irregular heart rhythm (pulse) or <u>abnormal</u> heart rate.</p> <p>Adults: HR < 50 or HR > 120.</p> <p>Pediatric: Per PROTOCOL: <i>Pediatric Parameters</i>.</p> <p>Shock from any cause.</p> <p>Significant multiple system trauma.</p> <p>Acute altered mental status or any acute neurologic symptom (syncope, seizure, stroke, numbness, etc.).</p> <p>Any other indication specifically covered in applicable PROTOCOL.</p>
Contraindications	None.
Equipment	Oxygen tank, nasal cannula, nonrebreather oxygen mask.
Complications	In COPD patients, may cause sleepiness (from carbon dioxide narcosis/retention) and respiratory depression. However, do not withhold oxygen from patients in respiratory distress. If a COPD patient develops respiratory depression after receiving oxygen, assist respiration with BVM.
Dosage/Route	<p>Mild distress or stable vitals: Low Flow nasal cannula (2 – 6 L/min).</p> <p>Severe distress, unstable vitals, or ALOC: High Flow nonrebreather mask (10 – 15 L/min). Start with reservoir bag inflated.</p> <p>Apnea or respiratory depression (too slow, too shallow): assist respirations: BVM with supplemental oxygen (15 liters/min). Too shallow respirations may be difficult to detect. Pay close attention to Tidal volume (depth of respiration).</p> <p>COPD patients (by history/exam or on home oxygen):</p> <p>Start oxygen at 2 liters/min by nasal cannula.</p> <p>If patient is still cyanotic or markedly dyspneic, gradually increase oxygen until cyanosis clears. If still cyanotic or markedly dyspneic on 6 liters/min by nasal cannula, change to high flow. Prepare to assist with BVM.</p>
Notes	<p>In every PROTOCOL where oxygen is indicated, use dosage/route above to determine proper oxygen administration.</p> <p>Exceptions will be noted in each individual PROTOCOL.</p> <p>In every PROTOCOL, if pulse oximetry available, titrate oxygen to keep saturation > 94%.</p> <p>Exception: If a patient requires assistance by BVM, the target saturation is 100%.</p>

Cross Reference

Protocols:

Allergic Reactions	Childbirth	Pediatric – Major Trauma
Altered Mental Status/Altered Level of Consciousness (ALOC)	Electrical and Lightning Injuries	Pediatric – Newborn Resuscitation
Altitude Illness	Heat Illness	Respiratory Distress
Bites and Stings	Ingestion/Poisoning	Scuba/Dive Injury
Burns	Major Trauma – Adult	Seizures
Cardiac Arrest/Dysrhythmias	Near Drowning	Shock Without Trauma
Chest Pain – Cardiac	Pediatric – Cardiac Arrest	Trauma Arrest (Adult and Pediatric)
	/Dysrhythmias	Vaginal Bleeding

Pelvic Stabilization

Traumatic Pelvic Orthotic Device (T-POD)

Scope of Practice	EMT, Paramedic and Paramedic.
Indications	Splinting of suspected open-book pelvic fracture in a patient with or without shock.
Contraindications	None with suspected open book fracture. Caution if vertical shear fracture or dislocation suspected.
Equipment	T-POD (Traumatic Pelvic Orthotic Device).
Procedure	<p>Maintain spinal precautions if indicated.</p> <p>Establish IV/IO access</p> <p>Continue IV fluids per PROCEDURE: <i>IV Access and IV Fluid Administration</i>.</p> <p>Log roll patient onto open T-POD, wrapping the fabric belt around the supine patient.</p> <p>Fit T-POD around the pelvis (ideally top edge of T-POD is even with the iliac crest, bottom edge should be just below the greater trochanters [hip bone]) Belt should cover the buttocks. Cut or fold excess belt in front leaving a 6-8 inch gap of exposed abdomen.</p> <p>Apply pulley system/power unit to each side of the belt and slowly draw tension until snug, providing simultaneous circumferential compression of the pelvic region.</p> <p>NOTE: in male patients make certain genitalia are elevated out of groin area.</p> <p>Care provider should be able to insert two fingers between the patient and T-POD.</p> <p>Document time device was applied.</p>
Notes	<p>If an obese patient requires a T-POD, two belts may be affixed together using one power unit as an extender and the other as the pulley.</p> <p>If T-POD remains on the patient longer than 24 hours, skin integrity should be checked and evaluated every 12 hours.</p> <p>Children < 50lbs (23 Kg) may be too small to obtain the 6 inch gap needed for closure.</p>

Pelvic Stabilization

Sheet Stabilization

Scope of Practice	EMT, Paramedic, and Paramedic
Indications	Splinting of suspected open-book pelvic fracture in a patient with or without shock.
Contraindications	None with suspected open book fracture. Caution if vertical shear fracture or dislocation suspected.
Equipment	Sheet.
Procedure	<p>Maintain spinal precautions if indicated.</p> <p>Establish IV/IO access</p> <p>Continue IV fluids per <i>PROCEDURE: IV Access and IV Fluid Administration</i>.</p> <p>Log roll patient onto prepared sheet.</p> <p>Prepare sheet: fold into long narrow rectangle wrapping the sheet around the supine patient.</p> <p>Fit sheet around the pelvis (ideally top edge of the sheet is even with the iliac crest, bottom edge should be just below the greater trochanters [hip bone]) Sheet should cover the buttocks.</p> <p>Cross tails of sheet over anterior pelvis and apply slow, steady force to the tails of the sheet by pulling them away from each other while centered over the patient's pelvis. This should provide simultaneous circumferential compression of the pelvic region. Tie sheet tails in square knot snugly.</p> <p>NOTE: in male patients make certain genitalia are elevated out of groin area.</p> <p>Document time and date sheet was applied.</p>
Notes	If sheet remains on the patient longer than 24 hours, skin integrity should be checked and evaluated every 12 hours.

Cross Reference

Procedures:

IV Access and IV Fluid Administration
Intraosseous Access

Protocols:

Major Trauma – Adult
Pediatric – Major Trauma

Rectal Drug Administration (Acetaminophen)

Scope of Practice	Parkmedic and Paramedic.
Indications	Pediatric fever: not tolerating oral. Pediatric febrile seizures.
Equipment	Syringe, 14G IV catheter with needle removed, lubricant, medication.
Procedure	Assemble equipment as above. Explain procedure to patient and guardian. Lubricate catheter. Place patient in knee–chest or lateral position with knees and hips flexed. Restrain as needed if altered mental status/uncooperative. Introduce lubricated catheter (needle removed) into rectum until syringe is against external rectal surface. Inject medication into rectum. Hold buttocks together with manual pressure for one minute. Remove and dispose of syringe and catheter.

Cross Reference

Protocols:

Pediatric – Medical Illness/Fever
Seizures

Drugs:

Acetaminophen (Tylenol)

Spine Immobilization

Scope of Practice	EMT, Paramedic and Paramedic.
Indications	<p>Any patient with a history of trauma, or found in the setting of potential trauma (including near-drowning) who meets <u>any</u> of the following criteria:</p> <p>Unstable Patient: per PROTOCOL: <i>Major Trauma – Adult; Pediatric – Major Trauma.</i></p> <p>Pain: complaining of neck or back pain (without language barrier).</p> <p>Tenderness: midline posterior neck or back tenderness.</p> <p>Altered Mental Status: <u>either</u> GCS < 15 <u>or</u> evidence of intoxication (drugs/alcohol).</p> <p>Distracting Injury: any injuries that appear to be distracting patient from identifying neck or back pain (e.g. major fractures).</p> <p>Neurologic Deficit: any numbness, tingling or weakness not obviously explained by a co-existing extremity fracture.</p> <p>Restricted or Painful Range of Motion: <u>if</u> a patient meets <u>none</u> of the previous criteria, then ask them to rotate their head slowly from side to side and to flex and extend their neck. If they are unable/unwilling to do so or describe pain or numbness/tingling in their arms or legs they should be immobilized.</p>
Equipment	Backboard, rigid cervical collar, tape, straps, head supports.
Procedure	Complete spinal immobilization should ideally include rigid cervical collar, backboard, strapping of torso/extremities, head support and taping of head to board; this permits patient to be turned on their side in case of vomiting, without movement of the spine. In the event that such equipment is not immediately available, immobilization can be maintained manually, using a blanket roll or other improvised bilateral head supports that prevent rotation and flexion. Specific attempts at improvising a collar need not be made. Before and after placing a patient in spinal precautions, check circulation, sensory and motor function.
Notes	<p>Children injured in motor vehicle collisions shall be immobilized and transported in their car seats whenever possible. Small children immobilized on a board will often require padding behind their torso to maintain neutral position because of their relatively large head.</p> <p>Booster seats, designed for children 40-80 pounds, are NOT adequate for spinal immobilization.</p> <p>When placing a patient in C-spine precautions, splint head-to-pelvis with no lateral movement of pelvis/legs; limited bending at the hips is permissible for comfort.</p> <p>When placing a patient in T-spine precautions, splint head-to-pelvis and immobilize legs at the hips; padding the pelvis for comfort is permissible.</p> <p>When placing a patient in L-spine/pelvis precautions, also splint the T-spine, pelvis, and hips; the neck and head may be free for patient comfort.</p> <p>When any doubt or communication barrier exists, err on the side of immobilization. This is especially true in the elderly, mentally disabled, and patients with whom you have a language barrier.</p>

Cross Reference

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Electrical and Lightning Injuries
Major Trauma – Adult
Near Drowning
Pediatric – Major Trauma
Scuba/Dive Injury
Seizures

Standard Reporting Format (Call-In)

Scope	EMT, Paramedic, and Paramedic.								
Indication	Base contact for non-MCI call-ins.								
Format	<p><u>Identification</u>: unit number (call sign), name, EMS certification.</p> <p><u>Condition</u>:</p> <table><tr><td><i>STAT</i>:</td><td>Unstable vitals or potential threat to life or limb.</td></tr><tr><td><i>NON-STAT</i>:</td><td>Stable vitals, no threat to life or limb.</td></tr><tr><td><i>MEDICAL</i>:</td><td>If most severe problem is medically-based.</td></tr><tr><td><i>TRAUMA</i>:</td><td>If most severe problem is trauma-based.</td></tr></table> <p><u>Reason for call</u>: e.g. medication request, AMA, ETA call-in, destination, etc</p> <p><u>Location; environment; elevation</u>.</p> <p><u>ETA; departure time; transport type; destination</u>.</p> <p><u>Patient Profile</u>: age, gender, weight.</p> <p><u>Chief Complaint</u>: include mechanism of injury.</p> <p><u>Mental Status</u>: i.e. Adult: alert and oriented. Pediatric: playful, interactive, eye contact, consolable.</p> <p><u>Glasgow Coma Score</u>.</p> <p><u>Vital Signs</u>: respiratory rate, lung sounds, respiratory effort; pulse, blood pressure, capillary refill; pupils; skin (cool/warm, pale/pink, dry/clammy).</p> <p><u>Past Medical History</u>.</p> <p><u>Allergies</u>.</p> <p><u>Medications</u>.</p> <p><u>Physical Exam</u>: pertinent positives and negatives only.</p> <p><u>Treatment in Progress</u>: include patient response to treatment.</p> <p><u>Requests for Additional Therapy or Questions</u>.</p> <p>Note: in STAT cases, EMS providers may call in an “incomplete report” if immediate feedback or guidance from base physician is desired.</p>	<i>STAT</i> :	Unstable vitals or potential threat to life or limb.	<i>NON-STAT</i> :	Stable vitals, no threat to life or limb.	<i>MEDICAL</i> :	If most severe problem is medically-based.	<i>TRAUMA</i> :	If most severe problem is trauma-based.
<i>STAT</i> :	Unstable vitals or potential threat to life or limb.								
<i>NON-STAT</i> :	Stable vitals, no threat to life or limb.								
<i>MEDICAL</i> :	If most severe problem is medically-based.								
<i>TRAUMA</i> :	If most severe problem is trauma-based.								

Transcutaneous Pacing

Note: Transcutaneous pacing is a tool for stabilizing the patient's heart rate in a patient who is symptomatic and bradycardic. This is not a substitution for defibrillation nor for the patient in asystole.

Scope of Practice: Paramedic

Indication: Symptomatic Bradycardia
Pulse < 60.
Unstable patient (e.g. hypotension, AMS, shock, chest pain, severe shortness of breath or heart block).
Patient unresponsive to Atropine.

Contraindications: Asystole
Patient with a firing pacemaker

Procedure:

1. Monitor Place limb leads
Place pacing pads anterior-posterior position. The anterior pad should be placed midway between xiphoid process and the left nipple at the apex of the heart. The posterior pad should be beneath the left scapula and lateral to the spine at heart level.
Print Rhythm Strips.
2. Pacing Set milliamps (mA) at the minimum level. Set pace rate at 70 beats per minute.
Activate pacer and adjust mA upward until electrical and mechanical capture are achieved. Typically occurs between 50 – 90 mA.
Note: for the severely unstable patient, consider starting the milliamps at a high level (90) and then titrating down.
3. Midazolam Consider for sedation of stable but uncomfortable patients. See protocol for dosing
4. Fentanyl If needed, provide analgesia *per Cardiac Arrest/Dysrhythmias - Bradycardia Protocol*.
5. Reassess Take vitals to assure pacing capture, and patient improvement.
Confirm capture with a manual peripheral pulse check which should match the pacing rate.

Cross Reference

Procedures:
Intraosseous Access
IV Access and IV Fluid
Administration

Protocols:
Cardiac Arrest/Dysrhythmias

Drugs:
Fentanyl
Midazolam

Transtracheal Jet Insufflation

Scope of Practice	Parkmedic and Paramedic.
Indications	Complete airway obstruction not relieved by manual procedures. Inability to insert ALS airway and inability to successfully ventilate using BVM ventilation.
Equipment	10ga IV catheter, 3.5mm ET tube adapter, bag valve.
Complications	Bleeding; misplacement damaging lung, vocal cords, and/or esophagus.
Procedure	<p>Locate cricothyroid membrane; it is the indentation below the thyroid cartilage (Adam's apple), between thyroid cartilage and 1st tracheal ring.</p> <p>Insert 10 gauge IV catheter through the membrane at a 45° angle, directed toward the feet. Aspirate for air return with a syringe to check placement; proper placement is usually ½" - ¾" deep to skin surface. Remove needle while advancing catheter.</p> <p>Hold manually to stabilize catheter.</p> <p>Attach 3.5mm ET tube adapter to catheter.</p> <p>Ventilate with Bag-Valve with oxygen at 15 L/min per PROCEDURE: <i>Oxygen Administration</i>. If available, use oxygen-powered breathing device.</p> <p>Check for proper placement in the following order:</p> <ul style="list-style-type: none">Assess chest rise.Verify absence of gastric sounds.Check adequacy of breath sounds.Assess for complications; reassess ventilation and placement if subcutaneous air is noted.Reassess placement every time patient is moved. Sometimes proper placement is difficult to assess. Do not just rely on the indicators listed above. Continual clinical reassessment for adequate ventilation is essential.
Notes	<p>TTJI is a temporizing measure and will not adequately ventilate a patient if used for more than 20–30 minutes. If using pulse oximetry and capnography expect low saturations and high CO₂. Watch for chest hyperinflation, stopping bagging may be necessary to allow for exhalation. Continue attempts to obtain an advanced airway and remove any obstruction.</p> <p>Due to the small caliber of this rescue airway, a prolonged exhalation phase is often required. Allow adequate time for exhalation.</p>

Cross Reference

Procedures:
Oxygen Administration

Protocols:
Allergic Reactions
Altered Mental Status/Altered Level of Consciousness (ALOC)
Bites and Stings
Burns
Cardiac Arrest / Dysrhythmias
Electrical and Lightning Injuries
Major Trauma – Adult
Near Drowning
Pediatric – Cardiac Arrest/ Dysrhythmias
Pediatric – Major Trauma
Respiratory Distress
Shock Without Trauma
Trauma Arrest (Adult and Pediatric)

When To Initiate a Patient Care Report/Run Sheet (PCR)

Scope EMT, Parkmedic, and Paramedic.

Indications A PCR should be completed for:
Anyone requesting medical assessment about a present medical condition.
Anyone who, in your judgment, requires medical attention even if medical attention is not requested e.g. altered mental status, psychiatric condition).
Anyone administered medication or treatment of any kind.
An exception to this rule is Acetaminophen (Tylenol) or Ibuprofen (Motrin, Advil) dispensation for self-administration.

Cross Reference

Drugs:
Acetaminophen (Tylenol)
Ibuprofen (Motrin, Advil)

Wound Care

Scope of Practice	EMT, Paramedic and Paramedic.
Indications	Any significant break in the skin (e.g. open blister, abrasion, burn, puncture, laceration, open fracture, avulsion, amputation).
Procedure	<p>Control bleeding in order to further assess wound.</p> <ol style="list-style-type: none">1. Utilize direct pressure. Well-aimed direct pressure to the source of most bleeding with a gloved hand and dressing will stop most bleeding. If bleeding continues, temporarily remove dressing to ensure that direct pressure is being appropriately applied to the source of bleeding. Pack wound if needed for additional bleeding control. Bandage wound to keep dressing in place.2. If bleeding continues, attempt the use of a pressure dressing to control bleeding.3. If necessary a tourniquet may be required for severe or difficult to control bleeding.4. Once bleeding control has been achieved continue with wound care as listed below.5. Frequently reassess wounds to ensure bleeding hasn't returned.
Tourniquets	<p>Tourniquets should be used if:</p> <ol style="list-style-type: none">1. There is life threatening or uncontrollable bleeding to any extremity.2. An MCI, Tactical, or Technical situation occurs where extremity bleeding is occurring and there are limited resources or ability to apply direct pressure for initial bleeding control.
Guidelines:	<p>The tourniquet should be: at least 1-1.5 inches wide, applied directly to exposed skin, unless unsafe, then place over clothing, as close to the wound as possible, not over a joint. If available, a blood pressure cuff may be used and inflated 20 mmHg above systolic blood pressure, with frequent rechecking to ensure cuff has not lost pressure. An appropriately applied tourniquet should occlude both venous and arterial blood flow and is often painful. If a distal pulse is present, the tourniquet is not tight enough.</p> <p>Note: Once placed, tourniquets should be left in place and rapid transport should be initiated/arranged. Base contact should be made early if tourniquet applied (see special considerations for prolonged care/tourniquet removal).</p>
CAT Tourniquet Application Procedure	<ol style="list-style-type: none">1. Wrap band around the extremity and pass the free (running) end through the inside slit of the buckle – or – insert the wounded extremity through the loop of the self-adhering band.2. Pass band through the outside slit of the buckle. (This utilizes the Friction Adaptor Buckle, which will lock the band in place.)3. Pull the band tight and securely fasten the band back on itself.4. Twist the windlass rod until bleeding has stopped and no distal pulse.5. Lock the rod with the clip.6. Secure the rod with the strap.7. Document time of application



Wound Care

Wound Care (Keep wound as clean as possible):

Gently remove any foreign material (except impaled objects), but do not delay transport if patient is unstable. Remove any constricting items (rings, watches, etc.)

Irrigation:

For any open wounds - Irrigate with approximately 100ml per centimeter of wound-length using NS/LR, sterile water, or potable water as available. Pressure irrigation using 18 gauge IV catheter and syringe is preferred. If bleeding is or was heavy, do not disturb clots to irrigate.

Burns < 15% TBSA can be gently rinsed. Do not use high pressure lavage.

Note: Do not use iodine, hydrogen peroxide, alcohol, or other antiseptics for irrigation.

Note: Wounds that should not be irrigated include:

Actively bleeding wounds

History of arterial bleeding (see special considerations – tourniquets)

Punctures below skin surface (inside the cavity)

Burns > 15% TBSA

Antibiotic ointment per DRUG: *Bacitracin* apply to abrasions and burns < 15% TBSA and if transport time > 1 hour.

DO NOT apply to large burns, deep wounds, puncture wounds or impaled objects.

Pressure dressings (see above): Apply for active bleeding; otherwise use loose, moist gauze dressings.

Specific wounds/situations

Amputations: gently rinse the amputated part; wrap in moist, clean cloth or gauze; place into a dry, water tight plastic bag. DO NOT IMMERSE PART DIRECTLY IN WATER OR ICE. Place bag in ice water or a cool water bath and transport with patient. Do not delay transport looking for amputated tissue. Consider helicopter transport as replantation success is highly time-dependent.

Impaled objects: stabilize in place unless they interfere with transport or ventilation. If shortening or removal is required for either reason, base contact/communication failure orders apply.

Large, deep or gaping wounds should be splinted if near joints; per PROTOCOL: *Fracture/Dislocation Management*.

Severe wounds with expected time from injury to definitive care > 3 hours (deep, crushed, exposed tendon, heavy contamination, or open fracture), administer Cefazolin (Ancef) per DRUG: *Cefazolin (Ancef)*.

Do not give Cefazolin in the following circumstances:

Burns

Shallow wounds (i.e. not through all layers of the skin).

Wounds where the expected transport to definitive care is < 1 hour

Base contact is advised for any questions/unusual circumstances

Sucking chest wounds: Place an occlusive dressing on the wound. Vent dressing or needle the chest if the signs/symptoms of a Tension Pneumothorax occur. **REFERENCE** PROCEDURE: *Needle Thoracostomy*.

Reassess distal circulation, sensory and motor function every 30 minutes during transport. Reassess bandages that may have become constricting and compromising distal CSM.

If wound to eye is suspected, **REFERENCE** PROTOCOL: *Eye Trauma*. Do not apply Bacitracin to eye.

Wound Care

SPECIAL CONSIDERATIONS

Tourniquets

Do not attempt removal/deflation of a tourniquet if the patient is in shock.

Tourniquet should not be removed by EMS, **UNLESS:**

1. Tourniquet was placed initially in MCI, technical or tactical environments where a limited assessment was performed. Once the scene is stabilized and assessment/treatment can continue, the tourniquet may be loosened and bleeding assessed and managed as above.
2. Prolonged care (more than 2 hours) is encountered. Base contact should be attempted to discuss tourniquet removal, if Base unavailable and vital signs are stable (SBP > 90), slowly deflate/release tourniquet to assess bleeding/circulation and with the goal of completely loosening the tourniquet. Do not remove tourniquet from limb, only loosen, in case reapplication is needed. When deflating/releasing a tourniquet, if life-threatening bleeding returns, immediately reapply tourniquet. If mild bleeding returns, attempt to use direct pressure and pressure dressing as described above.

Careful monitoring is necessary to ensure bleeding does not return, and swelling of limb doesn't cause compromised blood flow.

As tourniquet is being released, if no bleeding is noted, care should be taken to not create a venous tourniquet (occluding venous flow from the extremity while allowing arterial flow to resume). This may cause pressure to build up in the extremity and cause compartment syndrome or bleeding to resume.

i.e. If you can feel a distal pulse and venous return is occluded you have created a venous tourniquet.

Tourniquets left in place for more than 12 hours should be left in place until definitive care is reached.

After placing a tourniquet that successfully controls bleeding, wound irrigation can be considered, within the irrigation parameters above, if transport is prolonged.

Cross Reference

Protocols:

Bites and Stings
Burns
Electrical and Lightning Injuries
Eye Trauma

Protocols:

Fracture/Dislocation Management
Major Trauma – Adult
Minor or Isolated Extremity Trauma
Pediatric – Major Trauma

Drugs:

Bacitracin
Cefazolin (Ancef)

ABDOMINAL PAIN

Paramedic Standing Orders

1. ABCs If signs/symptoms of shock GO TO PROTOCOL: *Shock without Trauma*.
2. Assessment Vitals, PQRST, fever, N/V/D, pregnancy, tenderness.
3. Monitor Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity
4. Oxygen Per PROCEDURE: *Oxygen Administration*.
5. Transport Consider air transport for abnormal vitals, active bleeding, syncope, ALOC, absent distal pulses.
6. IV/IO's Fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
7. Ondansetron
Administration Ondansetron For nausea or vomiting or history of vomiting with narcotic.

 Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
 ODT: 4mg, repeat in 15 min x2 prn nausea.
 IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
 3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2
 prn nausea.
 ODT: ½ tab (2mg) if age 4- 14
 IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1
 prn nausea.
 0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
 IM: Contraindicated for patients < 3 months of age.
8. Base Contact

ABDOMINAL PAIN

Paramedic Base Hospital/Communication Failure Orders

1. Fentanyl Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
Subsequent doses (2 max) every 30 minutes.
i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.
- Pediatric: IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.
Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain.
Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Dilaudid).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- Morphine Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).
- Pediatric: Base Hospital Order ONLY, NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.

OR

- Dilaudid Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
IM: 1mg (1ml) every 30 min prn pain (max 2mg).
- Pediatric: Base Hospital Order ONLY, NOT in communication failure.
(> 5yrs.) IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.

ABDOMINAL PAIN

SPECIAL CONSIDERATIONS

Assessment	<p>Female: Possibility of pregnancy, last menstrual period, vaginal bleeding, history of ectopic pregnancy.</p> <p>Male or Female: PQRST, trauma, previous abdominal surgery, previous episodes of similar pain, syncopal episode, vomiting (color, amount, frequency), pain or blood with urination, diarrhea, fever, palpable pulsatile abdominal mass with age > 40 years.</p> <p>Abdominal pain is consistent with a broad range of potential diagnoses, some with serious outcomes--see differential diagnoses below. Careful consideration of this list of possibilities, thorough reporting to medical control, and documentation of all findings is key to good care.</p>
Differential	<p>Ectopic pregnancy, abdominal aortic aneurysm, gallstones, kidney stone, appendicitis, pneumonia, diabetic ketoacidosis.</p> <p>Remember, a heart attack or pneumonia can present as upper abdominal pain.</p>
AMA/TAR	<p>No TAR without base contact.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>
Documentation	<p>Relevant assessment features, reassessment, response to therapy.</p>

Cross References

Procedures:

Intraosseous (IO) Access
IV Access and IV Fluid
Administration
Oxygen Administration

Protocols:

Shock Without Trauma

Drugs:

Fentanyl
Hydromorphone (Dilaudid)
Morphine
Ondansetron

Allergic Reactions

Paramedic Standing Orders

1. ABC's Basic or ALS Airway if indicated, (*King Tube/ETT*).
2. Assessment Airway edema, vital signs, mental status, wheezes/stridor, rash, history.
3. Monitor Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity.
4. Classify **Mild** reaction: local swelling and/or hives. **Skip to Step 11 (Base Contact).**
Severe reaction (ANY of the following): hypotension, wheezing, respiratory distress, oral swelling, ALOC, chest tightness. **Follow Steps 5 to 11.**
Note: If isolated stridor in a pediatric patient, suspect croup, GO TO PROTOCOL: *Respiratory Distress*.
5. Epinephrine

> 10 yrs:	0.3ml (0.3mg) of 1:1,000 concentration IM.
4–10 yrs:	0.2ml (0.2mg) of 1:1,000 concentration IM.
< 4 yrs:	0.1ml (0.1mg) of 1:1,000 concentration IM.

 Repeat once in 10 minutes if not significantly improved.
6. Oxygen High-flow per PROCEDURE: *Oxygen Administration*.
7. Remove Allergen If possible (e.g., bee stinger) per PROTOCOL: *Bites and Stings*.
8. Transport If transport immediately available perform all other therapies en route. Consider air transport.
9. Albuterol

If wheezing or stridor:	
Nebulizer:	All Ages: 2.5mg in 3ml of NS/LR premixed solution. Use with standard acorn-type jet nebulizer. For all patients, start oxygen at 10 l/min. If not improved by 3–5 minutes, increase oxygen to 15 l/min. For patients who fail to respond to a single nebulized dose, repeat above dosing up to six times without allowing “acorn” to run dry
MDI:	Adult: 4 puffs on consecutive breaths during mid inspiration, then 1 puff every minute for up to 10 minutes (14 puffs total) if symptoms persist. May repeat 10-puff dose sequence starting 10 minutes after last puff if symptoms persist.
	1-14 yrs: 2 puffs per minute up to six puffs then base contact. In communications failure repeat 10-puff dose sequence starting 10 minutes after last puff if symptoms persist.
	< 1 yr: 1 puff per minute up to six puffs then base contact.

 Use spacer (Aerochamber) if available to increase inhaled dose.
10. IV/IO Fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*. Do not delay other therapies if difficult IV/IO access.

Allergic Reactions

- | | | |
|-----------------------------------|---------------------------------|---|
| 11. Diphenhydramine
(Benadryl) | Adults: | 50mg IV/IO every 6 hours, may utilize IM if no IV/IO access. |
| | ≤ 10 yrs: | 1mg/kg IV/IO (up to 50mg) every 6 hours, may utilize IM if no IV/IO access. |
| 12. Base Contact | For further orders and AMA/TAR. | |

Allergic Reactions

Paramedic Base Hospital /Communication Failure Orders

Severe reactions only:

1. Epinephrine
Repeat IM dose every 10 minutes until severe symptoms resolve. Increase frequency to every 5 minutes if symptoms worsening.
Consider IV/IO epinephrine if worsening despite above measures.
All ages: 1ml (0.1mg) of 1:10,000 IV/IO over 20–30 seconds.
Repeat every 1–2 minutes if symptoms worsening or no improvement.
Flush with 20ml NS/LR after each dose.
2. Dopamine
If SBP less than 100 after 20ml/kg or 2L IV/IO fluid bolus.

Adults: 10 mcg/kg/min, IV/IO drip. Titrate drip to a SBP of 100.
Children: 10mcg/kg/min IV/IO drip. Titrate drip to age appropriate SBP.
3. Transtracheal Jet Insufflation
Consider TTJI if complete airway obstruction not relieved by manual procedures, inability to insert ALS airway and inability to successfully ventilate using BVM ventilation.
TTJI should be attempted per PROCEDURE: *Transtracheal Jet Insufflation*.
Caution: TTJI may cause significant bleeding, worsening an already difficult airway.
4. Glucagon
Adults: 1mg IV for patients on beta blockers with refractory symptoms not responding to Epinephrine.
May repeat every 15 minutes x2 if symptoms not resolving.
5. Dexamethasone (Decadron)
> 12-Adults: 8mg PO/IV/IO/IM, then 4mg every 6 hours.
< 12 yrs: 4mg PO/IV/IO/IM, then 2mg every 6 hours.

Mild reactions only:

- Diphenhydramine (Benadryl)
- | | |
|-----------|-------------|
| > 12 yrs: | 50mg PO/IM. |
| 6-12 yrs: | 25mg PO/IM. |

Allergic Reactions

SPECIAL CONSIDERATIONS

Cardiac Monitor	Bring Cardiac Monitor/AED to patient's side.
Assessment	<p>Respiratory status: airway swelling? Wheezes? Stridor?</p> <p>Rash?</p> <p>Known or suspected exposure to allergen. If unclear contact base.</p> <p>Medication use prior to arrival: epinephrine auto-injector, Benadryl?</p> <p>PMH: allergic reactions, heart disease, stroke, hypertension?</p> <p>Medications: beta-blockers (atenolol, propranolol) may block effects of epinephrine.</p> <p>Vital signs including mental status.</p>
Medication Issues	<p>IV Epinephrine: When giving IV Epinephrine for allergic reactions, always use the 1:10,000 concentration (1mg in 10ml), and push dose slowly (over 20–30 seconds) to minimize risks.</p> <p>Use epinephrine with caution in the following patients:</p> <ol style="list-style-type: none"> 1. Over 70 years of age. 2. History of heart disease, stroke or hypertension. 3. Taking a beta-blocker, e.g., atenolol, propranolol. <p>In these patients contact base when possible, but do not withhold if patient in severe distress and base contact cannot be made easily.</p>
Transport Priorities	<p>Any patient with signs or symptoms of a severe reaction requires immediate evacuation.</p> <p>Consider air transport and/or rendezvous with higher level of care unless symptoms responding well to therapy.</p>
AMA/TAR	<p>Patients may be released at scene ("TAR") without base contact only if <u>all</u> of the following conditions are met and <u>documented</u>:</p> <ul style="list-style-type: none"> Mild local reaction not involving head/neck. (No systemic signs or symptoms including hives.) Patient observed at least 30 minutes since onset or exposure. No history of severe allergic reactions. No medications administered. Normal vital signs. <p>Parks without base hospitals (online medical control) should follow LEMA approved policy regarding AMA/TAR.</p>
Documentation	<p>History of allergies, possession of epinephrine auto-injector, rash.</p> <p>Patient should not drive for 1 hour after taking epinephrine or 6 hours after taking Diphenhydramine (Benadryl).</p>

Cross Reference

Procedures:	Protocols:	Drugs:
Automated External Defibrillator (AED)	Bites and Stings	Albuterol
Base Hospital Contact Criteria		Dexamethasone
CPAP		Diphenhydramine
Endotracheal Intubation		Dopamine
Epinephrine Auto-Injector		Epinephrine
Intraosseous Access		Glucagon
IV Access and IV Fluid Administration		
King Tube		
Oxygen Administration		
Transtracheal Jet Insufflation		

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Including suspected stroke and syncope

Paramedic Standing Orders

1. ABCs Secure airway. Assist respirations as needed, utilizing OPA/NPA or ALS airway (*King Tube/ETT*) if indicated.
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
Spinal immobilization in setting of trauma per PROCEDURE: *Spine Immobilization*.
If narcotic overdose suspected, give Naloxone (Narcan) per **Step 10**. If unlikely, continue with protocol.
 2. Restraints If needed to protect patient or caregivers from injury.
 3. Oxygen High-flow per PROCEDURE: *Oxygen Administration*.
 4. Assessment Setting, history, vitals, temperature, neurological deficits, trauma, seizure, PMH (cardiac, hypertension, diabetes)
Consider differential: "AEIOUTIPS," (See Special Considerations).
If appropriate, **GO TO** PROTOCOL: *Altitude Illness; Cardiac Arrest/Dysrhythmia; Electrical and Lightning Injuries; Heat Illness; Hypothermia; Major Trauma; Near Drowning; Seizures; Shock Without Trauma*
Consider nerve agent/organophosphate exposure if multiple victims and/or "AB-SLUDGEM," (See Special Considerations). If appropriate, **GO TO** PROTOCOL: *Ingestion/Poisoning*.
Check for signs/symptoms of stroke (See Special Considerations - *Cincinnati Prehospital Stroke Scale*).
 5. IV/IO If unable to establish IV/IO after 2 attempts, proceed to **Steps 6-11** before reattempting IV/IO
Fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
6. Check Glucose Per PROCEDURE: *Blood Glucose Determination*.
 7. Dextrose If glucose < 80, or ALOC and unable to determine glucose.

≥ 2 yrs: 1 amp **D50** IV/IO (1 amp = 25g in 50ml).

< 2 yrs: 2 ml/kg **D25** IV/IO (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).

May repeat in 5 minutes if ALOC or seizure persists and glucose still < 80.
May substitute dose on NPS Pediatric Resuscitation Tape/Broselow Tape for pediatric dose above.
 8. Glucose Paste If no IV, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 9**.

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

9. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
 *May repeat once in 15 minutes if ALOC or seizure persists, and glucose remains < 80.
10. Naloxone If still ALOC and narcotic overdose suspected (IN route preferred):
 (Narcan) > 10-Adults: 2mg IN/IV/IO/IM every 2 minutes prn ALOC (max 10mg).
 < 10 yrs: 0.1mg/kg up to 2mg IN/IV/IO/IM every 2 minutes prn ALOC.
11. Transport Consider air transport if decreasing mental status, GCS < 12, or airway not secure.
12. Base Contact

Paramedic Base Hospital/Communication Failure Orders

1. Midazolam (Versed) For combative patients > 10 yrs old (must be a danger to self or others).
 IV/IO/IN: 2mg every 3 minutes, titrated up to 10mg.
 IM: 10mg every 15 minutes, up to 3 doses.
 Hold if SBP < 100
 Note: Aggressive Versed dosing may be required for combative patients. If “wild”
 patient and unable/unsafe to get BP. Base Contact strongly advised.
 For combative patients ≤ 10 yrs old, **Base Hospital Orders Only.**
- Note: The fastest way to control a combative patient is ECD application. If indicated
 and used, REFERENCE *Electronic Control Device Procedure*.

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

SPECIAL CONSIDERATIONS

Cardiac Monitor

Bring Cardiac Monitor/AED to patient's side if available.

Assessment

“**AEIOUTIPS**” Mnemonic for causes of ALOC.

- A:** Alcohol, Altitude, Age.
- E:** Epilepsy, Electrolytes, Electrocution, Eclampsia, Encephalopathy.
- I:** Insulin (hypo/hyperglycemia).
- O:** Overdose, Oxygen (hypoxemia).
- U:** Uremia (kidney failure).
- T:** Trauma, Tumor, Temperature.
- I:** Infection, Infarction (stroke, MI).
- P:** Psychosis, Poisons.
- S:** Stroke, Shock.

“**AB-SLUDGEM**” Mnemonic for organophosphate poisoning.

- A:** Altered mental status.
- B:** Bronchorrhea, Breathing difficulty or wheezing, Bradycardia.
- S:** Salivation, Sweating, Seizures.
- L:** Lacrimation (tearing).
- U:** Urination.
- D:** Defecation or Diarrhea.
- G:** GI upset (abdominal cramps).
- E:** Emesis (vomiting).
- M:** Miosis/Muscle activity (twitching).

The **Cincinnati Prehospital Stroke Scale** is a clinical scoring system used to assist in identifying the possible presence of an (ischemic) stroke in the prehospital setting with the intention of potentially expediting the delivery of thrombolytic agents upon hospital arrival. It tests three abnormal findings which may indicate that the patient is having a stroke. If *ANY* one of the three challenges exhibit abnormal findings the patient may be having a stroke and should be transported to a hospital as soon as possible.

1. *Facial Droop:* Have the person smile or bare his/her teeth. If one side of the face doesn't move as well as the other or seems to droop, this is abnormal.
 - **ABNORMAL:** Facial asymmetry at rest or with expression.
2. *Arm drift:* Have the person close his/her eyes and hold his or her arms straight out in front with palms up for about 10 seconds. If one arm does not or cannot move, or one arm seems to drift, this is abnormal.
 - **ABNORMAL:** One arm does not move or one arm drifts down compared with the other.
3. *Speech:* Have the person say, "You can't teach an old dog new tricks," or some other simple, familiar saying. If the person slurs the words, speaks some words incorrectly or is unable to speak it is abnormal.
 - **ABNORMAL:** Slurred or inappropriate words or inability to speak.

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Physical Exam

Mental Status via GCS:

Vitals, pupils, neurologic deficits, seizures, medications, track marks, pill bottles, alcohol, drug paraphernalia, trauma setting

Differential Diagnosis

Stroke

History: numbness/tingling/weakness to one side of body or face.
May have history of prior stroke. No trauma.

Exam: difficulty speaking or understanding, weakness to one side of body or face. May have ALOC but usually not. See Cincinnati Stroke Scale above

No specific treatment in field. **THESE PATIENTS SHOULD NOT GET ASPIRIN.** This is due to the fact that strokes can be hemorrhagic or ischemic which require a Head CT to determine. Patients whose deficit has resolved (transient ischemic attack ["TIA"]) still need hospital transport because they are at risk for stroke.

Syncope or Near Syncope

Causes include heart rhythm disturbances, seizures, stroke, dehydration, internal bleeding and pregnancy.

These patients almost always require stabilization and transfer to higher level of care with cardiac monitoring

HACE/ HAPE

Typically > 8,000 feet elevation.

May cause ALOC; **REFERENCE PROTOCOL: *Altitude Illness.***

Heat Illness/ Hypothermia

May cause ALOC. In appropriate setting check temperature and institute cooling or warming measures per **PROTOCOL: *Heat Illness or Hypothermia.***

Hypertensive Encephalopathy

This entity exists with elevated BP (usually SBP > 200 and DBP > 120), along with CNS dysfunction such as ALOC, severe headache, seizure or stroke. Patients may also have chest pain or pulmonary edema. Isolated hypertension, without symptoms, need not be treated in the field, regardless of the degree of elevation. Contact base for guidance.

Diabetic Emergencies

Hypoglycemia may cause ALOC and/or focal neurologic deficits and thereby mimic stroke or coma. Treatment is with glucose (D-50, paste) and/or glucagon.

Hyperglycemia may occasionally cause ALOC, usually secondary to dehydration and coexisting illness. Treatment is with fluids, preferably IV. Contact base for guidance

Behavioral Emergencies

Causes include drug and alcohol intoxication, psychiatric illness, developmental delay and any cause of ALOC. Any patient that may be a danger to self or others including impaired judgment must be transported. Consider legal psychiatric hold.

If due only to psychiatric illness patients are usually alert and oriented.

Speak to patients in a calm non-threatening manner

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Excited Delirium This syndrome is a potentially lethal emergency which may be seen in patients with persistently violent/bizarre/agitated behavior, restraints, and/or drug intoxication.

The pathogenesis is not well understood, but is likely multifactorial, including positional asphyxia, hyperthermia, drug toxicity, and/or catecholamine-induced arrhythmias.

Treatment should focus on reduction of stress (minimize noise/light/patient stimulation), pharmacologic therapy (midazolam/Versed) and rapid monitored transport.

If the patient has an elevated temperature or feels hot to the touch, institute cooling measures and consider administering Sodium Bicarbonate.

Dystonic Reactions Dystonic Reactions include a variety of abnormal muscle movements or spasm and are associated most commonly with anti-psychotic medications. It should be noted that these symptoms are problems of motor control and while they may give the appearance of an AMS/ALOC a person experiencing a Dystonic Reaction can comprehend instructions although they may be unable to execute them because of their motor control impairment.

See PROTOCOL: *Dystonic Reactions*.

Transport Consider air transport and/or rendezvous with higher level of care for patients with unmanageable airways, unstable vital signs, rapid progression of symptoms, or failure to respond to treatment.

Restraint Issues Use only if necessary to protect patient or personnel from injury.

Consider restraining patient in swimmers position (one arm extended laterally beside head, one arm extended on lateral side of body) for airway protection.

Reassess mental status and vital signs every 10 minutes.

Check distal neurovascular status of restrained extremities every 30 minutes.

Consider base contact whenever restraints are used for medical purposes

AMA/TAR Treat and Release ("TAR") is not acceptable for patients who have had an alteration in mental status or focal neurologic deficit, even if they have resolved.

AMA is possible for patients that currently have a normal mental status. This is most likely to occur in diabetic patients with hypoglycemia that has been treated. It should be noted that despite treatment, hypoglycemia can recur. All patients who leave the scene against medical advice should be told to avoid any situation that would be dangerous if symptoms recurred (e.g. heights, trails, swimming, or driving).

Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation All pertinent positives and negatives under assessment.

Frequent vital signs.

Neurologic exam (pupils, facial droop, weakness of arms or legs).

Blood glucose.

Reassessments of mental status/symptoms and any change.

Treatments rendered and response.

ALTERED MENTAL STATUS/ ALTERED LEVEL OF CONSCIOUSNESS (ALOC)

Cross Reference

Procedures:

Blood Glucose Determination
CPAP
Endotracheal Intubation
Intraosseous (IO) Access
IV Access and IV Fluid
Administration
King Tube
Mucosal Atomizer Device
Oxygen Administration
Spine Immobilization
Transtacheal Jet Insufflation

Protocols:

Altitude Illness
Cardiac Arrest/Dysrhythmias
Chest Pain – Cardiac
Dystonic Reactions
Electrical Injuries
Heat Illness
Hypothermia
Major Trauma
Near Drowning
Seizures
Shock Without Trauma

Drugs:

Dextrose 50% (D50)
Glucagon
Glucose Paste or Gel
Naloxone (Narcan)
Midazolam (Versed)

ALTITUDE ILLNESS

Acute Mountain Sickness (AMS)

Paramedic Standing Orders

1. ABCs
2. Assessment
Vitals signs, mental status, coordination, vomiting, respiratory status.
If patient has: ALOC, inability to walk, severe headache, or persistent vomiting, then
GO TO PROTOCOL: *Altitude Illness, HACE.*
If patient has: shortness of breath at rest, increased respiratory rate, orthopnea, cough, crackles, or cyanosis, then **GO TO PROTOCOL: *Altitude Illness, HAPE.***
3. Monitor:
Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity
4. Descent
If symptoms moderate to severe, persistent or worsening.
5. Acetaminophen (Tylenol)
If headache:
> 10-Adult: 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
0-10 yrs.: 15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
6. Base Contact
If severe symptoms, possible HAPE, possible HACE, or AMA/TAR.

Paramedic Base Hospital/Communication Failure Orders

1. Acetazolamide (Diamox)
If severe symptoms:
Adults: 250mg PO every 12 hours.
9-12 yrs: 125mg PO every 12 hours.
6-9 yrs: 2.5mg/kg or ½ of 125mg pill PO every 12 hours.
< 6 yrs: 2.5mg/kg or ¼ of 125mg pill PO every 12 hours.
-All doses may be crushed and added to liquid.
-All doses may be stopped once patient is asymptomatic

ALTITUDE ILLNESS

High Altitude Pulmonary Edema (HAPE)

Paramedic Standing Orders

1. ABCs Protect airway, assist respirations, and suction as needed. OPA/NPA or ALS airway if indicated REFERENCE PROCEDURE /*King Tube/ETT*.
2. Assessment Vital signs, LOC, respiratory distress or tachycardia at rest, lung sounds, sputum, mental status, rapid ascent to altitudes > 8,000 feet.
3. Oxygen Per PROCEDURE: *Oxygen Administration*.
4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
Note: If suspicion of possible cardiac etiology (age > 50, cardiac history) for their pulmonary edema, obtain ECG. If computer generated read states "MI", **GO TO** PROTOCOL: Chest Pain (Cardiac).
5. Rapid Descent and Transport Eliminate or minimize exertion. Assist patient with rapid descent of at least 1000 to 2000 feet. Consider air transport.
6. IV/IO Saline lock or TKO per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous access*.
7. Ondansetron
Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: ½ tab (2mg) if age 4 - 14
IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
IM: Contraindicated for patients < 3 months of age.
7. Base Contact For all patients.

ALTITUDE ILLNESS

Paramedic Base Hospital/Communication Failure Orders

1. Nifedipine
If severe respiratory symptoms and SBP > 100mmHg:
Adults: -30mg every 12 hours or 20mg every 8 hours.
 -Give initial dose 10mg at a time, chewing and swallowing capsule, repeating every 20 min up to 3 doses unless symptoms resolve with first two doses or SBP drops by 20mmHg or SBP is < 100mmHg.
 -If patient unable to chew, capsule may be punctured and contents squeezed out under tongue.

6 - 12 years: Squeeze ½ of 10mg capsule under tongue every 8 to 12 hours.
< 6 years: Squeeze ¼ of 10mg capsule under tongue every 8 to 12 hours.
2. Gamow Bag If descent not possible, **GO TO PROCEDURE:** *Gamow Bag*.
3. IV Fluids Consider maintenance fluids for prolonged transport per PROCEDURE: *IV Access and IV Fluid Administration*.
4. Albuterol See Special Considerations
5. CPAP See Special Considerations.

ALTITUDE ILLNESS

High Altitude Cerebral Edema (HACE)

Paramedic Standing Orders

1. ABCs Protect airway, assist respirations, and suction as needed. OPA/NPA or ALS airway if indicated REFERENCE PROCEDURE /King Tube/ETT.
2. Assessment Vitals, severe headache, vision changes, vomiting, mental status, coordination/ability to walk, rapid ascent to altitudes > 8,000 feet.
Consider differential: HAPE, carbon monoxide, hypo/hyperthermia, stroke, drugs/alcohol, hypoglycemia, trauma. Contact Base if diagnosis is unclear.
3. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
4. Oxygen Per PROCEDURE: *Oxygen Administration*.

Note: Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).

5. Check Glucose Per PROCEDURE: *Blood Glucose Determination*.
6. Dextrose If Glucose < 80, or ALOC and unable to determine glucose.
≥ 2 yrs: 1 amp **D50** IV/IO (1 amp = 25g in 50ml).
< 2 yrs: 2 ml/kg **D25** IV/IO (12.5g in 50ml), up to a max of 100ml.
(To make D25, remove 25ml of D50 and draw up 25ml of NS/LR).
May repeat in 5 minutes if ALOC or seizure persists and glucose still < 80.
May substitute dose on Broselow Tape for pediatric dose above.
7. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 7**.
8. Glucagon Adults: 1mg IM (if no IV/IO).
0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
May repeat once in 15 minutes if ALOC or seizure persists, and glucose remains < 80.
9. Ondansetron Administration
Ondansetron For nausea or vomiting or history of vomiting with narcotic
Adult: IV: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: ½ tab (2mg) if age 4–14
IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
IM: Contraindicated for patients < 3 months of age.

ALTITUDE ILLNESS

- | | |
|-----------------------------|---|
| 10. Rapid Descent Transport | Assist patient with rapid descent. Eliminate or minimize exertion if this does not interfere with rapid decent. Consider air transport. |
| 11. IV/IO | Saline lock or TKO per PROCEDURE: <i>IV Access and IV Fluid Administration and Intraosseous Access</i> . |
| 12. Base Contact | For all patients. |

Paramedic Base Hospital/Communication Failure Orders

- | | |
|-----------------------------|---|
| 1. Dexamethasone (Decadron) | ≥ 12 -Adults: 8mg PO/IV/IO/IM, then 4mg every 6 hours until descent
< 12 yrs: 4mg PO/IV/IO/IM, then 2mg every 6 hours until descent. |
| 2. Acetazolamide (Diamox) | <u>If not actively vomiting:</u>
Adults: 250mg PO every 12 hours.
9–12 yrs: 2.5mg/kg or 125mg PO every 12 hours.
6–9 yrs: 2.5mg/kg or ½ of 125mg pill PO every 12 hours.
< 6 yrs: 2.5mg/kg or ¼ of 125mg pill PO every 12 hours.
All doses may be crushed and added to liquid.
All doses may be stopped once patient is asymptomatic. |
| 3. Gamow Bag | If <u>descent not possible</u> , GO TO PROCEDURE: <i>Gamow Bag</i> . |
| 4. IV Fluids | Consider maintenance fluids for prolonged transport per PROCEDURE: <i>IV Access and IV Fluid Administration</i> . |

ALTITUDE ILLNESS

SPECIAL CONSIDERATIONS

General	<p>High altitude illness usually occurs above 8,000 ft. in individuals who have ascended rapidly. Exertion, underlying illness, and respiratory depressants (alcohol, sleeping pills) may play a role. Syndromes may overlap and patients may need to be simultaneously treated for Acute Mountain Sickness (AMS), High Altitude Pulmonary Edema (HAPE), and/or High Altitude Cerebral Edema (HACE).</p> <p><u>In all types of altitude illness, descent is the definitive treatment.</u> Do not wait for higher level of care if descent is possible.</p>
Differential Diagnosis	<p>Acute Mountain Sickness (AMS), think of this as very mild HACE: Symptoms include: headache, fatigue, nausea/vomiting, decreased appetite, and insomnia.</p> <p>High Altitude Pulmonary Edema (HAPE): Shortness of breath or tachycardia at rest. Faster breathing and heart rates than would be anticipated for altitude. Orthopnea (worsening respiratory distress when lying flat). Cough - classically with white then pink frothy sputum. Crackles in lung fields. Cyanosis, particularly of nail beds and/or lips. Altered mental status if significantly hypoxic. Differential diagnosis: CHF, pneumonia. Consider Albuterol.</p> <p>High Altitude Cerebral Edema (HACE): Severe headache. Altered level of consciousness – confusion to lethargy to coma. Ataxia/incoordination. Focal neurologic deficits such as vision changes or limb paralysis. Seizures. Differential diagnosis: Carbon monoxide poisoning (cooking without ventilation), hypo/hyperthermia, HAPE with severe hypoxia, stroke, hypoglycemia, meningitis, drug/alcohol intoxication, trauma.</p>
Assessment	<p>Vitals including temperature, skin signs, and mental status. Blood glucose. Neuro - mental status, focal deficits, gait/coordination. Lung exam.</p>
Medication Issues	<p>For patients with HAPE, the primary therapy is as listed above. However, for severely wheezing patient, consider a trial of Albuterol. Albuterol 2.5mg in 3ml of LR/NS premixed solution nebulized treatment or 2-4 MDI puffs. Use spacer (Aerochamber) if available to increase inhaled dose.</p> <p>Ondansetron: Use caution with oral medications in patients with respiratory distress, especially those requiring CPAP.</p>
Treatment	<p>For patients with HAPE, the primary therapy is as listed above. Consider a trial of CPAP, Issues base contact for consultation advised. REFERENCE PROTOCOL: <i>CPAP</i></p>
AMA/TAR	<p>Base contact should be attempted in all cases. In the event that base contact cannot be made, patients may only be released IF:</p> <ol style="list-style-type: none">1. They will be with a competent adult.2. They have a means of re-contacting help.3. Acute Mountain Sickness is clearly the most likely cause of their symptoms.4. They have normal vital signs.5. They do not meet <u>any</u> of the criteria for HAPE or HACE.6. They did not require any treatment other than Acetaminophen.

ALTITUDE ILLNESS

Any patient released should be instructed to:

1. Descend or remain at current elevation until symptoms resolve.
2. Drink plenty of fluids.
3. Use over the counter analgesics as directed on the bottle.
4. Avoid heavy exertion.
5. Descend and call for help if symptoms worsen.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Cross Reference

Procedures:

Blood Glucose Determination
CPAP
Endotracheal Intubation
Gamow Bag
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration

Protocols:

Altered Mental Status/ Altered
Level of Consciousness (ALOC)
Respiratory Distress

Drugs:

Acetaminophen (Tylenol)
Acetazolamide (Diamox)
Albuterol
Dexamethasone (Decadron)
Dextrose 50%
Glucose Paste
Nifedipine

ALTITUDE ILLNESS PROPHYLAXIS

Paramedic Standing Orders

Acetazolamide (Diamox)

125 mg orally every 12 hours
Ideally dosing should begin 24 hours prior to ascent and continue for 72 hours once maximum altitude is attained, or until descent.

Note: Consider 62.5mg orally every 12 hours if 125mg is poorly tolerated.

Note: This drug is a diuretic. Additional PO fluids will be required.

Common expected side effects: tingling in hands/feet, frequent urination.

Rare side effects: nausea, taste disturbance, bone marrow suppression.

Contraindications: Pregnancy, allergy to sulfa drugs.

Alternative or Adjunct Medication:

Dexamethasone (Decadron)

Note: May be considered **only** in accordance with medical advisor approved EMS policy.

2mg PO every 6 hours.

-This drug may be used by those who cannot take Acetazolamide or for a forced rapid ascent to a very high altitude (e.g. a helicopter rescue at over 14,000 feet).

-This drug should be initiated 2-4 hours before ascent.

Note: Should not be used in people under 18 years old.

Note: Symptoms can return quickly if medication is stopped while still at altitude.

Note: Duration of use should not exceed 10 days

Common expected side effects: elevation of blood sugar.

Rare side effects: : dyspepsia (upset stomach), bizarre dreams, dysphoria (depressed mood), euphoria, perineal (groin) itching, gastrointestinal bleeding.

SPECIAL CONSIDERATIONS

This protocol applies only to park personnel involved in emergency operations where rapid ascents to altitudes higher than 8,000 feet are required. Higher altitudes and faster ascents carry increased risk of altitude illness compared to lower or slower ascents. Whenever possible, supervisory rangers and incident commanders are encouraged to use personnel already acclimatized to altitude, who are healthy, and who do not have a history of serious altitude illness. Those with a history of HAPE or HACE should be excluded from rescues at altitude. Any rescuer with history of Acute Mountain Sickness should carefully weigh the pros and cons of participating in rescues at altitude.

These medications are completely optional and are not 100% effective. Personnel shall be offered such medications in the appropriate clinical circumstances but should not be forced to take them nor should participation in any incident be contingent upon their use. With LEMA approval, these medications may be dispensed by Paramedics/Parkmedics to other rescuers who are under Park Service command during a rescue. Paramedics/Parkmedics should explain the potential side effects (see above) and risk of prophylactic failure to anyone accepting medication. A single Patient Care Report (PCR) will be generated documenting the names of personnel administered medication under this policy.

Prophylaxis will ideally begin before ascent according to the guidelines above but may also be started after arrival at altitude. Once AMS symptoms develop, discontinue this protocol, start a PCR and go to PROTOCOL: "Altitude Illness."

Cross Reference

Protocols:

Altitude Illness

Drugs:

Acetazolamide (Diamox)

Dexamethasone (Decadron)

BITES AND STINGS

Paramedic Standing Orders

1. ABCs Secure airway as needed. OPA/NPA or ALS airway if indicated (*King Tube/ETT*).
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
If signs or symptoms of allergic reaction **GO TO** PROTOCOL: *Allergic Reactions*.
If signs of hemorrhage with shock **GO TO** PROTOCOL: *Major Trauma – Adult; Pediatric Major Trauma*.
2. Assessment Vitals, mental status. Type, time, location and circumstances of injury. Progression of injury (draw marks on patient if appropriate). Behavior of animal prior to and after bite. Associated injuries. Distal neurovascular and tendon exam.
3. Monitor Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity.
4. Oxygen Per PROCEDURE: *Oxygen Administration*.
5. Classify Bite Reassure patient and keep patient calm. Treat as specified in sections below:
 - Insect Sting/Bite:**
 - Remove Remove constricting items (e.g. rings) from area of bite/swelling.
Remove stinger if visible.
 - Ice Use ice and/or "sting ease" if available for symptomatic relief.
 - Snake Bite:**
 - Remove Remove constricting items (e.g. rings) from area of bite/swelling.
 - Document Mark area of swelling and record progression over time.
 - Irrigate Sterile saline or potable water per PROCEDURE: *Wound Care*.
 - Immobilize Splint injured extremity above (if possible) the level of heart per PROCEDURE: *Fracture/Dislocation Management*.
 - Animal Bite:**
 - Remove Remove constricting items (e.g. rings) from area of bite/swelling.
 - Control Bleeding Per PROCEDURE: *Wound Care*.
 - Irrigate Sterile saline or potable water per PROCEDURE: *Wound Care*.
 - Splint Splint injury as per PROCEDURE: *Fracture/Dislocation Management*.
 - Marine Envenomation:**
 - Remove Remove constricting items (eg rings) from affected extremity
 - Document Mark area of swelling and record progression over time
Allergic Reactions are very common. Watch for signs of Allergy and GO TO Allergy/Anaphylaxis as needed

If envenomation by stingray, sea urchin, stone fish, spine fish, scorpion fish, catfish:

1. Remove the victim from the aquatic environment
2. Clean wound immediately with sea water
3. Remove any pieces of debris or stingers with tweezers or gloved hand
4. Soak the wound in nonscalding HOT water as soon as possible for 30 – 60 minutes. Hot water temperature should only be as hot as the unaffected extremity can tolerate for 1 minute.
5. Bandage loosely and Immobilize/Splint injured extremity as per PROCEDURE: *Fracture/Dislocation Management*

BITES AND STINGS

If envenomation by Nematocysts/Coelenterates (jellyfish, fire coral, Portuguese man-of-war, sea wasp, stinging anemone):

1. Remove the victim from the aquatic environment
2. Rinse irritated area of skin with sea water (Do NOT use fresh water)
3. Physically lift off any tentacles that still cling to the patient with a gloved hand or tweezers
4. Wash affected area with vinegar for 15-30 minutes
5. Remove embedded nematocysts by scraping off gently.
6. Bandage loosely and Immobilize/Splint injured extremity as per PROCEDURE:
Fracture/Dislocation Management

If source of envenomation is unknown:

1. Remove the victim from the aquatic environment
2. Rinse irritated area of skin with sea water (Do NOT use fresh water)
3. Rinse a small portion of the irritate area of skin with hot water. If the patient gets relief with this, continue with a larger area and then progressively to the entire area. If the patient complains of worsening or no relief with this, move to step 4 below.
4. Wash a small portion of the affected area with vinegar. If the patient gets relief with this, continue with a larger area and then progressively to the entire area. Continue for 15-30 minutes. If the patient complains of worsening or no relief with this, move to step 5 below.
5. Bandage loosely and Immobilize/Splint injured extremity as per PROCEDURE:
Fracture/Dislocation Management

6. Base Contact

7. Transport As required for patient condition. Transport all snake bites. See Special Considerations for AMA/TAR criteria.

8. IV/IO Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.

9. Ondansetron Administration (Zofran) For nausea or vomiting or history of vomiting with narcotic administration.

Adult:	IV/IO:	4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
	ODT:	4mg, repeat in 15 min x2 prn nausea.
	IM:	If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs:	IV/IO:	0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
	ODT:	½ tab (2mg) <u>if age 4- 14</u>
	IM:	If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.:	IV:	Base Hospital Order ONLY. 0.1mg/kg SIVP.
	IM:	Contraindicated for patients < 3 months of age.

BITES AND STINGS

Paramedic Base Hospital /Communication Failure Orders

1. Cefazolin (Ancef) Consider for serious wounds if > 3 hours between injury and arrival at hospital/clinic, per PROCEDURE: *Wound Care*.
 - > 12-Adult: 1g IV/IO (IM if no IV/IO access) every 8 hours.
 - 6-12 yrs.: 500mg IV/IO (IM if no IV/IO access) every 8 hours.
 - < 6 yrs.: 250mg IV/IO (IM if no IV/IO access) every 8 hours.
2. Fentanyl Adult: If severe pain, SBP > 100, and normal mental status.
 - IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
 - Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 - IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain. i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Pediatric: IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.

 - Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 - IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

3. Long Acting Narcotic (Morphine OR Dilaudid).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.
- | | | |
|----------|------------|--|
| Morphine | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). |
| | Pediatric: | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. |
- OR**
- | | | |
|----------|--------------------------|---|
| Dilaudid | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
IM: 1mg (1ml) every 30 min prn pain (max 2mg). |
| | Pediatric:
(> 5 yrs.) | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg |

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Hydrophormphone (Dilaudid) via any route requires base contact.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

4. Acetaminophen (Tylenol)
 - > 10-Adult: 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
 - 0-10 yrs: 15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
5. Ibuprofen (Motrin, Advil)
 - > 10-Adult: 600mg PO every 6 hours.
 - 6 mos-10 yrs: 10mg/kg PO (liquid or tablet) every 6 hours, max dose 200mg.

BITES AND STINGS

SPECIAL CONSIDERATIONS

Assessment	<p>Insect Sting or Bite</p> <p>Some insects leave their stinger in the victim. Try to remove the stinger as soon as practical. Spider bites may not be painful immediately. Ice can be helpful in treating pain.</p> <p>Snakebite</p> <p>Remember personal protection. Many snakes thought to be “dead” have bitten rescuers. Even the severed head may still be able to inflict a venomous bite. Do not engage in a search for the snake.</p> <p>Most snakebites are “dry,” i.e., no venom is injected.</p> <p>If envenomated some of the following should occur in 5–30 minutes.</p> <ol style="list-style-type: none">1. Severe burning pain out of proportion to the wound.2. Edema around the bite out of proportion to the wound.3. Small, non-blanching purple spots (petechiae), bruising, or continued oozing from site.4. Numbness or tingling of the mouth, extremities, or bite site.5. Metallic taste in the mouth.6. Involuntary twitching of the mouth, extremities, or bite site.7. Weakness <p>Exotic snakes (Cobra, Krait, etc.) or Coral may cause neurologic and respiratory depression prior to a local reaction. Observe for mental status change, respiratory depression, convulsions, or paralysis.</p> <p><u>Do not apply ice to snake bites. Do not incise wound or try to “suck” the venom out.</u></p>
	<p>Animal Bites</p> <p>Depending on the animal there can be a great deal of traumatic injury. Consider penetration of abdomen and/or thorax, fractures, etc.</p> <p>If the animal is suspected of having rabies, an attempt should be made to obtain the animal. However, the patient and rescuers take priority. Be careful not to injure other personnel in an attempt to capture the animal. If the animal is killed, try to preserve the head for necropsy.</p> <p>Most wounds should be irrigated with Normal Saline if available. Plain soap and water is also effective in decreasing infection rates. If there is a high suspicion for rabies, the wound should be scrubbed. (Scrubbing in the wound is <u>not</u> recommended for other wounds). If uncertain, address wound per PROCEDURE: <i>Wound Care</i>.</p>
	<p>Marine Envenomations</p> <p>Rescuers on scene need to protect themselves from injury and protect the patient from further injury. When entering the water for rescue, protective clothing with wet suits and gloves is ideal.</p> <p>If the stinger or tentacle is not able to be removed easily with gentle traction, do not compress with bandages as additional envenomation may occur</p> <p>Portuguese man-of-war, although often mistaken for a “Jellyfish”, is treated differently than most Coelenterates, <u>using hot water and not vinegar</u>.</p> <p>Stonefish envenomation can cause systemic toxicity with hypotension, tachycardia, cardiac arrhythmias, diaphoresis, dyspnea and pulmonary edema. Most cases are successfully managed with hot water immersion and symptomatic care, however some may require a specific antivenom.</p>
Treatment	<p>Response to narcotic analgesics (Fentanyl/Morphine/Hydromorphone (Dilaudid)) is both situation and patient specific. If prolonged patient contact is anticipated, dose adjustment within the protocol parameters may be warranted. If additional medication is indicated, contact base.</p>
Transport	<p>Consider air transport for serious bites to head or neck, airway difficulties, respiratory distress, major trauma, shock, or neurologic deficits.</p>

BITES AND STINGS

AMA/TAR Minor insect bites or stings that require no treatment beyond local wound care may be released at scene after infection precautions have been given and the patient observed for 30 minutes. Tetanus immunization should be recommended if last vaccination was over 5 years ago. All animal and snakebite patients should be transported or AMA after base contact. Parks without base hospitals should follow local medical advisor approved EMS policy.

Cross Reference

Procedures:

Fracture/Dislocation Management
Intraosseous (IO) Access
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration
Transtracheal Jet Insufflation
Wound Care

Protocols:

Allergic Reactions
Major Trauma – Adult
Pediatric – Major Trauma

Drugs:

Acetaminophen (Tylenol)
Cefazolin (Ancef)
Fentanyl
Hydromorphone (Dilaudid)
Ibuprofen (Motrin, Advil)
Morphine
Ondansetron (Zofran)

BURNS

Paramedic Standing Orders

1. Scene Safety Beware of Hazardous Material (HazMat); protect yourself from injury.
2. Rescue Remove patient from source of injury. Stop burning process (see Special Considerations). Decontaminate HazMat.
3. ABCs Protect airway and assist ventilations as needed. OPA/NPA or ALS airway if indicated (*King Tube/ETT*). Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtracheal Jet Insufflation*.
4. Assessment Vitals, shock, mental status, airway burns, singed hair, stridor, lung sounds, circumferential burns to torso or extremity.
Mechanism of burn (e.g. enclosed space, explosion, acid, oil, water, electrical, flame).
Percentage and degree (thickness) of burn.
5. Oxygen Per PROCEDURE: *Oxygen Administration*.
High flow for unstable vitals, ALOC, severe respiratory distress (possible inhalation injury or carbon monoxide exposure), or burns >15% total body surface area (TBSA).
6. Prevent Hypothermia Cover patient with blanket and remove wet clothing. Move patient to warm environment. Consider insulating patient from ground with blanket.
7. Remove Remove constricting items (e.g. rings).
8. Dressing Small burns: (< 15% TBSA): Cover with moist sterile dressings. May apply Bacitracin if transport time > 2 hour per PROCEDURE: *Wound Care*.

Large burns: No Bacitracin. Cover with dry sterile dressings to prevent hypothermia.
9. IV/IO All transported patient's: One IV/IO with maintenance fluids (NS/LR) per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Shock or TBSA > 15%: Two IV/IOs, with total IV fluid at the following rates:
Adults: 2-L LR/NS bolus, then double the maintenance rate (240ml/hr).
0-14 yrs.: 40 ml/kg LR/NS bolus (max bolus 2-L), then double maintenance rate (4ml/kg/hr).
10. Ondansetron For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV over 2-5 min, repeat in 15 min x2 prn nausea.
 ODT: 4mg, repeat in 15 min x2 prn nausea.
 IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.

3 mos-14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2-5 min, repeat in 15 min x2 prn nausea.
 ODT: ½ tab (2mg) if age 4-14
 IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1prn nausea.

0 - 3 mos.: IV/IO: Base Hospital Order ONLY. 0.1mg/kg SIVP.
 IM: Contraindicated for patient's < 3 months of age.

Note: For severely symptomatic patient's, ODT can be administered prior to attempts for IV/IO access
10. Transport Consider air transport for > 15% TBSA, shock, or airway involvement.
Transport to Regional Burn Center unless directed elsewhere by base.
See Special Considerations for TAR guidelines.
11. Base Contact

BURNS

Paramedic Base Hospital /Communication Failure Orders

1. Fentanyl

Adult:	<p>If severe pain, SBP > 100, and normal mental status. IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain. i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>
Pediatric:	<p>IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Hydromorphone (Dilaudid)).
 Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- | | | |
|--------------------------|------------------------|---|
| Morphine | Adult: | <p>If severe pain, SBP > 100, and normal mental status.
 IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
 IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).</p> |
| | Pediatric: | <p><u>Base Order ONLY</u>, NOT in communication failure.
 IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
 IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.</p> |
| OR | | |
| Hydromorphone (Dilaudid) | Adult: | <p>If severe pain, SBP > 100, and normal mental status.
 IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
 IM: 1mg (1ml) every 30 min prn pain (max 2mg).</p> |
| | Pediatric:
(> 5y.o) | <p><u>Base Order ONLY</u>, NOT in communication failure.
 IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
 IM: 0.015mg/kg (0.015ml/kg). Max 1mg</p> |

***Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
 Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Hydromorphone (Dilaudid) via any route requires base contact.***

3. Acetaminophen (Tylenol)

> 10-Adult:	1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
0-10 yrs:	15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
4. Ibuprofen (Motrin, Advil)

> 10-Adult:	600mg PO every 6 hours.
6 mos-10 yrs:	10mg/kg PO (liquid or tablet) every 6 hours, max dose 200mg.

BURNS

SPECIAL CONSIDERATIONS

Rescue	<p>Thermal Burns: Protect yourself. Remove patient from source of burn to fresh air, remove burning or smoldering clothing, stop burning process. Use any water available. Consider ways of smothering the fire.</p> <p>Chemical Burns: Protect yourself. Remove all contaminated clothing. Wash patient with copious amounts of water. Do not scrub. Sterile water or saline is preferred, but any available water may be used. Record type of chemical and manner and time of exposure.</p> <p>Electrical Burns: Protect yourself. Be aware of likelihood of cardiac arrhythmias.</p> <p>REFERENCE PROTOCOL: <i>Electrical and Lightning Injuries</i>. Treat as medical arrest, not trauma. If in cardiac arrest, GO TO PROTOCOL: <i>Cardiac Arrest/ Dysrhythmias</i> or <i>Pediatric-Cardiac Arrest/ Dysrhythmias</i></p>
Assessment	<p>Check for evidence of airway burn (singled nose or facial hair, black tinged sputum, hoarse voice, abnormal lung sounds). Consider all enclosed-space burn victims to have carbon monoxide poisoning and possible inhalation injury. Remember that inhalation injuries may have delayed presentation of life threatening lung or airway injuries.</p> <p>Check nature and extent of burn (rule of nines), mental status, smoke inhalation, duration of exposure, depth of wounds. Evaluate for associated trauma and/or drug/alcohol intoxication.</p> <p>Depth of Burn:</p> <p><u>Superficial</u> (first degree): Erythema only.</p> <p><u>Partial Thickness</u> (second degree): Blisters; sensation and capillary refill present.</p> <p><u>Full Thickness</u> (third degree): White or charred; firm to touch; lack of sensation.</p> <p>Even though small, burns that involve the eyes, hands, feet, airway, genitalia, or those that are circumferential, are more concerning.</p> <p>Burns often have greatly increased fluid requirements, especially in the first eight hours. Contact base hospital for further fluid requirements. If no other site is available, it is acceptable to place an IV/IO through burned skin.</p>
Transport	<p>All patient's with the following should be transported to a Regional Burn Center unless directed otherwise by base: airway burns or respiratory distress; burns greater than 15% TBSA; burns with major trauma; face, hands, feet, or genitalia involvement; circumferential extremity burns; any 3rd degree burn; extremes of age.</p> <p>All other patient's may go to the hospital of their choice.</p>
AMA/TAR	<p>Only the following may be treated and released without base contact: first-degree burns without systemic symptoms; burns less than 5% TBSA, NOT involving the face, genitals, hands, or feet.</p> <p>All patient's not transported (AMA) with second- or third-degree burns should be advised to seek medical attention immediately. Base hospital contact for all others.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>
Documentation	<p>Degree (thickness) and extent (TBSA) of burn using the "rule of nines" or patient's palm size=1% TBSA, mechanism of burn, time of burn, associated injuries, tetanus status.</p>

Cross Reference

Procedures:

Endotracheal Intubation
Intraosseous Access
IV Access and IV Fluid Administration
King Tube
Oxygen Administration
Transtacheal Jet Insufflation
Wound Care

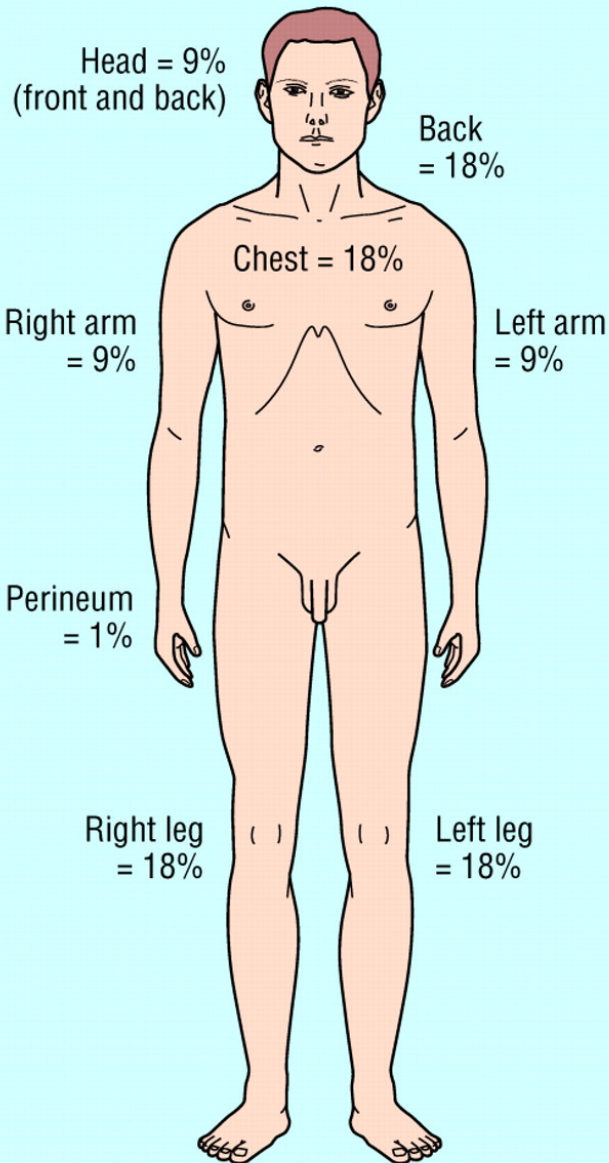
Protocols:

Cardiac Arrest/Dysrhythmias
Electrical and Lightning Injuries
Pediatric –Cardiac Arrest/
Dysrhythmias

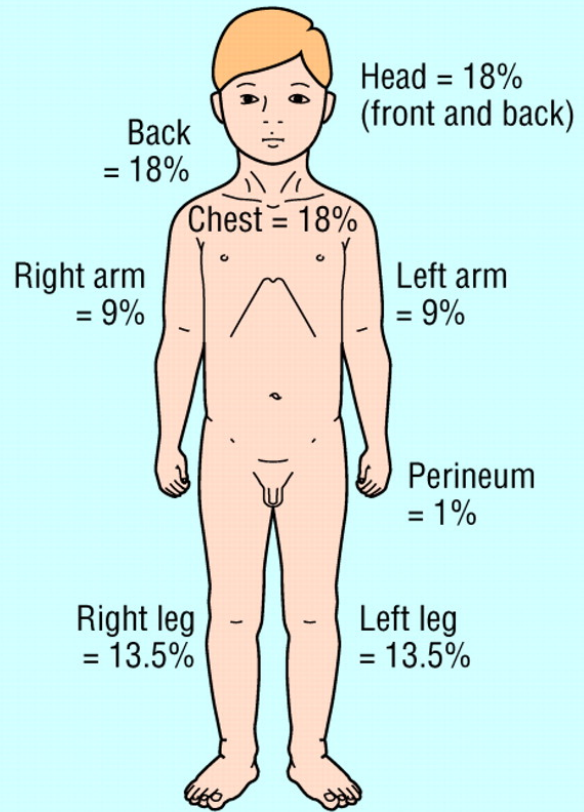
Drugs:

Acetaminophen (Tylenol)
Bacitracin
Fentanyl
Hydromorphone (Dilaudid)
Ibuprofen (Motrin, Advil)
Morphine
Ondansetron

BURNS



Adult



Child

Cardiac Arrest/Dysrhythmia

Paramedic Standing Orders

If patient is ≤ 14 yr or shorter than NPS Pediatric Resuscitation Tape/Broselow Tape(5 feet), **GO TO PROTOCOL:**
Pediatric – Cardiac Arrest/Dysrhythmias

If patient is a newborn **GO TO PROTOCOL:** *Pediatric – Newborn Resuscitation.*

Pulseless Arrest (PEA/VF/VT) (2060 P-1)

Resuscitation Guidelines

Resuscitation Management

This protocol may be followed by a single provider. Ideally, additional provider or bystander help should be solicited. CPR and application of defibrillator devices are the priorities. These interventions should not be delayed for IV/IO placement, medication administration or ALS airways.

Once a second provider is available (even a well-trained bystander) direct them to perform CPR. The Paramedic should attempt IV/IO placement per **Steps 5 or 13**. Once an IV/IO is placed successfully, administer appropriate medications per PROTOCOL.

In cardiac arrest, emphasis should be on defibrillation and quality CPR; however, an ALS airway will augment the effectiveness of ventilations. Early in the resuscitation, if BLS airway is inadequate or if manpower allows, consideration of ALS airway is warranted. Otherwise, after the first cycle of IV/IO medications has been delivered, the next priority is to convert the BLS airway to an ALS airway.

CPR

Emphasis should be on minimizing interruptions of compressions during CPR. Airway interventions, IV/IO access, rhythm analysis, and medication administration should be completed with minimal interruptions in chest compressions. Either single- or dual-rescuer CPR is conducted with a compression-to-ventilation ratio of 30:2. Compression rate is 100/minute: "Push Hard, Push Fast." Continue with 5 cycles of CPR (30:2) – approximately 2-3 minutes. **Single-rescuer resuscitation may be initiated with compression-only CPR depending upon available assistance and necessary airway equipment.**

Medication Note

Unless otherwise directed by base, the cumulative dose for Amiodarone is 300 mg IV/IO. The dose for Sodium Bicarbonate is 50 meq IV/IO. In a re-arrested patient who has already received the maximum cumulative dose during the previous arrest/resuscitation sequence, these medications should not be repeated. The exception is Epinephrine, which has no maximum cumulative dose in a coding patient.

Cardiac Monitor External Defibrillator

If AED already in place upon paramedic arrival continue AED use until appropriate transition to cardiac monitor can be made.

Electrocardiogram

Whenever return of spontaneous circulation occurs in the cardiac arrest patient, obtain 12-lead ECG.

Transport

Cardiac arrest < 10 minutes from health care facility, transport with CPR in route.
SPECIAL CASES (as noted in assessment section, step 2) **< 30 minutes from health care facility, transport with CPR in route.**
All patients with ROSC, consider air transport if available.

Cardiac Arrest/Dysrhythmia

1. Confirm Arrest
Assess airway, breathing, and circulation, prior to resuscitation efforts. No response to aggressive stimulation.

If pulse is present do not initiate CPR, patient is NOT in cardiac arrest. **GO TO** **PROTOCOL: Altered Mental Status/Altered Level of Consciousness (ALOC)**, or other appropriate protocol
2. Assessment
Quickly obtain information (15-30 seconds) from witnesses to determine whether resuscitation should be initiated and by what means (e.g., length of downtime determines whether to start with CPR or defibrillation). As time allows, obtain additional information including preceding events and symptoms, PMH.

Do not attempt resuscitation in the following cases:

Rigor mortis, lividity, obviously fatal trauma, or DNR.

Documented pulseless downtime greater than 15 minutes.

In specific SPECIAL CASES (cold water drowning, hypothermia, barbiturate ingestion, electrocution or lightning strike) downtime is extended to 30 min. Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol.
3. CPR
(Rhythm Check, BLS Airway, Supplemental Oxygen)
Begin with a compression-to-ventilation ratio of 30:2. Compression rate is 100/minute. "Push Hard, Push Fast." Continue with 5 cycles of CPR (30:2) – approximately 2-3 minutes.

Apply Cardiac Monitor/External Defibrillator: Attach cardiac monitor or AED pads as soon as available. Provide CPR until the monitor is attached and defibrillator is ready to deliver a shock.

If downtime < 4 minutes, witnessed/confirmed: Initiate rhythm analysis as soon as monitor attached - Shock for VF/VT – proceed to "Shockable Rhythm": VF/Pulseless VT algorithm (Step 4). If "Non-shockable Rhythm" proceed to Asystole/PEA algorithm (Step 13).

If downtime > 4 minutes, unknown: Continue a full sequence of CPR. After 5 cycles of CPR analyze rhythm. If "Shockable Rhythm" proceed to VF/Pulseless VT algorithm (Step 4). If "Non-shockable Rhythm" proceed to Asystole/PEA algorithm (Step 13).

Ensure adequate BLS airway utilizing OPA/NPA and BVM, initiate oxygen therapy with 15-L Oxygen. Per PROCEDURE: *BVM and Oxygen Administration*.

Cardiac Arrest/Dysrhythmia

“Shockable Rhythm”: VF/Pulseless VT

Outcome of shock delivery is best if rescuers minimize the time between last compression and shock delivery, so rescuers should be prepared to coordinate (brief) interruptions in chest compressions to deliver shocks, and should resume compressions immediately after shock delivery.

4. Shock Give 1 shock (Biphasic 200J) and immediately resume CPR, beginning with chest compressions.
5. CPR
 (IV/IO Access) Continue CPR for approximately 2 minutes.

 After shock delivery, resume CPR, beginning with chest compressions. Minimize interruptions of chest compressions. After prolonged arrest defibrillation is more likely to be successful after a period of effective chest compressions. Ideally, chest compressions should be interrupted only for ventilations (until an advanced airway is in place), rhythm check, and shock delivery.

 Obtain IV/IO access (IO access preferred as initial access). Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
6. Rhythm Check Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).

 If a “Shockable” rhythm persists, give another shock (**Step 7**).

 If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm (**Step 15**).
7. Shock Give 1 shock (Biphasic 200J) and immediately resume CPR, beginning with chest compressions.
8. CPR
 (Medication
 Administration) Immediately resume chest compressions. Continue CPR for 2 minutes.
 During CPR give Epinephrine and Amiodarone.

 Give Epinephrine 10ml (1mg) of 1:10,000 IV/IO bolus **every 3 to 5 minutes**.

 Give Amiodarone 300 mg IV/IO bolus.
9. Rhythm Check Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).

 If the rhythm is “Shockable,” deliver another shock and immediately resume CPR (**Step 10**).

 If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm (**Step 17**).
10. Shock Give 1 shock (Biphasic 200J) and immediately resume CPR, beginning with chest compressions.

Cardiac Arrest/Dysrhythmia

11. CPR
(Medication
Administration, ALS
Airway)
- Immediately resume chest compressions. Continue CPR for 2 minutes.
During CPR give Epinephrine.
- Give Epinephrine 10ml (1mg) of 1:10,000 IV/IO bolus **every 3 to 5 minutes**.
- Give Sodium Bicarbonate 50 meq IV/IO bolus.
- Give Amiodarone 150mg IV push.
- Consider placement of ALS airway. Per PROCEDURE: *ETT /King Tube*.
- Assess proper placement and effectiveness of ALS airway.
- Monitor effectiveness of CPR with continuous capnography/capnometry if available.
- Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
- Once an advanced airway is in place, with 2 rescuers, the 1st rescuer gives continuous chest compressions at a rate of at least 100 per minute without pause for ventilation.
The 2nd rescuer delivers ventilations of 1 breath every 6-8 seconds (8-10 breaths per minute).
12. Continuation
- Check rhythm every 2 minutes with minimal (6 second) interruptions in chest compressions.
- If the rhythm remains "Shockable," give a shock (**Step 7**) and immediately resume chest compressions for 2 minutes before rechecking the rhythm. Minimize time between chest compressions and shock delivery (ie, check rhythm and deliver shocks immediately after compressions rather than after rescue breaths, if possible) and between shock delivery and resumption of chest compressions. Continue to administer Epinephrine every 3-5 minutes during chest compressions. To terminate resuscitation efforts Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol.
- If the rhythm becomes "Non-shockable", go to Step 15, continue with cycles of CPR and epinephrine administration until there is evidence of ROSC, a change to a "Shockable" rhythm, or you decide to terminate resuscitation efforts Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol.
- Note: Search for and treat reversible causes. See special considerations "Treatment."

Cardiac Arrest/Dysrhythmia

“Non-shockable Rhythm”: Asystole/PEA

PEA is an organized electrical activity—most commonly slow, wide QRS complexes—without palpable pulses. Less frequently there is a sudden impairment of cardiac output with an initially normal rhythm but without pulses and with poor perfusion.

13. CPR
(IV/IO Access)
 - Continue CPR for 2 minutes.
 - Minimize interruptions of chest compressions. Ideally, chest compressions should be interrupted only for ventilations (until an advanced airway is in place), rhythm check, and shock delivery, as indicated.
 - Obtain IV/IO access (IO access preferred as initial access). Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
14. Rhythm Check
 - Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).
 - If a “Shockable” rhythm exists, deliver shock (**Step 7**).
 - If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm. (**Step 15**)
15. CPR
(Medication Administration)
 - Immediately resume chest compressions. Continue CPR for approximately 2 minutes.
 - During CPR give Epinephrine.
 - Give Epinephrine 10ml (1mg) of 1:10,000 IV/IO bolus **every 3 to 5 minutes**.
16. Rhythm Check
 - Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).
 - If a “Shockable” rhythm exists, deliver shock (**Step 7**).
 - If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm.
17. CPR
(Medication Administration, ALS Airway)
 - Immediately resume chest compressions. Continue CPR for 2 minutes.
 - During CPR give Epinephrine.
 - Give Epinephrine 10ml (1mg) of 1:10,000 IV/IO bolus **every 3 to 5 minutes**.
 - Give Sodium Bicarbonate 50 meq IV/IO bolus.
 - Consider placement of ALS airway. Per PROCEDURE: *King Tube/ ETT*.
 - Assess proper placement and effectiveness of ALS airway.
 - Monitor effectiveness of CPR with continuous capnography/capnometry as available.
 - If failed BLS and ALS airway consider TTJI per PROCEDURE: *Transtracheal Jet Insufflation*.
 - Once an advanced airway is in place, with 2 rescuers, the 1st rescuer gives continuous chest compressions at a rate of at least 100 per minute without pause for ventilation. The 2nd rescuer delivers ventilations of 1 breath every 6-8 seconds (8-10 breaths per minute).

Cardiac Arrest/Dysrhythmia

18. Continuation

Check rhythm every 2 minutes with minimal interruptions in chest compressions.

If the rhythm remains “Non-shockable” continue with cycles of CPR and epinephrine administration until there is evidence of ROSC, a change to a “Shockable” rhythm, or you decide to terminate resuscitation efforts Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol.

If at any time the rhythm becomes “Shockable,” give a shock (Step 7) and immediately resume chest compressions for 2 minutes before rechecking the rhythm. Minimize time between chest compressions and shock delivery (ie, check rhythm and deliver shocks immediately after compressions rather than after rescue breaths, if possible) and between shock delivery and resumption of chest compressions. Continue to administer Epinephrine every 3-5 minutes during chest compressions. To terminate resuscitation efforts Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol.

Note: Search for and treat reversible causes. See special considerations “Treatment.”

Cardiac Arrest/Dysrhythmia

Return of Spontaneous Circulation – Post Cardiac Arrest Care

19. Post Cardiac Arrest Care	If return of spontaneous circulation (ROSC) initiate transport on monitor, reassess, make base hospital contact, establish vascular access, consider administration of Amiodarone, check glucose, and consider prehospital ECG.
Reassess	If patient has a palpable pulse or shows signs of life, check pulse every 3 minutes and provide appropriate ventilatory support.
Base Contact	As soon as possible without compromising patient care.
IV/IO Access	If IV/IO not previously attempted or established, obtain IV/IO per PROCEDURE: <i>IV Access and IV Fluid Administration or Intraosseous Access</i> .
Amiodarone	If patient was not given Amiodarone during resuscitation reference “Amiodarone” section in Special Considerations.
Check Glucose	Per PROCEDURE: <i>Blood Glucose Determination</i> . If glucose < 80 or ALOC and unable to determine glucose:
Note:	Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
Dextrose	1 amp D50 IV/IO (1 amp = 25g in 50ml). May repeat in 5 minutes if ALOC persists and glucose still < 80.
Glucose Paste	If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed. If patient is unable to swallow, paste may be placed inside the mouth, outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated). If no response to Glucose Paste in 5 minutes, then proceed to Glucagon.
Glucagon	1mg IM (if no IV/IO). If ALOC persists and glucose remains < 80, may repeat once in 15 minutes.
12-lead ECG	Perform 12-lead ECG as available.

Cardiac Arrest/Dysrhythmia

SPECIAL CONSIDERATIONS

Return of Spontaneous Circulation (ROSC) If return of spontaneous circulation, contact base for further management. If in communication failure consider clinical situation. If indicated, GO TO PROTOCOL: *Altered Mental Status/Altered Level of Consciousness (ALOC), Hypothermia, Respiratory Distress, Shock Without Trauma*, etc.

Amiodarone Actively coding with shockable rhythm: 300mg IVP, 2nd dose 150mg IVP.

Patients suffering cardiac arrest responsive to shock who did not receive Amiodarone during resuscitation, administer IV/IO: 150mg in 100ml NS over 10 minutes.

Hold for HR < 80 as Amiodarone may worsen/induce bradycardia.

Patients suffering rearrest may receive an additional 150mg IVP. If ROSC obtained administer an additional 150mg in 100ml NS over 10 minutes.

Hold for HR < 80 as Amiodarone may worsen/induce bradycardia.

Base contact advised

Initiation AND Termination of CPR Guideline

	Adult		Pediatric	
	Standard	Special Circumstance	Standard	Special Circumstance
Medical Arrest	15 min	30 min	30 min	60 min
	Adult		Pediatric	
	Blunt	Penetrating	Blunt	Penetrating
	10 min	20 min	10 min	20 min

Notes:

These times apply to either:

Not initiating CPR in the setting of known down time prior to EMS arrival or Cessation of CPR in an unsuccessful EMS resuscitation.

Special Circumstances include: Hypothermia, Barbiturate ingestion, Nitrate ingestion, Cold water drowning, Electrocutation, and Lightning injury.

Do not initiate if signs of prolonged lifelessness (e.g. rigor mortis, lividity) or obvious non-survivable injury (e.g. severe [100% 3rd degree] burn or decapitation).

Assessment

Patient condition immediately prior to arrest: chest pain, shortness of breath?

Bystander resuscitation: downtime before CPR, duration of CPR, bystander experience?

Physical Exam:

Respirations: Shallow? Rate? Spontaneous?

Breath sounds: Equal? Crackles? Rhonchi?

Heart: Beating? Regular or irregular?

Pulses: Carotid? Peripheral? Regular? All pulse checks during resuscitation should be for 6 seconds. Pulse checks for termination are for 30 seconds (ideally carotid and femoral). Do not stop CPR to perform pulse checks unless specified by protocol.

Abdomen: Soft? Signs of GI bleeding?

Skin: Warm? Dry? Cyanosis? Rigor/lividity? Cold? Surgical scars/implants?

Pupils: Reactive? Size?

Evidence of trauma? Acute blood loss?

Previous medical history: medications, allergies, depression/previous attempt at self injury, drug ingestions, history of renal failure?

Cardiac Arrest/Dysrhythmia

Differential Diagnosis

Cardiac arrest is the final common pathway for every cause of death. It is important to differentiate irreversible causes of cardiac arrest from potentially reversible causes of cardiac arrest. Some examples of potentially reversible causes of cardiac arrest include: cardiogenic shock, cardiac dysrhythmia, hypovolemia, hypoglycemia, hyperkalemia, tension pneumothorax, pericardial tamponade, respiratory arrest, allergic reaction, drug/medication/toxin ingestion, hypothermia, hyperthermia, drowning, electrical injury or trauma.

Treatment

*** In selected circumstances consider inserting any/all of the therapies below: ***

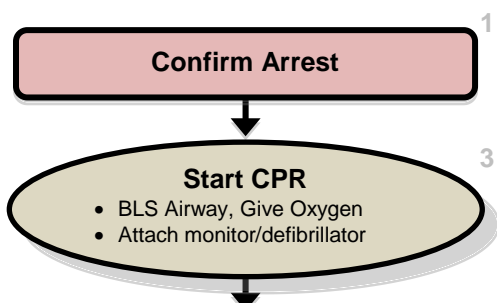
1. NS 1 liter IV/IO bolus - History of possible dehydration.
2. Sodium bicarbonate 50 meq (1 ampule) IV/IO - History of toxicologic exposure, renal failure or excessive exertion.
3. Dextrose - 1 ampule D50 IV/IO (1 ampule = 25g in 50ml) - History of diabetes medication or starvation.
4. Magnesium - For Torsades/refractory V Fib: Adult: 2g IV/IO over 1-2 minutes, repeat if arrhythmia not resolved.
5. Calcium Gluconate - 1 – 3 gms (10 – 30 mls) equals 1 – 3 vials per dose (SIVP)
In cardiac arrest give 3 gms (30 mls) IVP. History of toxicologic calcium channel blocker exposure (nifedipine, verapamil, etc.) or patients with renal failure.

Documentation

Initial and subsequent vital signs and mental status.
Downtime before CPR, duration of CPR, and by whom.
Time and response to interventions administered.
Time of death if applicable.
If outcome unsuccessful, leave airway, IV/IO, etc. in place.
If CPR was not initiated, the reason for not initiating CPR.

Cardiac Arrest/Dysrhythmia

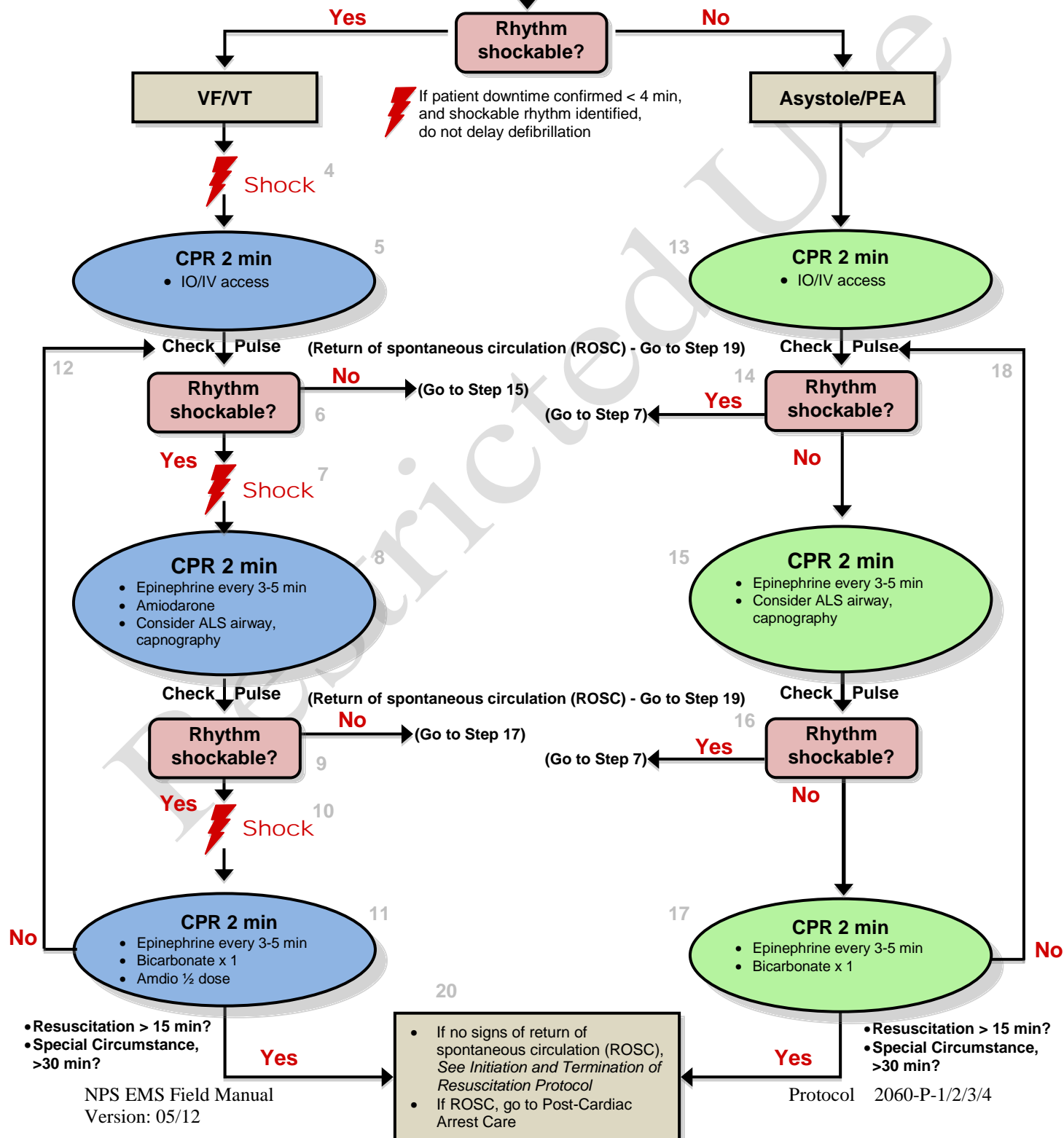
Paramedic Adult Pulseless Arrest Algorithm (2060 P-1)



Post Cardiac Arrest Care: Return of spontaneous circulation (ROSC)

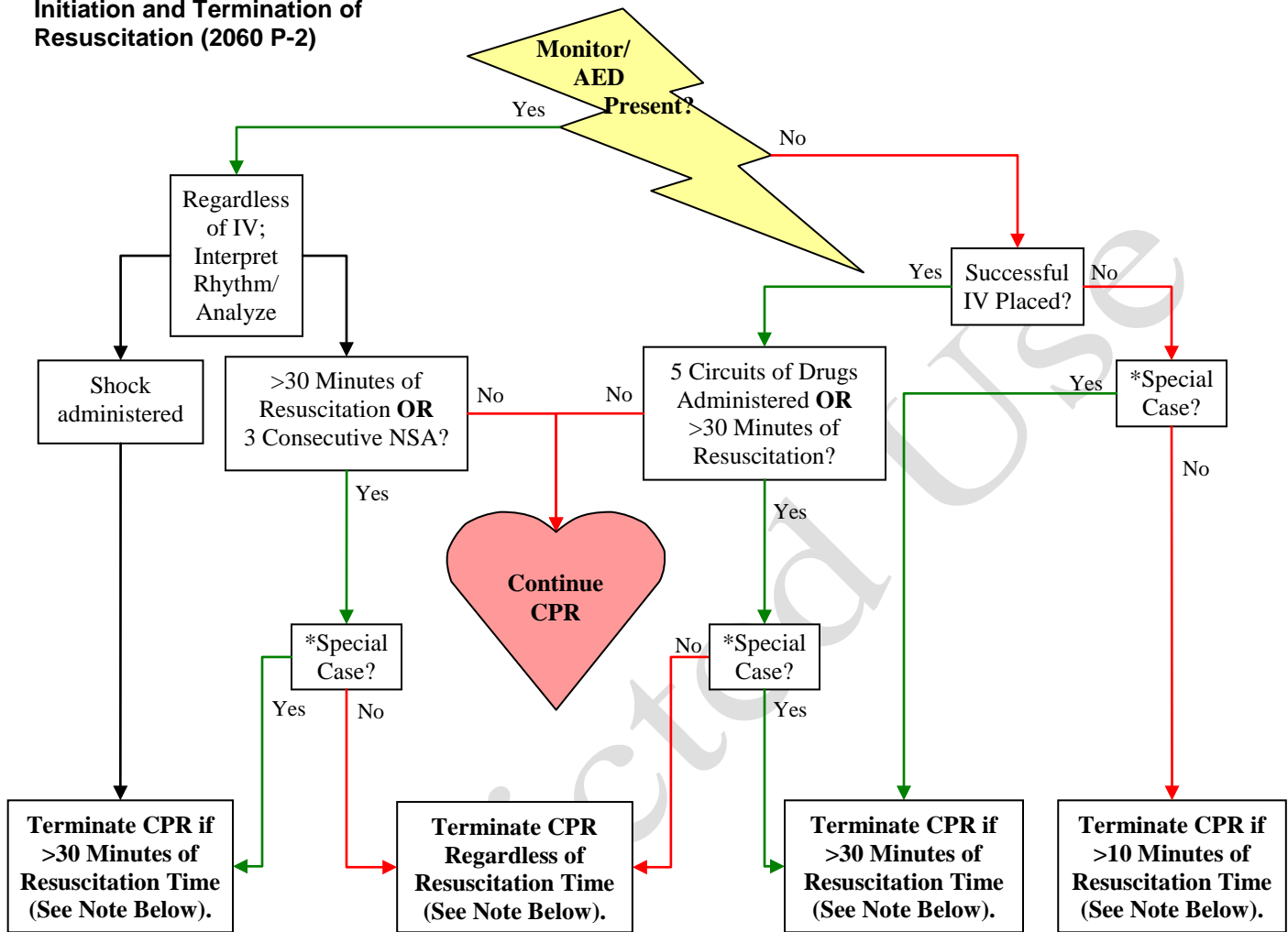
- Accucheck/Give Glucose
- Transport on Monitor
- Consider Pre-Hospital ECG

19



Cardiac Arrest/Dysrhythmia

Initiation and Termination of Resuscitation (2060 P-2)



***Special Cases:** cold water drowning, hypothermia, barbiturate ingestion, electrocution, lightning, or pediatric patients (age <14yrs).

NSA: No Shock Advised or No Shock Administered based on monitor rhythm.

Note: Before terminating CPR, palpate pulse and evaluate for spontaneous respirations for 30 seconds. Confirm with a second provider if available. If no palpable pulse nor spontaneous respirations, CPR may be terminated.

If patient has a palpable pulse or spontaneous respirations, continue with **PROTOCOL: Cardiac Arrest Without AED–Adult Medical**. Any return of spontaneous circulation restarts the clock (time for CPR termination) should the patient subsequently re-arrest.

Cardiac Arrest/Dysrhythmia

Bradydysrhythmia (2060 P-3)

Treatment Guidelines

Medication Note	All of the following medications may be indicated depending on the patient's condition or complaint: Atropine, Dopamine For transcutaneous pacing, see protocol for medication dosing (Fentanyl, Midazolam).
Cardiac Monitor/ Transcutaneous pacing	Placement of pacer pads should be performed as soon as possible as they may be needed for either pacing or cardioversion/defibrillation.
Electrocardiogram	In a patient with bradycardia (HR < 50) application of 12-lead ECG should be considered, but should not delay therapy.

Cardiac Arrest/Dysrhythmia

1. ABCs	<p>Assess airway and breathing: Secure airway. Assist respirations, utilizing BVM, suction, OPA/NPA or ALS airway (<i>ETT/King Tube</i>). REFERENCE PROCEDURE: <i>Endotracheal Intubation or King Tube</i> for appropriate ALS tube size for patient age/size. Consider TTJI if ALS airway unsuccessful per PROCEDURE: <i>Transtacheal Jet Insufflation</i>.</p> <p>Assess circulation: Evaluate for signs/symptoms of poor perfusion. Poor tissue perfusion (signs of shock) may present as, but is not limited to: Bradypnea, tachypnea, cool and pale distal extremities, prolonged (> 2 seconds) capillary refill, weak or absent peripheral pulses, weak central pulses, deterioration in color (ie, pallor, peripheral cyanosis), mottling of the skin, depressed mental status, decreased urine output, and hypotension.</p> <p>If, at any time, pulse is absent, patient is in cardiac arrest. Begin CPR and GO TO PROTOCOL: <i>Cardiac Arrest/Dysrhythmia</i>.</p>
2. Assessment	<p>Quickly obtain information (15-30 seconds) to identify preceding events, duration and onset of symptoms, setting, history, vitals, temperature, mental status, signs of head trauma, PMH, medications (especially calcium channel blockers, beta-blockers, digoxin, clonidine, amiodarone or other antiarrhythmics.)</p> <p>Is the patients' bradycardia inappropriate or pathologic for their clinical condition? The key question is are the patients' signs and symptoms related to a slow HR? Heart rate typically < 50/minute if bradycardia</p> <p>If the signs and symptoms are not due to bradycardia, the provider should reassess the underlying cause of the patient's symptoms.</p> <p>If Hypothermic, core temperature < 35C GO TO PROTOCOL: <i>Hypothermia</i></p> <p>Consider opioid overdose in a patient with pinpoint pupils, RR < 12, bradycardia, and signs of opioid abuse ie: surrounded by drug paraphernalia, opioid pills/bottles, or track marks. If appropriate, GO TO PROTOCOL: <i>Altered Mental Status/ALOC</i></p> <p>Consider nerve agent/organophosphate exposure if multiple victims and/or "AB-SLUDGEM," (See Special Considerations). If appropriate, GO TO PROTOCOL: <i>Ingestions/Poisoning</i>.</p>
3. Identify and Treat (Oxygen, Cardiac Monitor, IV/IO Access, check glucose)	<p>Provide high flow oxygen, per PROCEDURE: <i>Oxygen Administration</i>. Apply cardiac monitor leads and pulse oximetry. Apply pacer pads/external defibrillator.</p> <p>Obtain IV/IO access. Administer normal saline bolus Per PROCEDURE: <i>IV/IO Access and IV Fluid Administration</i>.</p> <p>If unable to obtain IV/IO access in the unstable patient, GO TO Step 8.</p> <p>If altered mental status, check/give glucose Per PROCEDURE: <i>Blood Glucose Determination</i>. See special considerations.</p> <p>Consider early base contact.</p> <p>Obtain 12 lead ECG, if available: do NOT delay therapy.</p>

Cardiac Arrest/Dysrhythmia

4. Unstable Patient	<p>Hypotension? Acute Altered Mental Status/ALOC? Signs of Shock? Ischemic chest discomfort? Acute Heart Failure? Severe Respiratory Distress?</p> <p>If the patient <u>does not</u> display any of the above signs and/or symptoms GO TO step 5. If the patient <u>does</u> display any of the above signs and/or symptoms GO TO Step 6.</p>
5. Monitor/Observe	<p>Continue to monitor and observe the patient with frequent vitals.</p> <p>If the patient becomes unstable at any time GO TO step 6.</p> <p>If at any time the patient loses pulses GO TO PROTOCOL: Cardiac Arrest (Adult Medical)</p>
6. Atropine	<p>0.5 mg IV/IO bolus. Prepare for transcutaneous pacing.</p> <p>If the patient responds to Atropine and is no longer bradycardic or unstable continue to monitor and observe the patient with frequent vitals. GO TO step 5.</p> <p>If bradycardia and instability continues, give additional doses of Atropine 0.5 mg IV/IO every 3 minutes up to a max dose of 3mg. GO TO step 7.</p>
7. Reassess	<p>Bradycardia persists with signs of cardiopulmonary compromise? NO – GO TO Step 5 YES – GO TO Step 8</p>
8. Transcutaneous Pacing	<p>Start Transcutaneous Pacing at a rate of 80 BPM and verify electrical capture (monitor) and mechanical contractions (palpable pulse).</p> <p>If the patient is not hypotensive and stable and complaining of pain/discomfort from the transcutaneous pacing administer Midazolam 1-2 mg IV/IO.</p> <p>If after the administration of Midazolam the patient is still uncomfortable and they remain normotensive and stable administer Fentanyl 50 mcg IV/IO.</p>
9. Reassess	<p>Bradycardia persists with signs of cardiopulmonary compromise? NO – And capture is obtained via transcutaneous pacing GO TO Step 5. YES – The patient remains or becomes unstable or bradycardic, quickly attempt to troubleshoot the transcutaneous pacing (confirm you have good pad contact, increase the current). If unsuccessful. GO TO Step 10.</p>
10. Dopamine	<p>For a patient with unstable bradycardia who has failed atropine and transcutaneous pacing start Dopamine infusion at 10 mcg/kg/min IV/IO.</p> <p>Note: Make sure the patient has an adequate intravascular volume and support volume as needed Per PROCEDURE: <i>IV Access and IV Fluid Administration</i>).</p>

Cardiac Arrest/Dysrhythmia

- | | |
|------------------------------|--|
| 11. Symptomatic Support | <p>Support ABC's
Give oxygen
Observe/Reassess</p> <p>Note: If at any time the patient again becomes bradycardic and unstable return to the last treatment step applied in the protocol.</p> <p>Note: If at any time the patient loses pulses GO TO PROTOCOL: Cardiac Arrest (Adult Medical)</p> |
| 12. Transport/Base Contact | |
| 13. Pre-Hospital 12-lead ECG | Perform 12-lead ECG as available. |

Paramedic Base Hospital/Communication Failure Orders

- | | |
|----------------------|--|
| 1.Sodium Bicarbonate | 50 meq (1 ampule) IO/IV – Known history of toxicologic exposure or renal failure. |
| 2.Calcium Gluconate | 1 vial (10 ml) IV/IO (1 gm) – Known history of renal failure or known history of Beta Blocker or Calcium Channel Blocker ingestion/overdose. |
| 3. Glucagon | 2mg IV/IO/IM every 5 min – Known history of Beta-Blocker or Calcium Channel Blocker overdose (see glucagon drug page for high dose regimen). |

Cardiac Arrest/Dysrhythmia

Special Considerations

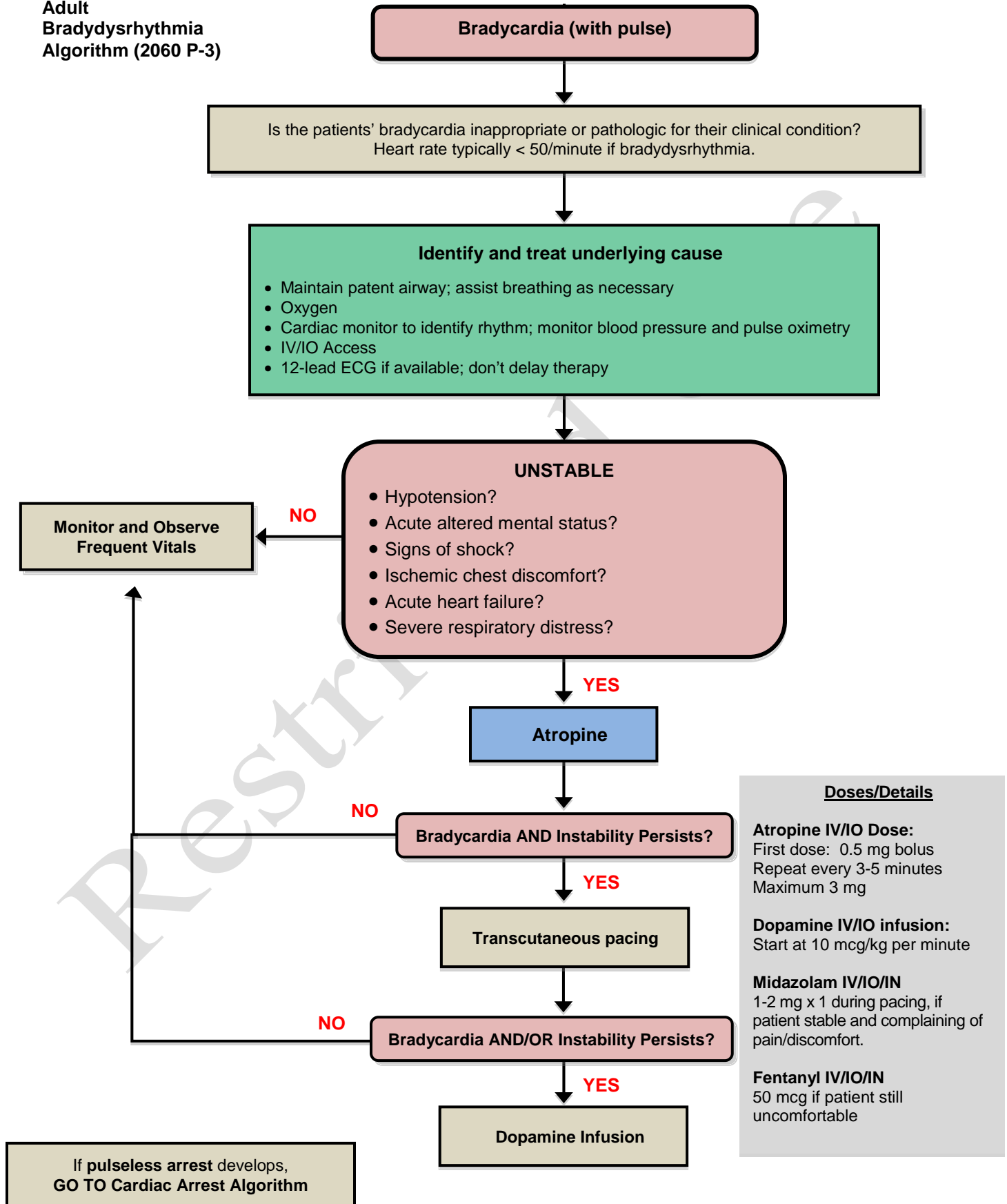
Transcutaneous Pacer	Apply transcutaneous pacer pads immediately once a transcutaneous pacer becomes available even in the stable patient in anticipation of cardiovascular collapse. If a transcutaneous pacer is not available treat the patients unstable bradycardia with Atropine and Dopamine.
Cardiac Monitor	Analyze rhythm and prepare for transcutaneous pacing without delay in patients with high-degree block (Mobitz type II second degree AV block or third-degree AV block) who are unstable. Consider atropine while awaiting pacer, if atropine is ineffective begin pacing. If pacing is ineffective consider dopamine.
Assessment	<p>Clinical setting: chest pain, shortness of breath, altered mental status/ALOC, trauma, head injury, medications.</p> <p>Bradycardia may be a normal variant in an asymptomatic patient especially in young athletes.</p> <p>Vitals</p> <p>Physical Exam:</p> <p>Respirations: Shallow? Rate? Spontaneous?</p> <p>Breath sounds: Equal? Crackles? Rhonchi?</p> <p>Heart: Beating? Regular or irregular?</p> <p>Chest: Pacemaker?</p> <p>Pulses: Carotid? Peripheral? Regular?</p> <p>Abdomen: Soft?</p> <p>Skin: Warm? Dry? Cyanosis? Cold? Surgical scars/implants? Med-alert tags?</p> <p>Pupils: Reactive? Size?</p> <p>Evidence of trauma? Head injury?</p> <p>Mental Status: GCS?</p> <p>Previous medical history: medications, allergies, depression/previous attempt at self injury, drug ingestions, history of renal failure?</p> <p>Unstable: Hypotension, ALOC, Shock, Ischemic Chest Pain, Acute Heart Failure, Severe Respiratory Distress.</p>
Differential Diagnosis	<p>P: Physiologic (young athlete, sleeping).</p> <p>A: AV Block (Mobitz type II second degree AV Block, third degree block).</p> <p>D: Drugs (Beta-blockers, Calcium Channel Blockers, Digoxin, Clonidine, Amiodarone, Opioids.)</p> <p>H: Hypothermia, Hypothyroidism, Hyperkalemia (renal failure), Hypoxemia.</p> <p>I: Increased Intracranial Pressure (head trauma, head tumor, subarachnoid hemorrhage).</p> <p>M: Myocardial infarction/ischemia.</p> <p>Consider nerve agent/organophosphate exposure if multiple victims and/or “AB-SLUDGEM”: ALOC, Bronchorrhea, Bradycardia, Bronchospasm, Salivation, Sweating, Seizures, Lacrimation (tearing), Urination, Defecation, Diarrhea, GI upset (abdominal cramps), Emesis (vomiting), Miosis/Muscle activity (twitching).</p>

Cardiac Arrest/Dysrhythmia

Medications	<p>Doses of atropine < 0.5 mg may paradoxically result in further slowing of the heart rate. Thus the minimum dose administered to an adult should be 0.5 mg.</p> <p>Atropine administration should not delay implementation of external pacing for patients with poor perfusion.</p> <p>Use atropine cautiously in the presence of acute coronary ischemia or MI; increased heart rate may worsen ischemia or increase infarction size.</p> <p>Consider additional doses of Midazolam for pain/discomfort with Transcutaneous pacing in a patient who is stable and SBP > 100, Midazolam 2 mg IV/IO/IN every 10 minutes (max 10 mg). Carefully monitor respiratory status, blood pressure, and mental status.</p> <p>Consider additional doses of Fentanyl for pain/discomfort with Transcutaneous pacing in a patient who is stable and SBP > 100 and their pain and discomfort are not controlled after Midazolam. Give Fentanyl 25-50 mcg IV/IO/IN every 30 minutes x2 prn pain.</p>
ALOC	<p>Glucose - Per PROCEDURE: <i>Blood Glucose Determination</i>. If glucose < 80 or ALOC and unable to determine glucose:</p> <p>Note: Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).</p> <p>Dextrose – 1 amp D50 IO/IV (1 amp = 25g in 50ml). May repeat in 5 minutes if ALOC persists and glucose still < 80.</p> <p>Glucose Paste – If no IV, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.</p> <p>If patient is unable to swallow, paste may be placed inside the mouth, outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).</p> <p>If no response to Glucose Paste in 5 minutes, then proceed to Glucagon.</p> <p>Glucagon 0.03mg/kg IM, max dose 1mg (if no IO/IV).</p> <p>If ALOC persists and glucose remains < 80, may repeat once in 15 minutes.</p>
Decompensation	<p>At any time a patient with Bradycardia can decompensate into VFib/Vtach or PEA. Be prepared to GO TO PROTOCOL: <i>Cardiac Arrest (Adult Medical)</i>.</p>
Documentation	<p>Initial and subsequent vital signs, mental status and physical exam.</p> <p>All pertinent positive and negatives under assessment.</p> <p>Time and response to interventions administered.</p> <p>Reassessments of Vitals, signs of instability.</p> <p>Base Contact.</p>

Cardiac Arrest/Dysrhythmia

Adult Bradydysrhythmia Algorithm (2060 P-3)



Cardiac Arrest/Dysrhythmia

Tachydysrhythmia (2060 P-4)

If patient is pulseless, **GO TO PROTOCOL: Cardiac Arrest/Dysrhythmias-Pulseless Arrest.**

Resuscitation Guidelines

If Patients HR > (220 – age) = consider pathologic rhythm.

Sinus Tachycardia

Sinus Tachycardia is defined as a rate of > 100 beats per minute and is usually a normal physiologic response to underlying pathology (A healthy heart responding to a sick body!). Patients with signs and symptoms of systemic inflammatory response syndromes (SIRS), sepsis responding to an underlying infection, or undifferentiated shock (cardiogenic, hypovolemic, obstructive, distributive, etc.) often present with sinus tachycardia. These patients will not respond well to treatments directed at their sinus tachycardia and may worsen with such treatments. This protocol is not intended for these patients. Often they respond to volume replacement and treatment of the underlying condition(s).

Supraventricular Tachycardia

Pathologically significant tachydysrhythmia rates are typically ≥ 150 beats/minute.

Narrow-complex (QRS duration < 0.12 seconds)

Narrow-complex (QRS duration < 0.12 seconds) supraventricular tachycardias (SVT) consist of: Atrial fibrillation, Atrial flutter, AV nodal reentry, Accessory pathway –mediated tachycardia, Atrial tachycardia (including automatic and reentry forms), Multifocal atrial tachycardia (MAT), and Junctional tachycardia (rare in adults).

Wide-Complex Tachycardia (QRS duration ≥ 0.12 seconds)

Wide-complex (QRS duration ≥ 0.12 second) tachycardias consist of: Ventricular tachycardia (VT), ventricular fibrillation (VF), SVT with aberrancy, Pre-excitation tachycardias (WPW), and Ventricular paced rhythms. Wide-complex tachycardias are often unstable, or progress to instability quickly if not addressed.

Vagal Maneuvers

Vagal maneuvers may be useful for the conversion of Paroxysmal (P) SVT. There are multiple vagal maneuvers. However, the only maneuvers endorsed in this manual are valsalva maneuvers. For valsalva maneuvers, instruct the patient to “bear down” or hum loudly for approximately 10 seconds. **Do not perform carotid body massage.**

Medication Administration

Stable Narrow-Complex (QRS duration < 0.12 seconds) Tachycardia

Adenosine. If narrow-complex supraventricular tachycardia (SVT) does not respond to vagal maneuvers, give 6 mg of adenosine as a rapid IV push through a large vein followed by a 20 ml normal saline flush. If the rhythm does not convert within 1 to 2 minutes, give a 12 mg rapid IV push of adenosine using the same method above. A defibrillator should be available when adenosine is administered to any patient

Cardiac Arrest/Dysrhythmia

Calcium Channel Blocker (Diltiazem). If adenosine or vagal maneuvers fail to convert narrow-complex SVT, SVT recurs after such treatment, or these treatments disclose a different form of SVT (such as atrial fibrillation or flutter), it is reasonable to use longer-acting AV nodal blocking agents such as calcium channel blockers (Diltiazem). Their alternate mechanism of action and longer duration may result in more sustained termination of SVT or afford more sustained rate control of atrial dysrhythmias (such as atrial fibrillation or flutter). For refractory SVT, further dosing should be administered under the direction of a base physician. Diltiazem should not be given to patients with wide-complex tachycardias or to patients with known impaired ventricular function or heart failure.

Stable Wide-complex (QRS duration \geq 0.12 seconds) Tachycardia

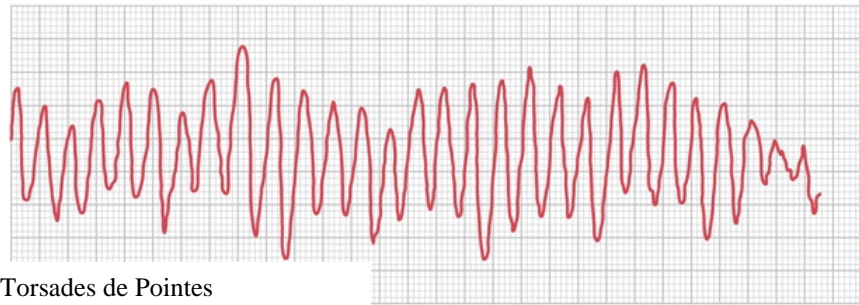
Amiodarone. Amiodarone is effective in preventing recurrent monomorphic VT and treating refractory ventricular arrhythmias. Administer 150 mg IV over 10 minutes. Dosing may be repeated once for refractory wide-complex tachycardias. Either bolus should be followed by an infusion of 1mg/min over 6 hours.

Cardiac Monitor/ Synchronized Cardioversion

Cardiac Arrest/Dysrhythmia

1. ABCs	<p>Assess airway, breathing, and circulation. Evaluate for signs/symptoms of poor perfusion. Poor tissue perfusion (signs of shock) may present as, but are not limited to:</p> <p>Tachypnea, cool and pale distal extremities, prolonged (> 2 seconds) capillary refill, weak or absent peripheral pulses, weak central pulses, deterioration in color (ie, pallor, peripheral cyanosis), mottling of the skin, depressed mental status, and hypotension.</p> <p>If, at any time, pulse is absent, patient is in cardiac arrest, initiate CPR and GO TO PROTOCOL: <i>Cardiac Arrest/Dysrhythmias</i>.</p>
2. Assessment	<p>Is the patient's tachycardia inappropriate or pathologic for their clinical condition? Sinus tachycardia is an appropriate rhythm response for some underlying medical conditions. If sinus tachycardia GO TO appropriate protocol.</p> <p>Quickly obtain information (15-30 seconds) from witnesses to identify preceding events, duration and onset of symptoms, previous medical history, medications, and possible ingestions.</p>
3. Identify and Treat (Airway, Oxygen, Assist Breathing, Cardiac Monitor, IV/IO Access, ECG)	<p>Support a patent airway, breathing, and circulation as needed. Administer oxygen, attach a cardiac monitor/external defibrillator, and obtain vascular access.</p> <p>Initiate oxygen therapy Per PROCEDURE: <i>Oxygen Administration</i>. Consider securing BLS airway utilizing OPA/NPA and assisting ventilations with BVM.</p> <p>Apply Cardiac Monitor/External Defibrillator: Evaluate blood pressure and monitor oximetry.</p> <p>IV/IO access per PROCEDURE: <i>IV Access and IV Fluid Administration and Intraosseous Access</i>.</p>
4. Patient Stability	<p>Stable or Unstable? Assess cardiopulmonary reserve.</p> <p>Signs/symptoms of tachydysrhythmia causing hypotension, altered mental status, signs of shock, severe respiratory distress or chest discomfort are considered "Unstable."</p> <p>Unstable – Step 5 – Synchronized Cardioversion.</p> <p>Stable – Step 6 – Evaluate monitor rhythm for QRS duration.</p>
5. Synchronized Cardioversion	<p>Identify tachydysrhythmia prior to cardioversion.</p> <p>Narrow regular: 50-100J Narrow irregular: 120-200J Wide regular: 100J Wide irregular: 200 J Defibrillation (NOT synchronized)</p> <p>Note: If Torsades de Pointes or long QT is suspected, give Magnesium Sulfate 2gm IV</p>

Cardiac Arrest/Dysrhythmia



Versed

1-2 mg, SIVP post cardioversion. If patient converts, and SBP > 100 and protecting airway adequately.

6. Cardiac Monitor

Evaluate monitor rhythm for QRS duration.

If QRS duration ≤ 0.12 seconds, proceed to **step 7**.

If QRS duration ≥ 0.12 seconds, proceed to **step 12**.

7. Rhythm Assessment

Assess whether the narrow-complex (QRS duration ≤ 0.12 seconds) tachycardia is regular (P) SVT or irregular (atrial fibrillation or occasionally a flutter with variable block).

If regular, proceed to **Step 8**.

If irregular, proceed to **Step 11**.

8. Treatment – Regular Narrow SVT (IV, ECG, Vagal Maneuvers)

Supraventricular tachycardias (SVTs) are characterized by abrupt onset and termination and a steady regular rate/rhythm that exceeds the typical upper limits of sinus tachycardia at rest (usually > 150 beats per minute). SVT often presents without readily identifiable P waves on the ECG.

Obtain IV/IO access. Per PROCEDURE: IV Access and IV Fluid Administration and Intraosseous access.

Perform 12-lead ECG as available. Per PROCEDURE: 12-lead Electrocardiogram.

Attempt vagal maneuver. May repeat vagal maneuver once. Reassess rhythm after vagal maneuver attempts.

9. Treatment – Regular Narrow SVT (Adenosine)

Give Adenosine IV dose:

First dose: 6 mg rapid IV push, followed by 20 ml NS flush, reassess rate/rhythm.

If conversion or rate control unsuccessful, attempt 2nd dose.

Second dose: 12 mg IV, 20 ml NS flush, reassess rate/rhythm.

Cardiac Arrest/Dysrhythmia

10. Treatment – Regular Narrow SVT (Diltiazem)	<p>Give Diltiazem IV dose: First dose: 10 mg SIVP over 2 minutes (over 3 minutes in older patients). If conversion or rate control unsuccessful, attempt 2nd dose. Second dose: 10 mg as above. Third dose: Base contact</p> <p>Diltiazem drip (If time to definitive care > 30 minutes): 5mg/hour and increase up to 10 mg/hr for a goal HR of 80-100. Hold for SBP < 90 or HR < 80. If patient converts to sinus: titrate drip off over 10 minutes.</p>
11. Treatment – Irregular Narrow SVT (IV, ECG, Diltiazem)	<p>Irregular narrow-complex (QRS duration ≤ 0.12 seconds) SVT consider atrial flutter or fibrillation. Administer rate control medications.</p> <p>Give Diltiazem IV dose: First dose: 10 mg SIVP over 2 minutes (over 3 minutes in older patients). If conversion or rate control unsuccessful, attempt 2nd dose. Second dose: 10 mg as above. Third dose: Base contact</p> <p>Diltiazem drip: 5mg/hour and increase up to 10 mg/hr for a goal HR of 80-100. Hold for SBP < 90 or HR < 80.</p>
12. Treatment – Stable Wide-Complex Regular (IV, ECG, Amiodarone)	<p>Amiodarone IV Dose: First dose: 150 mg over 10 minutes. Repeat once if VT continues/recurs.</p> <p>Either bolus should be followed by an infusion of 1mg/min over 6 hours. Should the patient's condition become unstable, proceed to immediate synchronized cardioversion. During the evaluation and re-assessment of the patient, should pulses become absent, proceed to cardiac arrest algorithm.</p>
13. Treatment – Stable Wide-Complex Irregular (IV, ECG)	<p>Call Base. If Torsades de Pointes suspected see Step 5 above for magnesium.</p>
14. 12 lead ECG	<p>Post cardioversion (electrical or chemical) obtain ECG.</p>
15. Transport	<p>Consider air transport for all cardioverted patients unless base advises otherwise.</p>

Cardiac Arrest/Dysrhythmia

SPECIAL CONSIDERATIONS

Assessment

Patient condition immediately prior to tachydysrhythmia: chest pain, shortness of breath?
Bystander interventions?

Physical Exam:

Respirations: Shallow? Rate? Spontaneous?

Breath sounds: Equal? Crackles? Rhonchi?

Heart: Beating? Regular or irregular?

Pulses: Carotid? Peripheral? Regular?

Abdomen: Soft? Signs of GI bleeding?

Skin: Warm? Dry? Cyanosis? Rigor/lividity? Cold? Surgical scars/implants?

Pupils: Reactive? Size?

Evidence of trauma? Acute blood loss?

Previous medical history: medications, allergies, depression/previous attempt at self injury, drug ingestions, history of renal failure, known history of dysrhythmias?

Differential Diagnosis

There are multiple causes of both sinus tachycardia and tachydysrhythmias. Including: hyperthyroidism, drug use (cocaine, methamphetamine, anticholinergics), drug and alcohol withdrawal states, aspirin toxicity and other ingestions, fever, hypovolemia, infection, sepsis, myocardial ischemia, pulmonary causes (COPD, Asthma, PE, hypoxia).

The key to appropriate management is identifying the patients where the dysrhythmia is the primary problem and not a compensation for the underlying medical condition.

The aggressiveness of your therapy, electrical (cardioversion) vs chemical (medications) depends on the stability of the patient.

Cardiac arrest is the final common pathway for every cause of death. It is important to differentiate irreversible causes of cardiac arrest from potentially reversible causes of cardiac arrest. Some examples of potentially reversible causes of cardiac arrest include: cardiogenic shock, cardiac dysrhythmia, hypovolemia, hypoglycemia, hyperkalemia, tension pneumothorax, pericardial tamponade, respiratory arrest, allergic reaction, drug/medication/toxin ingestion, hypothermia, hyperthermia, drowning, electrical injury or trauma.

Treatment

Versed Post Cardioversion. Use caution with elderly patients when dosing. Administer slowly or cut dose in half and redose. Versed is intended to provide retrograde amnesia so the patient won't remember the painful shock.

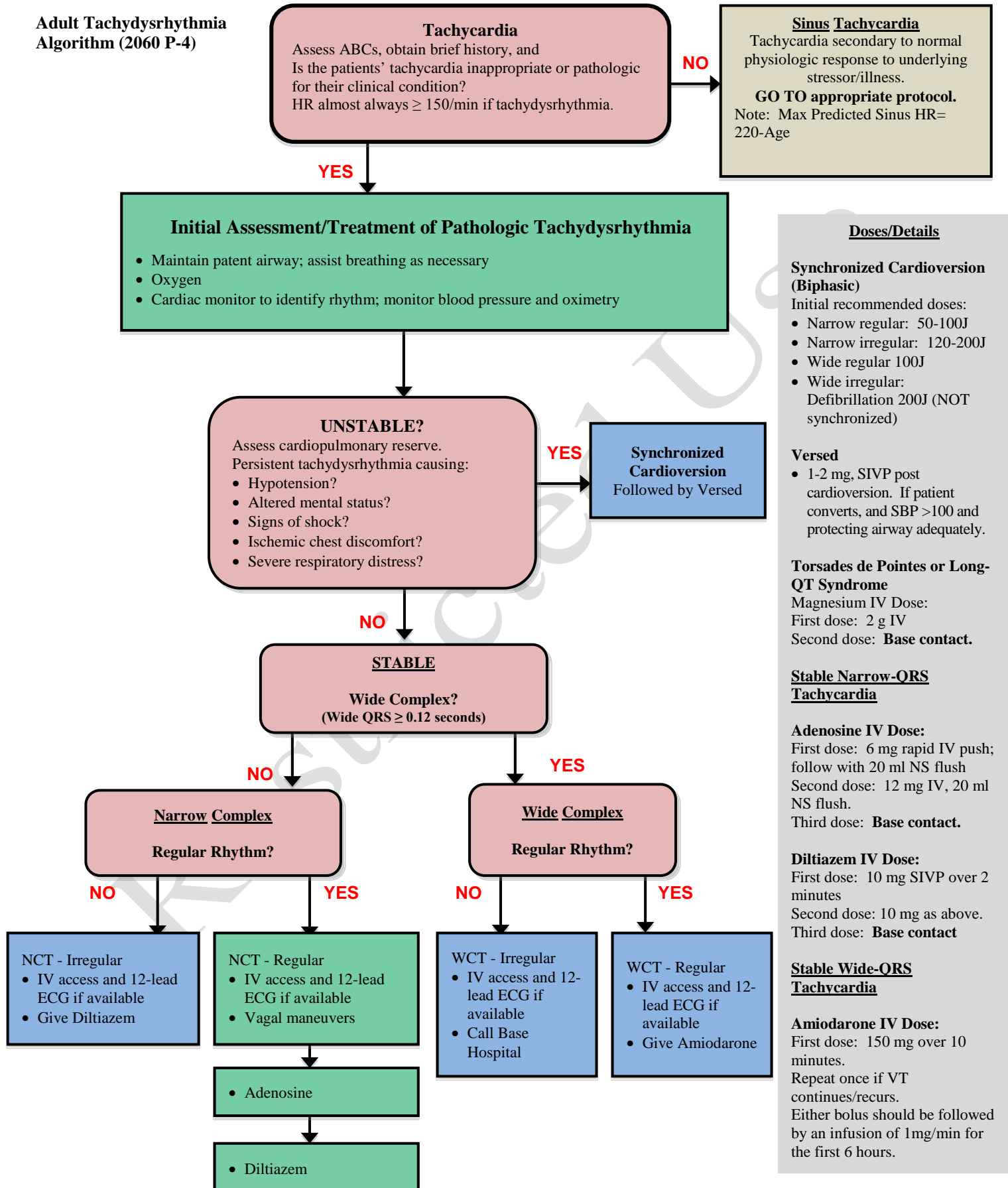
*** Although unlikely, in selected circumstances consider using any/all of the therapies below ***

1. NS 1 liter IV/IO bolus - History of possible dehydration
2. Sodium bicarbonate 50 meq (1 ampule) IV/IO - History of toxicologic exposure, renal failure or excessive exertion
3. Dextrose - History of diabetes medication or starvation - 1 ampule D50 IV/IO (1 ampule = 25g in 50ml).
4. For Torsades/refractory V Fib: Adult: Magnesium Sulfate 2gm SIVP over 1-2 minutes, repeat if arrhythmia not resolved.
5. Calcium Gluconate - - For patients with renal failure with suspected hyperkalemia (rhythm often looks like "slow V-tach").

Documentation

Initial and subsequent vital signs and mental status.
Time and response to interventions administered.

Adult Tachydysrhythmia Algorithm (2060 P-4)



Doses/Details

Synchronized Cardioversion (Biphasic)

Initial recommended doses:

- Narrow regular: 50-100J
- Narrow irregular: 120-200J
- Wide regular 100J
- Wide irregular: Defibrillation 200J (NOT synchronized)

Versed

- 1-2 mg, SIVP post cardioversion. If patient converts, and SBP >100 and protecting airway adequately.

Torsades de Pointes or Long-QT Syndrome

Magnesium IV Dose:

First dose: 2 g IV

Second dose: **Base contact.**

Stable Narrow-QRS Tachycardia

Adenosine IV Dose:

First dose: 6 mg rapid IV push; follow with 20 ml NS flush

Second dose: 12 mg IV, 20 ml NS flush.

Third dose: **Base contact.**

Diltiazem IV Dose:

First dose: 10 mg SIVP over 2 minutes

Second dose: 10 mg as above.

Third dose: **Base contact**

Stable Wide-QRS Tachycardia

Amiodarone IV Dose:

First dose: 150 mg over 10 minutes.

Repeat once if VT continues/recurs.

Either bolus should be followed by an infusion of 1mg/min for the first 6 hours.

Cross Reference

Procedures:

12 Lead ECG
Blood Glucose Determination
Endotracheal Intubation
Glucose Determination
Intraosseous (IO) Access
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration
Transcutaneous Pacing
Transtacheal Jet Insufflation

Protocols:

Altered Mental Status/Altered
Level of Consciousness (ALOC)
Hypothermia
Ingestion/Poisoning
Pediatric – Cardiac Arrest/
Dysrhythmias
Pediatric – Newborn Resuscitation
Respiratory Distress
Shock Without Trauma

Drugs:

Adenosine
Amiodarone
Atropine
Calcium Gluconate
Dextrose 50% (D50)
Diltiazem
Dopamine
Epinephrine
Fentanyl
Glucagon
Glucose Paste or Gel
Magnesium Sulfate
Midazolam (Versed)
Sodium Bicarbonate

CHEST PAIN - CARDIAC

Paramedic Standing Orders

1. **Assessment** Evaluate ABCs. Assess pain PQRST, vital signs, lung sounds (rales), skin signs, mental status, cardiac history, medications, blood pressure in both arms.
2. **Airway** Protect the airway, assist respirations, and suction as needed. Consider OPA/NPA /CPAP.or ALS airway as indicated. Per PROCEDURE: *CPAP/ETT/King Tube*.
3. **Oxygen** Low flow per PROCEDURE: *Oxygen Administration*. If signs of shock or respiratory distress, use high flow O2.
4. **Cardiac Monitor** Apply cardiac monitor and treat rhythm if appropriate.
If appropriate, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
Frequent PVCs, Couplets/Triplets, Non-sustained VT – make base hospital contact for treatment considerations.
5. **Aspirin** Administer 325mg tablet or four 81mg tablets PO, chewed and swallowed with a little water as needed.
6. **Nitroglycerin** Administer 0.4 mg SL or mouth spray. **Hold for systolic BP < 100.** Repeat every 5 minutes if chest pain continues, and systolic BP is greater than 100, to a total of 8 doses. Check BP before each dose. After fourth nitroglycerin dose, administer one dose of fentanyl 25-50mcg while continuing the above nitroglycerin regimen.

Administer if patient has, and continues to have, all of the following:
ongoing chest pain
SBP >100
normal neuro exam
normal mental status
no erectile dysfunction drug use in last 24 hours
7. **IV/IO Access** Establish IV/IO Access per PROCEDURE: *IV/Access and IV Fluid Administration and Intraosseous Access*.
8. **Reassurance** Provide reassurance and prevent patient exertion.
9. **12-lead ECG** Obtain 12-lead ECG in accordance with manufacturer's guidelines.
Relay any relevant read (e.g. ***AMI***) to base hospital
10. **STAT Transport** Transport in position of comfort. Consider air transport and/or rendezvous with higher level of care for ongoing pain, abnormal vitals, shortness of breath, signs of shock, STEMI, or prolonged ground transport. Check vitals 2-3 minutes after every intervention. Consider early Base contact.
11. **Ondansetron** For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.

Note: If ECG available and shows prolonged QTc, do not give without Base approval.

CHEST PAIN - CARDIAC

12. IV Fluid Administration Per PROCEDURE: *IV Access and IV Fluid Administration*. Bolus IV fluids based on SBP:

SBP > 100: LR/NS Saline Lock.
SBP 80-100: LR/NS 250ml bolus.
SBP < 80: LR/NS 500ml bolus.

Repeat IV fluid bolus as needed if lung sounds remain clear, following SBP directives.

13. Nitropaste If SBP > 100: Apply 1-inch to anterior chest wall.
If SBP drops below 90: Wipe paste off chest wall.

14. Midazolam Administer 2mg IV/IO/IN if ischemic chest discomfort associated with sympathomimetic abuse (cocaine, crack, amphetamines, crank). May repeat once if needed.

15. Fentanyl If ongoing pain unresponsive to nitroglycerin, SBP > 100, and normal mental status.
IV/IO/IN: 25-50 mcg. Repeat in 10 min x1 prn pain.
Subsequent doses (2 max) every 20 minutes.
i.e. Fastest possible dosing schedule would be; time 0, 10, 30, 50 min.
IM: 50 - 100 mcg every 20 minutes. Repeat in 20 min x2 prn pain.
i.e. Fastest possible dosing schedule would be; time 0, 20, 40 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

16. Long Acting Narcotic (Morphine **OR** Hydromorphone (Dilaudid)). Only to be used 20 minutes after fentanyl dosing schedule above is completed.

Morphine If severe pain, SBP > 100, and normal mental status.

IM: 5mg (0.5ml) every 20 min prn pain (max 20mg)
IV/IO: 4-10mg (0.4-1ml) every 20 min prn pain (max 20mg)

OR

Hydromorphone If severe pain, SBP > 100, and normal mental status.

(Dilaudid) IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
IM: 1mg (1ml) every 30 min prn pain (max 2mg).

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

17. Base Contact

CHEST PAIN - CARDIAC

SPECIAL CONSIDERATIONS

Assessment	<p>History of pain "PQRST":</p> <ul style="list-style-type: none">P: Provoking/Palliating factors.Q: Quality/Quantity of pain.R: Region/Radiation of pain.S: Setting/Severity (scale 1-10).T: Time (onset/duration/variability of pain). <p>General appearance: ashen, cyanotic, anxious, sweating, respiratory distress.</p> <p>PMH: heart attack, high blood pressure, heart disease, CHF, diabetes, high cholesterol.</p> <p>Predisposing factors: age >40, smoking, high blood pressure, high cholesterol, family history of heart disease, prior heart problems or prior heart attack, diabetes.</p> <p>Medications: heart/blood pressure medication (aspirin, nitroglycerine), insulin.</p> <p>Allergies: Aspirin, morphine.</p> <p>Social: smoking, recent drug use, sedentary lifestyle.</p> <p>Mental status</p> <p>Blood pressure: presence of cardiogenic shock or severe hypertension.</p> <p>Heart rate (brady or tachyarrhythmias) and irregular rhythms.</p> <ul style="list-style-type: none">Bradycardia: heart disease (blocks), pacer malfunction, medications.Tachycardia: Consider shock, sympathomimetic drug use, or pain. <p>Unequal pulses: possibility of aortic dissection.</p> <p>Lungs: wet lung sounds (rales) or wheezing suggesting heart failure and pulmonary edema.</p>
Diagnosis	<p>Etiology of chest pain is difficult to diagnose. History is the most important guide. Assume and treat as if life-threatening condition. If unsure, contact base early. Assume cardiac until proven otherwise.</p> <p>Symptoms suggesting cardiac ischemia (angina)/MI: chest pressure or tightness; chest pain, often radiating to neck, jaw, and/or arms.</p> <p>Associated symptoms: shortness of breath, dizziness, syncope, diaphoresis, nausea, vomiting, abdominal pain, palpitations, anxiety and agitation. Symptoms often worsen with exertion and improve with rest.</p> <p>Signs of CHF: rales, distended neck veins, shortness of breath, pedal edema.</p>
Differential Diagnosis	<p>Cardiac ischemia (angina) and MI are frequent causes of chest pain but consider other life threatening causes and treat accordingly:</p> <p>Pulmonary:</p> <ul style="list-style-type: none">Pneumothorax (young people, asthmatics, COPD, trauma): sudden onset, unilateral diminished breath sounds, tachypnea, chest pain. Some may have positional/pleuritic component.Pulmonary embolus (pregnant women or women taking oral contraceptives, people with immobilized lower extremities or cancer, prolonged travel, smokers): tachypnea, short of breath, sudden onset of coughing blood, chest pain, tachycardia.Pneumonia: cough, sputum, shortness of breath, fever, gradual onset.Asthma: wheezing, history of asthma, shortness of breath.

CHEST PAIN - CARDIAC

Other cardiac:

Aortic aneurysm or dissection (age > 50 with atherosclerotic disease):
“tearing pain” radiating to the back, hyper/hypotension, unequal upper extremity pulses and blood pressure. If suspected, transport immediately, and refer to *PROTOCOL: Shock Without Trauma*.

Pericarditis: gradual onset may have a pleuritic or positional (e.g. pain improves when leaning forward) component.

Medication Issues Aspirin: Contraindicated if true allergy. Not contraindicated if “allergy” due to ulcers or stomach upset. Give Aspirin regardless of whether or not the patient has had Aspirin in the past 24 hours.

Nitroglycerin tablets/spray/paste: Check blood pressure before and after administration. When applying Nitropaste to chest wall, avoid AED pad placement areas as Nitropaste will impede adherence of the pads. Nitropaste is a venodilator and should be placed on all patients with suspected ischemic chest pain even if pain resolves. Recurrent ischemia may be prevented with nitropaste; thus, routine use is indicated unless blood pressure is below 100 systolic.

Fentanyl – note that dosing regimen in this protocol is more aggressive and different than all other protocols using this drug. This is due to the fact that in addition to alleviating pain, this medication treats the underlying disease process.

Transport If suggestive of cardiac origin, do not delay on scene; begin immediate rapid evacuation. Arrange ALS rendezvous, preferably ACLS. Consider air transport if shock, ongoing pain, unstable vitals, SOB, STEMI, or extended ground transport. Continue frequent reassessment of vitals.

AMA/TAR NO patient with chest pain should be TAR without base contact (AMA if communication failure). Parks without base hospitals should follow local medical advisor approved EMS policy.

Pre-Hospital ECG and Destination Any patient with chest pain should be considered at risk for cardiac disease. These patients should have a 12-lead ECG performed and subsequently transported to a facility with interventional heart catheterization capabilities if the ECG interpretation would warrant such transport, i.e.

*** ** ACUTE MI *** ** (Zoll Monitor)

or

ACUTE MI SUSPECTED (Physio-Control Monitor)

Consider early call-in.

Cross Reference

Procedures:

12 Lead ECG
CPAP
Intraosseous Access
IV Access and IV Fluid Administration
Oxygen Administration
Synchronized Cardioversion

Protocols:

Cardiac Arrest/Dysrhythmia
Respiratory Distress
Shock Without Trauma

Drugs:

Aspirin
Fentanyl
Hydromorphone (Dilaudid)
Midazolam (Versed)
Morphine
Nitroglycerin
Ondansetron

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Paramedic Standing Orders

1. ABCs
2. Assessment
Vitals, contractions, ruptured bag of water, urge to push, bleeding, due date, prenatal care, expected complications, prior deliveries.
If urge to push inspect perineum.
If crowning prepare for imminent delivery.
If prolapsed cord or breech see Special Considerations.
3. Monitor
Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*.
4. Oxygen
Per PROCEDURE: *Oxygen Administration*. High flow if complications.
5. Transport
Place mother on left side unless crowning/pushing.
Begin transport unless delivery imminent (crowning/pushing).
If complications consider air transport.
6. Base Contact
Consider early base contact to assist with resuscitation.
7. Maternal IV/IO
Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*
If delivery is imminent, defer IV/IO attempts until after delivery.
8. Delivery
Assist with delivery: If complications, see Special Considerations for procedures.
Control head.
Once head is delivered, suction mouth and nose with bulb syringe prior to newborn's first breath.
Check for cord around neck.
Deliver upper shoulder, then lower shoulder.
After shoulders delivered, newborn will rapidly deliver.
9. Dry Newborn
Dry the newborn. Place newborn in as warm an environment as possible, replacing all wet towels with dry. Keep newborn covered, especially the head, to minimize heat loss.
10. Clamp/ Suction
Clamp and cut umbilical cord approximately 3" from abdominal wall of infant. Place newborn on mother's abdomen with head in neutral position. Suction mouth, pharynx, then nose with a bulb syringe.
11. Stimulate
Rub newborn's body. Flick the soles of the feet or rub the back.
12. Evaluate
Determine APGAR score at 1 min and 5 min after completion of delivery. (See APGAR chart in Special Considerations).
If newborn in distress or APGAR < 8, **GO TO PROTOCOL: Pediatric - Newborn Resuscitation**.
If healthy, place newborn to mother's breast to facilitate delivery of placenta and reduce bleeding; proceed to **Step 13**.
13. Placenta
Allow placenta to deliver on its own. Do not pull on cord. Bring placenta to hospital.
14. Massage
Massage uterine fundus. If uncontrolled heavy bleeding, see Special Considerations and Oxytocin orders below.

CHILDBIRTH

Paramedic Base Hospital/Communication Failure Orders

1. Oxytocin For heavy bleeding after delivery that is not controlled by fundal massage and breast feeding:
 IV/IO: 20 units (2ml) in 1000 ml NS/LR at 500 ml/hr.
 IM: 10 units (1ml) if no IV access.

2. Acetaminophen Adult: 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
 (Tylenol)

3. Fentanyl Adult: If severe pain, SBP > 100, and normal mental status.
 IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes.
 i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
 i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

4. Long Acting Only to be used 30 minutes after fentanyl dosing schedule above is completed.
 Narcotic (Morphine
 OR Dilaudid).

- Morphine Adult: If severe pain, SBP > 100, and normal mental status.
 IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
 IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).

- Dilaudid Adult: If severe pain, SBP > 100, and normal mental status.
 IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
 IM: 1mg (1ml) every 30 min prn pain (max 2mg).

***Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
 Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.***

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SPECIAL CONSIDERATIONS

Assessment

APGAR CHART

	0	1	2
Appearance	Blue or Pale	Body pink, limbs blue	Completely pink
Pulse	0	< 100	> 100
Grimace	No response	Grimace	Cough, sneeze, cry
Activity	Flaccid	Some Flexion	Active Movement
Respirations	Absent	Slow, Irregular, Weak	Strongly crying

History:

What is the expected birth date?
Prenatal care? Ultrasound?
Does patient expect any complications (e.g., twins, breech, hypertension, diabetes)?
Number of pregnancies?
Number of vaginal deliveries? Previous Cesarean Sections? Prior complications?
Have the membranes ruptured (bag of water)? When?
Urge to push?

Vital signs:

High/low blood pressure?
Contractions: frequency, duration, onset?

Examine perineum:

Crowning, bleeding, cord prolapse?
If patient has urge to push, perform external exam; do not perform digital exams.

Childbirth Complications

Hypertension:

SBP > 180 or DBP > 110 (pre-eclampsia) are particularly worrisome, especially if complications associated with headaches, blurry vision, seizures (eclampsia), chest pain, or vomiting. The most important aspect of treatment is recognition and rapid transport. Reference **PROTOCOL: Chest Pain (Cardiac) or Seizures if appropriate.**

Placenta Abruption/Previa:

Vaginal bleeding in the last trimester of pregnancy not associated with labor. High flow Oxygen. Transport in left lateral decubitus position. ALS backup and air transport if available. Discourage patient from pushing if she feels the urge to push as this may significantly worsen bleeding. Two large-bore IV/IOs per **PROCEDURE: IV Access and IV Fluid Administration** and **Intraosseous Access**. If patient is in shock, **GO TO PROTOCOL: Shock without Trauma.**

Breech Presentation:

Foot or buttocks first instead of head first.

1. Allow delivery to progress naturally until the umbilicus is visualized, then apply gentle traction until the shoulders deliver. Continue encouraging mother to push.
2. If head becomes entrapped (i.e. delivery fails to progress), suffocation may occur because the newborn's umbilical cord is compressed by its head in the birth canal and its face is pressed against the vaginal wall.
3. At this point, do not attempt to pull the newborn out.
4. Insert gloved hand into vagina, palm towards newborn's

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face. Form a “V” with your fingers on either side of the newborn’s nose and push the vaginal wall away from the newborn’s face until the head is delivered.

5. Provide blow-by oxygen to newborn.
6. Begin transport immediately with mother on her left side and her hips elevated above her head, while still maintaining breathing passage with fingers.
7. Be careful not to hyperextend or hyperflex the newborn’s neck during transport, as this can kink the airway.

- Shoulder Dystocia:* Shoulders are stuck, preventing delivery and potentially leading to newborn asphyxiation if not corrected rapidly. Work through the steps, stopping when shoulder is disengaged:
1. While mother is supine, bring her knees as close to her armpits as possible.
 2. Apply firm steady pressure to the lower abdomen just above the pubic bone.
 3. “Corkscrew” the shoulders: Rotate the shoulders 180° by pushing the most accessible shoulder toward the newborn’s chest.
 4. Grab the lower arm of the newborn and sweep it across the neonate’s chest to the chin and then pull arm out of the canal, bringing the fetal hand up to the chin.

- Prolapsed Cord:* Visible umbilical cord preceding delivery.
1. Place mother in Trendelenberg position (head lower than hips) with left lateral decubitus or manual uterine displacement.
 2. Check for pulse in cord; if pulsatile, go to **Step 4**. If no pulse in cord, place mother in knee-chest position (while still in Trendelenberg), and check for pulse in cord; if pulsatile, go to **Step 4**. If still no pulse in cord, go to **Step 3**.
 3. With gloved hand, gently push the neonate back up into the vagina to take pressure off the cord. Apply enough pressure to allow a pulse to be palpated in the cord, and then maintain the newborn in that position.
 4. Do not attempt to push the cord back into the vagina.
 5. Cover the exposed cord with a moist dressing.
 6. Air transport if available.

EXCEPTION: When head is crowning with a prolapsed cord, deliver immediately at the scene, as this is the most rapid means of restoring oxygen to the newborn.

- Cord Entanglement:* Umbilical cord knots may be pulled tight at delivery and may cause fetal distress. Rapid delivery and avoidance of further traction will optimize fetal outcome.
- Long umbilical cords may loop around body or neck, called a “Nuchal Cord.” Reduce these nuchal cords if possible by slipping them over the head. If a loop is impeding delivery, then clamp, carefully cut the cord, and deliver the newborn as soon as possible.
- Be careful not to cut the newborn’s neck.

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Postpartum Hemorrhage	Perform external exam to determine site of bleeding. If vaginal laceration seen apply direct pressure. Firmly massage fundus, and allow newborn to breast-feed. If bleeding not due to laceration <u>and</u> not controlled with fundal massage, contact base regarding Oxytocin.
Transportation	Many EMS helicopters cannot transport patients in active labor or at high risk of delivery due to space constraints
AMA/TAR	No patients may be released at scene (TAR) without base contact. Parks without base hospitals should follow local medical advisor approved EMS policy.
Documentation	Newborn vital signs and APGAR score at 1 and 5 minutes. Whether cord was cut by sterile or non-sterile equipment. Times: contractions began, "Water broke," delivery of newborn, delivery of placenta.

Cross References

Procedures:

Intraosseous Access
IV Access and IV
Fluid Administration
Oxygen Administration

Protocols:

Pediatric – Newborn Resuscitation

Drugs:

Acetaminophen (Tylenol)
Oxytocin

Dystonic Reactions

Paramedic Standing Orders

ABCs

Secure airway. Assist respirations as needed, utilizing OPA/NPA or ALS airway (*King Tube/ETT*) if indicated.

Note: Many of these reactions involve muscles of the face and mouth. Therefore, securing the airway may be difficult or impossible without appropriate therapy (Diphenhydramine).

Dystonic Reactions are very specific alterations of muscle control. Patient's with Dystonic Reactions have NORMAL comprehension of instructions and commands. Their ability to follow or execute commands may be impaired by their muscle control difficulties. If initial treatment is unsuccessful or diagnosis of Dystonic Reaction is uncertain, go to **PROTOCOL: Altered Mental Status/Altered Level of Consciousness (ALOC)**.

Diphenhydramine

Adults: 50mg IM/ IV/IO
0-14 yrs: 1mg/kg IM/IV/IO (Max 50mg)

IV

If no improvement of symptoms in 15 minutes, place IV, reassess and GO TO protocol *Altered Mental Status/Altered Level of Consciousness (ALOC)*.

Transport/Base Contact

Most patients improve after Diphenhydramine. A short period of observations (20-30 mins) is warranted. Transport/Base Contact is usually not necessary when symptoms are completely resolved. Consider Transport/Base Contact if symptoms persist or diagnosis unclear

Dystonic Reactions

SPECIAL CONSIDERATIONS

Dystonic reactions are associated with certain medications. They are a sort of “side effect” in that they cause unwanted symptoms but these reactions are not predictable as they can occur independent of dose. These reactions can occur after being on the medication for some time or after a single dose.

Dystonic reactions include a variety of abnormal motor/muscle findings ranging from restlessness to muscle spasms. Involuntary persistent muscle contractions, commonly of head, neck, or face. This may result in head or eye deviation or other uncontrollable movements such as eyelid spasms or tongue movements/spasticity (and can therefore interfere with speech).

Dystonic reactions are frequently associated with antipsychotic medications (e.g. Haldol). Newer antipsychotics (e.g. Zyprexa) seem to produce this ‘side effect’ less frequently but are still known to cause it. Other drugs, including common anti-emetics (anti nausea) Reglan, Compazine or Phenergan, can also cause dystonic reactions.

Dystonic reactions are the result of a derangement in one of the body’s motor coordination systems (extrapyramidal system or EPS). The EPS contains dopamine receptors thus drugs with antidopaminergic effects (such as Haldol, Zyprexa & Reglan, etc.) can produce these symptoms.

Cross Reference

Procedures:

IV Access and IV Fluid
Administration

Protocols:

Altered Mental Status

Drugs:

Diphenhydramine (Benadryl)

ELECTRICAL AND LIGHTNING INJURIES

Paramedic Standing Orders

1. Scene Safety Protect yourself and others from injury.
2. Rescue Remove victim from unsafe environment including electrical hazard, cold, and heat.
3. ABCs Secure airway. Assist respirations, utilizing OPA/NPA or ALS airway (*King Tube/ETT*).
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
Maintain C-spine precautions with ALL airway maneuvers.
If patient in cardiac arrest, **GO TO** PROTOCOL: *Cardiac Arrest/Dysrhythmia and Pediatric/Cardiac Arrest Dysrhythmia*
4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
5. Spinal Precautions If secondary trauma suspected or cannot be ruled out, reference PROCEDURE: *Spine Immobilization*.
6. Oxygen Per PROCEDURE: *Oxygen Administration*.
7. Assessment Vitals, mental status, burns, entry/exit wounds, fractures and dislocations, blunt trauma (from falls or being thrown), hypothermia.
8. IV/IO All transported patients: One IV/IO with maintenance fluids (NS/LR) per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Shock or TBSA > 15%: Two IV/IO's, with total IV fluid at the following rates:
Adults: 2-L NS/LR bolus, then double the maintenance rate (240ml/hr).
0–14 yrs.: 40 ml/kg NS/LR bolus (max bolus 2-L), then double maintenance rate (4ml/kg/hr).
9. Consider Trauma Treat for shock.
If suspected, **REFERENCE** PROTOCOL: *Burns; Major Trauma – Adult; or Pediatric – Major Trauma*.
If applicable, **REFERENCE** PROCEDURE: *Fracture/Dislocation Management; or Wound Care*.
10. Ondansetron
 (Zofran) For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
 ODT: 4mg, repeat in 15 min x2 prn nausea.
 IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
 ODT: ½ tab (2mg) if age 4–14
 IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IV/IO: Base Hospital Order ONLY. 0.1mg/kg SIVP.
 IM: Contraindicated for patients < 3 months of age.
Note: For severely symptomatic patients, ODT can be administered prior to attempts for IV/IO access
11. Transport Consider air transport if cardiac or respiratory arrest, ALOC, hypotension, or major trauma.
12. Base Contact Contact early if questions about destination, mode of transport, termination of resuscitation, or other problems.

ELECTRICAL AND LIGHTNING INJURIES

Paramedic Base Hospital /Communication Failure Orders

1. Fentanyl

Adult:	<p>If severe pain, SBP > 100, and normal mental status. IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain. i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>
Pediatric:	<p>IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p>

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Dilaudid).
 Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- | | | |
|-----------|------------------------|--|
| Morphine | Adult: | <p>If severe pain, SBP > 100, and normal mental status.
 IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
 IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).</p> |
| | Pediatric: | <p><u>Base Hospital Order ONLY</u>, NOT in communication failure.
 IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
 IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.</p> |
| OR | | |
| Dilaudid | Adult: | <p>If severe pain, SBP > 100, and normal mental status.
 IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
 IM: 1mg (1ml) every 30 min prn pain (max 2mg).</p> |
| | Pediatric:
(> 5y.o) | <p><u>Base Hospital Order ONLY</u>, NOT in communication failure.
 IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
 IM: 0.015mg/kg (0.015ml/kg). Max 1mg</p> |

***Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
 Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.***

3. Acetaminophen (Tylenol)

> 10-Adult:	1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
0-10 yrs:	15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.

ELECTRICAL AND LIGHTNING INJURIES

SPECIAL CONSIDERATIONS

Mechanism of Electrical Injury	<p>If possible, determine voltage, current (AC or DC), duration of exposure, and pathway of the electricity.</p> <p>High-voltage is > 1000 Volts, usually industrial, high-tension wires, lightning.</p> <p>Low-voltage is < 1000 Volts, usually household voltage.</p> <p>High-voltage electrocutions create worse injuries.</p> <p>AC prevents victims from releasing, so they sustain greater internal electrical injury.</p> <p>DC often throws victims, so they sustain less electrical injury but greater trauma.</p> <p>Lightning voltage is very high but exposure is very brief, making lightning strikes much more survivable than might be expected. Lightning exposure may occur as direct strike, side flash, or ground current.</p> <p>In electrocutions, cardiac arrest is the usual cause of death.</p> <p><u>Respiratory arrest may last longer than cardiac arrest</u> so respirations may need assistance after pulse returns.</p> <p><u>With multiple patients, triage priorities are different:</u> Patients in cardiac or respiratory arrest from electrocution have a better prognosis than patients in cardiac or respiratory arrest from other causes. Therefore, in multiple patient triage situations, <u>attend to patients in cardiac or respiratory arrest first.</u></p>
Common Findings	<p>High-voltage/lightning injury: cardiac and/or respiratory arrest, arrhythmias, ALOC, trauma.</p> <p>High-voltage electrical: entry/exit burns; fractures/dislocations; internal burns with resultant compartment syndrome, hypovolemia and kidney failure <u>requiring vigorous hydration.</u></p> <p>Hypovolemic shock may occur from internal burns or blunt trauma. Cardiogenic shock may occur from direct electrical injury to heart.</p> <p>Lightning injuries: ruptured eardrums, transient paralysis of legs, “fern-like” or punctuate burns. Compared to major electrocutions, internal burns with relative hypovolemia and kidney failure rarely occurs, so IV hydration is much less important unless there is concomitant trauma.</p>
Disposition	<p>Victims of low-voltage electrical injury with mild or no symptoms may be transported to the closest facility.</p> <p>Consider transport to nearest burn/trauma center for patients with burns, significant trauma, lightning or high-voltage electrical injuries.</p>
AMA/TAR:	<p>No patient suffering an electrical or lightning injury may be released at scene without base contact.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>

Cross Reference

Procedures:	Protocols:	Drugs:
Automated External Defibrillator	Burns	Acetaminophen (Tylenol)
Endotracheal Intubation	Cardiac Arrest/Dysrhythmias	Fentanyl
Fracture/Dislocation Management	Major Trauma – Adult	Hydromorphone (Dilaudid)
IV Access and IV Fluid Administration	Pediatric – Cardiac Arrest/Dysrhythmias	Morphine
King Tube		Ondansetron
Oxygen Administration		
Spine Immobilization		
Transtacheal Jet Insufflation		
Wound Care		

EYE TRAUMA

Paramedic Standing Orders

1. ABCs
2. Assessment Vision, pupil response, contact lenses, foreign body, chemical (alkali/acid), welding or sun exposure, globe rupture. If globe rupture suspected, skip to **Step 4**, (see **Special Considerations.**)
3. Irrigate If chemical exposure, immediately irrigate with LR/NS or any available potable water for 15 minutes.
4. Protect If impaled object, foreign body, or globe rupture suspected, do NOT irrigate or apply ointment. Do NOT remove impaled object. Cover eye with a loose, protective dressing (eye cup), putting no pressure on the globe. Cover BOTH eyes if practical (e.g., if patient does not need to walk unassisted) to reduce eye movement.
5. Elevate If possible, keep the patient's face upward and head of bed elevated greater than 30 degrees. This can help to minimize postural/positional increases in intraocular pressure.
6. Contact Base
7. Transport Transport or AMA all patients unless TAR approved by base hospital.
8. IV/IO If needed for medication administration

Paramedic Base Hospital/Communication Failure Orders

1. Erythromycin Ophthalmic Ointment Minor eye trauma. Do not apply if impaled objects or suspected globe penetration. Apply 1-cm ribbon to inside of lower eyelid, repeat every 2 hours while awake.
2. Cefazolin (Ancef) Consider for eye trauma if > 3 hours transport time to hospital/clinic, per PROCEDURE: *Wound Care*.
> 12-Adult: 1g IV (IM if no IV access) every 8 hours.
6-12 yrs.: 500mg IV (IM if no IV access) every 8 hours.
< 6 yrs.: 250mg IV (IM if no IV access) every 8 hours.
3. Ondansetron (Zofran) For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: ½ tab (2mg) if age 4- 14
IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
IM: Contraindicated for patients < 3 months of age.

Continued on next page

EYE TRAUMA

Continued from previous page.

- | | |
|-------------|---|
| 4. Fentanyl | <p>Adult:</p> <p>If severe pain, SBP > 100, and normal mental status.
 IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes.
 i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.</p> <p>IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
 i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.</p> <p>Pediatric:</p> <p>IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.</p> <p>IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain.
 Fastest possible dosing schedule would be; time 0, 30, 60 min.</p> |
|-------------|---|

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

5. Long Acting Narcotic (Morphine OR Dilaudid).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- | | | |
|-----------|-------------------------|--|
| Morphine | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 4–10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). |
| | Pediatric: | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. |
| OR | | |
| Dilaudid | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
IM: 1mg (1ml) every 30 min prn pain (max 2mg). |
| | Pediatric:
(> 5yrs.) | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg |

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status. Maximm dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.

- | | | |
|-------------------------------|-------------|--|
| 6. Acetaminophen
(Tylenol) | > 10-Adult: | 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours. |
| | 0-10 yrs: | 15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours. |

**** NSAIDs (Ibuprofen, Motrin, Advil) should generally NOT be administered in the setting of Ocular (Eye) Trauma as they can theoretically worsen intraocular bleeding by their anti-platelet effects.**

EYE TRAUMA

SPECIAL CONSIDERATIONS

General

Suspect an eye injury if any significant facial trauma.
LR/NS is the preferred solution for irrigation but potable water may be used.
If globe rupture is suspected (high velocity mechanism, impaled object, irregular pupil, significantly decreased vision in the acute setting) eye should be protected from environment and NO irrigation or ointment should be administered.
Do not remove impaled objects. Protect them from movement with a protective dressing (eye cup) and cover BOTH eyes to reduce eye movement. Explain to patient that the injured eye moves with the other eye and movement can worsen injury.
Protect the patient from further eye injury/increases in intraocular pressure:
Elevate the head of bed
Keep the patient's face upward
Consider anti-emetics with history of narcotic induced vomiting
Avoid NSAID use
Cover bilateral eyes

Documentation

Document eye exam and assessment, focusing on vision, pupil size, and pupil shape.

Cross Reference

Procedures:

IV Access and IV Fluid
Administration
Wound Care

Drugs:

Acetaminophen (Tylenol)
Cefazolin (Ancef)
Erythromycin Ophthalmic Ointment
Fentanyl
Hydromorphone (Dilaudid)
Morphine
Ondansetron

FROSTBITE

Paramedic Standing Orders

1. ABCs
2. Assessment Vitals, trauma, circulation/sensation/function/skin of all extremities, nose, ears, duration, ambient temperature, PMH, and meds.
If appropriate, **GO TO PROTOCOL: *Altered Mental Status/Altered Level of Consciousness (ALOC) or Hypothermia.***
3. Monitor Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity
4. Protect Prevent further heat loss and injury. Remove tight or wet clothing and jewelry.
5. Transport Backup indicated if field re-warming is to be attempted.
6. IV/IO Saline lock if field re-warming to be attempted or analgesia required per
PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access.*
7. Ondansetron For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
 ODT: 4mg, repeat in 15 min x2 prn nausea.
 IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2
 prn nausea.
 ODT: ½ tab (2mg) if age 4– 14
 IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1
 prn nausea.
0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
 IM: Contraindicated for patients < 3 months of age.

Note: For severely symptomatic patients, ODT can be administered prior to attempts for IV/IO access

8. Base Contact

FROSTBITE

Paramedic Base Hospital/Communication Failure Orders

1. Rewarm

Rarely performed in field. Consider only if **all** of the following:
 Evacuation is not possible in less than 6–12 hours.
 Patient is not hypothermic.
 There is sufficient supply of warm water.
 There is NO risk of refreezing.
 Use 38°–42° C (100.4°–107.6° F) water only. Use thermometer.
 Provide analgesia
 Immerse until skin is soft, pink, pliable and painful. Do NOT rub.
 After re-warming place gauze between toes and fingers, and dress.
 Protect from further injury and refreezing if possible.
 Patient should not walk on thawed feet.
2. Fentanyl

Adult: If severe pain, SBP > 100, and normal mental status.
 IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes.
 i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
 i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Pediatric: IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain.
 Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

3. Long Acting Narcotic (Morphine OR Dilaudid).
 Only to be used 30 minutes after fentanyl dosing schedule above is completed.
- | | | |
|-----------|------------------------|--|
| Morphine | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 4–10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). |
| | Pediatric: | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. |
| OR | | |
| Dilaudid | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg).
IM: 1mg (1ml) every 30 min prn pain (max 2mg). |
| | Pediatric:
(> 5y.o) | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg |

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status. Maximm dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

4. Ibuprofen

> 10-Adult:	600mg PO every 6 hours.
6 mos-10 yrs:	10mg/kg PO (liquid or tablet) every 6 hours, max dose 200mg.

FROSTBITE

SPECIAL CONSIDERATIONS

Assessment	Other injuries Extent of frostbite (does it involve more than a digit)
Treatment Issues	Response to narcotic analgesics (Fentanyl/Morphine/Dilaudid) is both situation and patient specific. If prolonged patient contact is anticipated, dose adjustment within the protocol parameters may be warranted. If additional medication is indicated, contact base.
Transport	Consider air transport.
AMA/TAR	All patients not transported (AMA) should be advised to seek medical attention immediately. Base hospital contact for all others. Parks without base hospitals should follow local medical advisor approved EMS policy.
Documentation	Mechanism of injury. Tetanus status. Distal neurovascular function. Care provided. Instructions provided.

Cross Reference

Procedures:

Intraosseous Access
IV Access and IV Fluid
Administration

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)
Hypothermia

Drugs:

Fentanyl
Hydromorphone (Dilaudid)
Ibuprofen (Motrin, Advil)
Morphine
Ondansetron

(FEVER/NAUSEA/VOMITING/DIARRHEA/HEADACHE/DIZZINESS/WEAKNESS)

Paramedic Standing Orders

- NPS EMS Field Manual
Version: 05/12

General Medical Illness -- Adult

(FEVER/NAUSEA/VOMITING/DIARRHEA/HEADACHE/DIZZINESS/WEAKNESS)

10. Ondansetron For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
11. Base Contact
12. Transport If patient either presents with or develops decreased mental status, signs of shock, ill appearing, or signs of stroke/TIA.
Additionally, consider transport in all patients who fail to improve to their baseline.

Paramedic Base Contact/Communication Failure Orders

1. Aspirin If patient > 40 years old and no complaint of headache at present or in the last 24 hours,
Dose: 325 mg PO once.
Consideration of this therapy is warranted for the presumed “silent MI” presenting as malaise/weakness
2. Ibuprofen If temperature remains over 38.5°C (101°F) with no response to acetaminophen after 60 minutes, administer Ibuprofen.
Dose: 600 mg PO every 6 hrs
Although indicated in the setting of fever (suspected infection), caution is warranted in the setting of hyperthermia and dehydration due to potential renal failure
3. Dextrose 50% If glucose < 80 and unable to tolerate PO, with increasing confusion.
Adults: D50 (25 grams/50 ml) 1amp IV

If patient is a GCS < 15, **GO TO** PROTOCOL: AMS/ALOC
Although indicated in the setting of hypoglycemia, caution is warranted in the setting of suspected stroke/TIA

General Medical Illness -- Adult

(FEVER/NAUSEA/VOMITING/DIARRHEA/HEADACHE/DIZZINESS/WEAKNESS)

Special Considerations

Assessment	<p>If patient presents with or develops a specific complaint during the assessment, then go to that appropriate protocol (e.g. <i>Altered Mental Status</i>, <i>Altitude Illness</i>, <i>Chest Pain</i>, <i>Heat Illness</i>, <i>Abdominal pain</i>, <i>Ingestion/poisoning</i>, <i>Shortness of Breath</i>, <i>Shock without Trauma</i>). This protocol is intended for the adult (age ≥ 14) who complains of symptoms of a general medical illness (e.g. fever, nausea/vomiting, generalized weakness, headache, extremity weakness/numbness, lightheadedness/dizziness, diarrhea, dehydration) or non-specific complaints (e.g. "I feel sick", "I feel ill", "I have the flu").</p> <p>History: Recent activities, duration of symptoms, fever (subjective or measured). Associated symptoms such as headache, runny nose, sore throat, cough (productive or dry); respiratory difficulties; vomiting; diarrhea (frequency, watery or bloody); neck pain; sick contacts; tolerating food/fluids; change in urine output; ability to walk normally.</p> <p>PMH: Age ≥ 50, Comorbidities incl. Diabetes, Renal Failure, Congestive Heart Failure, Liver Failure, Coronary Artery Disease, Pacemaker/AICD, Recent surgeries.</p> <p>Physical Exam: Overall appearance (lethargic, dehydrated, weak, appropriate); ability to sit, stand, ambulate; vitals (including mental status, heart rate, blood pressure, resp rate and temp/O₂ sat if available), complete physical exam with particular attention to mucous membranes, eyes (scleral icterus), neck stiffness, lungs, heart, skin (rash, jaundice, dialysis shunts), urine output, and neurological exam (see Stroke Scale).</p> <p>Cincinnati Stroke Scale: Unilateral facial droop, slurred/mute speech, unilateral arm drift (See PROTOCOL: <i>AMS/ALOC</i> Special Considerations for detailed description).</p>
Differential Diagnosis	Altitude Sickness, HAPE/HACE, Meningitis/Encephalitis, Dehydration, Upper Respiratory Illness, Influenza, Pneumonia, Acute Coronary syndrome (Angina, MI), CHF/Pulmonary Edema, Drug Intoxication/Withdrawal, Dysrhythmia, Renal Failure, Hepatitis/Cirrhosis, Gastroenteritis, Urinary Tract Infection, Stroke/TIA, Hypoglycemia, Hyperglycemia, Exhaustion from physical exertion.
ECG	<p>Since MI can present with vague symptoms and you may end up on this protocol. See differential and PMH above. All patients over age 50 (if diabetic and age > 40) obtain an ECG.</p>
Oral Rehydration Therapy	<p>Example of salt/sugar containing electrolyte solution:</p> <p>8 teaspoons of sugar, and 1 teaspoon of salt, dissolved in 1 quart of water</p>
AMA/TAR	<p>AMA is possible only for age ≥ 18 and normal mental status.</p> <p>Treat and Release without base contact only if all conditions below are met:</p> <ol style="list-style-type: none">1. Age < 602. Normal mental status3. No signs of shock (HR 50-100, SBP 100-180)4. Respiratory rate 10-305. No history of syncope, chest pain or continued dyspnea6. Patient appears well, tolerates PO fluids, and ambulates w/ pack (if available). <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>
Documentation	Thorough physical exam, GCS, vitals, ability to tolerate oral fluids/food, ability to ambulate with their pack (if available).

General Medical Illness -- Adult

(FEVER/NAUSEA/VOMITING/DIARRHEA/HEADACHE/DIZZINESS/WEAKNESS)

Cross Reference

Procedures:

12-Lead ECG
AED
Blood Glucose Determination
Intraosseous Access
IV Access and IV Fluid
Administration
Oxygen Administration

Protocols:

Abdominal Pain
Altitude Illness
AMS/ALOC
Chest pain- Cardiac
Heat Illness
Pediatric – Medical Illness/Fever
Respiratory Distress
Shock without Trauma

Drugs:

Acetaminophen (Tylenol)
Aspirin
Dextrose 50% (D50)
Glucose Paste or Gel
Ibuprofen (Motrin)
Ondansetron (Zofran)

HEAT ILLNESS

Paramedic Standing Orders

1. ABCs Protect airway if ALOC. Assist respirations as needed, utilizing OPA/NPA or ALS airway (*King Tube/ETT*) if indicated.
 2. Assessment Vitals, mental status, temperature if available, skin signs (sweaty/dry), or shock.
 3. Cooling Remove patient from hot environment to a cool area if possible.
Remove constricting and warm clothing.
If ALOC or severe symptoms, begin evaporative cooling (see special considerations).
Don't let cooling delay transport – cool en route!
 4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*.
 5. Oral Fluid If alert and no signs of heat stroke may give oral fluid. Frequent small amounts of water with ¼ tsp of salt, or sport drink if available.
Adults: Give a total of 1-L.
1mon-14yrs: 10 ml/kg to a maximum of 1-L.
 6. IV/IO If ALOC, unable to take oral fluids, or signs of heatstroke, place IV per
PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Adults: 1-L LR/NS bolus, then maintenance rate (120ml/hr).
Pediatric: 20ml/kg LR/NS bolus (max 1-L), then maintenance rate (2ml/kg/hr).
All ages: If still symptomatic after initial bolus, give second bolus.
 7. Oxygen Per PROCEDURE: *Oxygen Administration*.
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
8. Check Glucose Only if ALOC per PROCEDURE: *Blood Glucose Determination*.
 9. Dextrose If glucose < 80, or ALOC and unable to determine glucose:
≥ 2 yrs: 1 amp **D50 IV/IO** (1 amp = 25g in 50ml).
< 2 yrs: 2 ml/kg **D25 IV/IO** (12.5g in 50ml), up to a max of 100ml.
(To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
May repeat in 5 minutes if ALOC persists and glucose still <80.
May substitute dose on Broselow Tape for pediatric dose above.
 10. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 10**.
 11. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
May repeat once in 15 minutes if ALOC persists and glucose remains <80.
 12. Seizures If present, **GO TO** *PROTOCOL: Seizures*.
 13. Transport Consider air transport for heatstroke.
 14. Base Contact

HEAT ILLNESS

SPECIAL CONSIDERATIONS

Assessment	<p>Try to differentiate heat stroke from other heat illness early! There is a continuum from heat exhaustion to heat stroke, and assessment of mental status, temperature (if available), and hypotension are key.</p> <p>Many factors alter the body's ability to regulate temperature, including: age extremes, heart disease/medications (diuretics, beta blockers), antihistamines (alter sweating), alcohol, amount/type of fluid replacement, dehydration, acclimatization, humidity, altitude.</p> <p><u>Mental Status</u>: Ataxia (incoordination) and combativeness are often early signs of heat stroke.</p> <p>If patient has ALOC, assume heat stroke until proven otherwise and begin rapid cooling.</p> <p><u>Seizures</u> often occur in heat stroke. Be prepared to protect the airway and treat for seizures.</p> <p><u>Temperature</u>: Take oral temperature only if normal mental status, otherwise take rectal temperature if able.</p> <p><u>Sweating</u>: If NOT present then assume heat stroke. However, a patient may still have heat stroke and sweating so don't use this alone to distinguish heat exhaustion from heat stroke.</p> <p><u>History</u>: heat exposure, exertion, age, recent alcohol use, rehydration status/fluid intake.</p> <p><u>PMH</u>: thyroid disease, psychiatric history, heart disease, seizures.</p> <p><u>Medications</u>: Haldol (other antipsychotics), blood pressure/heart medications (diuretics, beta blockers), and antihistamine (cold medicines/herbal medicine) can worsen heat illness.</p>
Differential Diagnosis	<p>Drug overdose (amphetamines, antihistamines, tricyclic antidepressants, aspirin).</p> <p>Alcohol withdrawal.</p> <p>Sepsis, Febrile illness.</p> <p>Diabetic ketoacidosis.</p> <p>Meningitis, Encephalitis.</p> <p>Thyroid storm (hyperthyroidism).</p> <p>Cerebral hemorrhage.</p> <p>Medication reaction (antipsychotics, e.g. Haldol).</p> <p>Status Epilepticus.</p>
Treatment	<p>Judicious fluid replacement: In elderly patients, overzealous fluid replacement may be detrimental.</p> <p>Cooling measures:</p> <p>Evaporative cooling: The most effective. Spray or wipe skin with water and evaporate water with air using a fan, fanning or wind. Applying a moist cloth that retains moisture (cotton) is also effective.</p> <p>Immersion: The next most effective but potentially dangerous. Use only if you can not provide evaporative cooling. Immerse the patient in cool/cold water for 10 minutes, remove patient and recheck temperature. Be cautious! Keep patient's head out of the water. It is difficult to protect an airway and manage a seizing patient in a stream! Also, it is easy to make the patient hypothermic using this method. Cool only to goal temperature of 39°C (102.5°F). Cooling will continue after you stop. If first attempt not successful then continue with 5 minute cycles, rechecking temperature 5 minutes after each immersion.</p> <p>Adjunctive measures: Placing ice or cool towels in areas of high blood flow (neck veins, armpits, groin) works but is much less effective.</p> <p>AVOID cooling below 39° C (102.5° F) and stop if the patient starts shivering (hypothermic overshoot). Shivering increases body temperature and reflects overcooling.</p>
Transport	<p>Transport any patient with signs of severe heat exhaustion or heat stroke. Heat stroke warrants air transport.</p>
AMA/TAR	<p>Mild forms of heat illness may be treated and released after base contact if all symptoms have resolved.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>

HEAT ILLNESS

Types of Heat Illness				
	Who/Why	Symptoms	Treatment	Disposition
Heat Edema	Elderly, not acclimated to hot environment. History of rigorous activity then sitting/standing for long periods.	Redness, swelling of hands, ankles and feet.	Resolves with elevation of extremity and acclimatization.	Treat and release but make sure not CHF!
Heat Rash (prickly heat)	Anyone, usually in tropical/humid environment.	Blockage of sweat glands causing red painful, itchy rash in areas where clothing rubs.	None in field. Antibacterial cream, loose clothing, antihistamines.	TAR.
Heat Syncope	Elderly most common. Relative volume depletion. Must rule out other serious causes of syncope.	Dizziness and syncope with postural changes in hot environment.	Oral or IV fluids.	All symptoms should resolve with shade and fluid. But, you can't rule out other causes of syncope so transport all patients.
Heat Tetany	Anyone doing vigorous activity in a hot environment.	Hyperventilation, hand/foot spasm and tingling/ numbness.	Shade and normal breathing.	All symptoms should resolve with shade, rest and cessation of hyperventilation. Base contact for disposition.
Heat Cramps	Unconditioned people starting vigorous activity in the heat. Fluid replacement with water and lack of adequate salt and potassium replacement.	Involuntary, spasmodic, painful cramps in calves, thighs or shoulders during or after exercise.	Rest and re-hydration with sport drink or salted water. (NOT salt pills).	All symptoms should resolve with shade, rest and adequate electrolyte replacement. Base contact for disposition.
Heat Exhaustion normal mental status, body temp < 40° C (104°F)	Anyone active in hot environment without adequate fluid replacement. Caused by water and/or salt depletion.	Dizziness, weakness, fatigue, body aches, headache, nausea, sweating, vomiting, syncope, positional hypotension, tachycardia, elevated temperature but NORMAL MENTAL STATUS!	Rest, cooling, aggressive fluid/electrolyte replacement.	Transport. By ground OK if stable and improving. May be early heat stroke and must rule out other conditions.
Heat Stroke altered mental status, temp over 104° F or 40° C A medical emergency!	Anyone active in hot environment without adequate fluid replacement. Water and/or salt depletion <u>Classic:</u> elderly in heat wave--poor ability to regulate heat because of age/meds. <u>Exertional:</u> young, healthy athletes after strenuous exercise in hot environment.	Same as heat exhaustion but no longer able to regulate heat so they develop neuro signs: incoordination, combative, hallucinations, seizures. Severe vasodilation = hypotension, tachycardia. Dry skin = loss of sweating mechanism, i.e. temp control.	Rapid cooling, airway protection, IV fluids, seizure treatment if present.	Air transport if possible.

HEAT ILLNESS

Cross Reference

Procedures:

Blood Glucose Determination
Endotracheal Intubation
Intraosseous (IO) Access
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)
Seizures

Drugs:

Dextrose 50% (D50)
Glucagon
Glucose Paste

HYPOTHERMIA

Paramedic Standing Orders

1. ABCs Secure airway. Assist respirations as needed, utilizing OPA/NPA if indicated.
 2. Assessment Vitals, mental status, trauma, body temperature, shivering, environment (temperature, wind, wet, duration).
Palpate carotid and radial arteries for pulse and listen over left chest for heart sounds for two minutes before assuming cardiopulmonary arrest.
If no pulse after two minutes, **GO TO PROTOCOL: Cardiac Arrest/Dysrhythmias** or *Pediatric – Cardiac Arrest/Dysrhythmias*.
If patient has normal mental status and chief complaint is a frozen isolated extremity, nose, or ears **GO TO PROTOCOL: Frostbite**.
 3. Stop Heat Loss Shelter from wind and wet environment.
Insulate from ground or snow.
Remove wet clothes.
Dry patient.
Dress in dry insulated clothing or sleeping bag.
Protect head and neck from heat loss.
 4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
 5. IV/IO If ALOC, per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Use warm IV fluids if available.
Adults: 1-L NS/LR bolus, then maintenance rate (120ml/hr).
0–14 yrs: 20 ml/kg NS/LR bolus (max bolus 1-L), then maintenance rate (4ml/kg/hr).
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
6. Check Glucose If ALOC, per PROCEDURE: *Blood Glucose Determination*.
 7. Dextrose If glucose < 80, or ALOC and unable to determine glucose:
 ≥ 2 yrs: 1 amp **D50 IV/IO** (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25 IV/IO** (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
May repeat in 5 minutes if ALOC persists and glucose still < 80.
May substitute dose on NPS Pediatric Resuscitation Tape/Broselow Tape for pediatric dose above.
 8. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to Glucagon.
 9. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
May repeat once in 15 minutes if ALOC persists and glucose remains < 80.

HYPOTHERMIA

9. Transport Prepare for transport early in the rewarming effort. Avoid shaking or jostling patient.
 If transport delayed, continue with protocol.
10. Base Contact
11. Active Focus rewarming efforts on head and trunk, not extremities.
 Rewarming Place near heater or fire – monitor to prevent burns.
 Apply hot water bottles or thermal packs (insulate from skin to prevent burns) to
 thermal windows (head, neck, axilla, and groin).
 Warm patient with a second person in sleeping bag.
 If normal mental status: Warm bath or shower.
 If patient can sit up on own and protect airway, give warm sugary drinks. Otherwise,
 nothing by mouth. No alcohol.
12. Naloxone If still ALOC and narcotic overdose suspected: (IN Route preferred)
 (Narcan) > 10-Adults: 2mg IN/IV/IO/IM/ every 2 minutes prn ALOC (max 10mg).
 < 10 yrs: 0.1mg/kg IN/IV/IO/IM/ every 2 minutes (max 2mg).

HYPOTHERMIA

SPECIAL CONSIDERATIONS

General

Hypothermia usually results from patients being unable to remove themselves from a cold environment. Consider preceding trauma, alcohol/drug use or other underlying medical cause.

Degrees of hypothermia:

In mild hypothermia, the core temp is 32-35°C (90-95°F). The body is still able to control temperature, and signs may include tachycardia, hypertension, shivering, or normal mental status.

In severe hypothermia, the core temp is <32°C (90°F). The body is unable to control temperature, and signs may include bradycardia, hypotension, loss of shivering, slowing of functions, or cardiac arrest.

The central nervous system is very sensitive to hypothermia. The patient has a progressive decline in mental ability from incoordination, to confusion, then lethargy, and finally coma.

Hypothermic patients may still be alive and have nonreactive pupils, minimal respirations, bradycardia, and hypotension. This warrants careful assessment of vitals! Palpate and listen for 2 minutes when checking vitals.

Cold irritates the heart muscle. Hypothermic patients often have a slow heart rate or arrhythmias which usually resolve with warming. They are also susceptible to ventricular fibrillation if handled roughly.

When rewarming, warm the trunk first. Warming the extremities causes dilation of peripheral blood vessels. This circulates cold blood to the core, lowering core temperature further.

Transport

Arrange transport early in the rewarming effort.

Avoid shaking or jostling patient, as rough handling can precipitate arrhythmias.

Transport all hypothermic patients with ANY of the following:

ALOC, abnormal vital signs, or signs of shock.

Severe hypothermia even if successfully rewarmed, or signs of frostbite.

Other significant injury or illness.

Rewarming not possible in the field.

AMA/TAR

Base contact should be made in all cases. Patients may be treated and released in communications failure only if normal mental status, mild hypothermia, all symptoms have resolved, no underlying medical problems, and has adequate protection from further hypothermia. All other patients should AMA.

The patient should demonstrate reasonable exercise tolerance prior to TAR (e.g. hiking 100 yards with pack)

Parks without base hospitals should follow local medical advisor approved EMS policy.

Cross Reference

Procedures:

Blood Glucose Determination
Endotracheal Intubation
Intraosseous Access
IV Access and IV Fluid Administration
King Tube
Mucosal Atomizer Device

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmias
Frostbite
Pediatric – Cardiac Arrest/Dysrhythmias

Drugs:

Dextrose 50% (D50)
Glucose Paste or Gel
Glucagon
Naloxon (Narcan)

Ingestion/Poisoning

Paramedic Standing Orders

1. Scene Safety Toxins/poisons can poison the EMS provider as well as the patient. Decontamination is paramount (see Special Considerations) because the environment may be hazardous, the patient may be hazardous, or their behavior unpredictable.
 2. ABCs Protect airway, assist ventilation and suction as needed. OPA/NPA or ALS airway if indicated (*King Tube/ETT*). Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
If ALOC, seizures or shock: continue on this protocol, but **REFERENCE** PROTOCOL: *Altered Mental Status/Altered Level of Consciousness (ALOC); Seizures; or Shock Without Trauma*.
If cardiac arrest, **GO TO** PROTOCOL: *Cardiac Arrest/Dysrhythmias; Pediatric – Cardiac Arrest/Dysrhythmias*.
 3. Assessment Vitals, mental status, pupils, vomiting on scene, PMH, substance taken, route taken, time of ingestion, empty containers, suicide note, drug paraphernalia.
Consider nerve agent/organophosphate exposure if multiple victims and/or AB-SLUDGEM; if suspected, **UTILIZE** PROCEDURE: *NAAK/Mark I (Nerve Agent Antidote Kit)*.
Note: All body fluids can poison the EMS provider.
If ALOC, proceed to **Step 4**.
If normal mental status, perform **Steps 4 and 5** then proceed to **Step 11**.
 4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
Note: if you have ECG transmission capability, consider obtaining ECG (*see 12-Lead ECG Procedure*).
 5. Oxygen Per PROCEDURE: *Oxygen Administration*.
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
6. Check Glucose If ALOC, per PROCEDURE: *Blood Glucose Determination*.
 7. Dextrose If glucose < 80, or ALOC and unable to determine glucose:
 ≥ 2 yrs: 1 amp **D50 IV** (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25 IV** (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
May repeat in 5 minutes if ALOC persists and glucose still < 80.
May substitute dose on Broselow Tape for pediatric dose above.
 8. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 10**.
 9. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
May repeat once in 15 minutes if ALOC persists and glucose remains < 80.
 10. Naloxone (Narcan) If still ALOC and narcotic overdose suspected (IN Route preferred):
 > 10-Adults: 2mg IN/IV /IO/IM every 2 minutes prn ALOC (max 10mg).
 < 10 yrs: 0.1mg/kg IN/IV/IO/IM every 2 minutes (max 2mg).

Ingestion/Poisoning

11. IV/IO Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access.*
12. Transport Arrange backup and consider air transport if abnormal vital signs, decreasing level of consciousness, or potentially toxic ingestion. Contact base for guidance.
If a hazmat situation, decontaminate prior to transport. Air transport may be contraindicated. Contact Base.
If non-accidental and self-inflicted, patient must be placed on a legal hold. NO AMA/TAR.
13. Base Contact For all ingestions/poisoning.
If no base available, all patients require transport unless Poison Control advises otherwise (see Special Considerations).

Ingestion/Poisoning

Paramedic Base Hospital/Communication Failure Orders

1. Atropine For nerve agent/organophosphate (e.g. pesticide) exposure to control secretions.
Adults: 2mg IV/IO/IM every 5 minutes prn secretions.
Peds: 0.04mg/kg (0.4 ml/kg) IV/IO/IM every 5 minutes prn secretions.
For each injection: minimum dose 0.1mg, maximum dose 2mg.
2. Glucagon For beta-blocker overdose.
Adults: 2mg IV/IO/IM every 5 min prn bradycardia/hypotension causing shock.
Peds: 0.06mg/kg IV/IO/IM (max 2mg) every 5min prn bradycardia/hypotension causing shock.
Maximum cumulative dose is based on patient symptoms.
3. Calcium Gluconate For calcium channel-blocker overdose.
Adults: 2mg IV/IO every 5 min prn bradycardia/hypotension causing shock.
Peds: 0.06mg/kg IV/IO (max 2mg) every 5min prn bradycardia/hypotension causing shock.
Maximum cumulative dose is based on patient symptoms.
4. Sodium Bicarbonate For known tricyclic antidepressant or salicylate (aspirin) overdose,
Any patient with seizures, hypotension or any wide complex tachycardia on monitor or ECG.
Adults: 1amp IVP.
Peds: 1meq/kg IVP (max 50meq=1 amp).
Contact Base Hospital for repeat doses.
5. Midazolam (Versed) For actively seizing patients.
Adults: IV/IO: 2mg every 3 min prn seizure (max 10mg).
IN: 2mg every 3 min prn seizure (max 10mg).
IM: 5mg every 10 min prn seizure (max 15mg).
< 10 yrs: IV/IO: 0.1mg/kg (max 2mg) every 3 min prn seizure (max 5 doses).
IN: 0.1mg/kg (max 2mg) every 3 min prn seizure (max 5 doses).
IM: 0.15mg/kg (max 5mg) every 10 min prn seizure (max 3 doses).
6. Albuterol For wheezing or stridor associated with chemical exposure.
Nebulizer: All ages: 5mg in 3ml of LR/NS premixed solution.
Use with standard acorn-type jet nebulizer.
For all patients, start oxygen at 10 l/min. If not improved by 3–5 minutes, increase oxygen to 15 l/min.
For patients who fail to respond to a single nebulized dose, repeat above dosing up to six times without allowing “acorn” to run dry

MDI: Adult: 4 puffs on consecutive breaths during mid inspiration, then 1 puff every minute for up to 10 minutes (14 puffs total) if symptoms persist.
May repeat 10-puff dose starting 10 minutes after last puff if symptoms persist.
1-14 yrs: 2 puffs per minute up to six puffs then base contact.
In communications failure repeat 6-puff sequence starting 10 minutes after last puff if symptoms persist.
< 1 yr: 1 puff per minute up to six puffs then base contact.

Ingestion/Poisoning

Paramedic Base Hospital/Communication Failure Orders (cont.)

- | | |
|---|---|
| 7. Charcoal | Indicated for some life threatening oral ingestions within 1 hour. (see Special Considerations.)
If patient able to sit up and drink:
Adult: 50g PO.
1–14 yrs: 1g/kg PO (max dose 50g).
< 1 yr: Base contact only, not in communications failure. |
| 8. Nasogastric/
Orogastric Tube
Insertion | For administration of charcoal per PROCEDURE: <i>Nasogastric/Orogastric Tube Insertion</i> per local medical advisor approved EMS policy. |

SPECIAL CONSIDERATIONS

Assessment

Physical Exam should pay special attention to airway, lung sounds, mental status, bowel sounds, skin signs, pupils, oral burns, gag reflex, odors, track marks, pill containers, drug paraphernalia, or kitchen/workshop containers (children). If possible, verify the route of exposure: ingestion, inhalation, absorption, or injection.

History is very valuable in guiding therapy, but do not delay transport of potentially unstable patient for prolonged medication container search or prolonged questioning.

Beware of possible co-ingestions. For example, it is not uncommon for an overdose victim to mix drugs and alcohol. Consider base contact for direction when ingestion includes drugs/substances that have both indication and contraindication for charcoal, e.g., beta blocker and a caustic agent.

Particularly toxic/hazardous ingestions that may cause the patient to rapidly decline include:

Beta blockers (most commonly present with bradycardia and hypotension, especially in young pediatrics).

Calcium channel blockers (especially in young pediatrics).

Tricyclic antidepressants.

Organophosphates.

Digoxin/Lanoxin.

Caustic agents (agents with a high/basic pH).

Some parents may have Ipecac. If given prior to arrival, patient may be vomiting due to the Ipecac. Advise parents to not give Ipecac.

Information specific to organophosphate/nerve agent exposure:

AB-SLUDGEM:

A: Altered mental status.

B: Bronchorrhea, Breathing difficulty or wheezing, Bradycardia.

S: Salivation, Sweating, Seizures.

L: Lacrimation (tearing).

U: Urination.

D: Defecation or Diarrhea.

G: GI upset (abdominal cramps).

E: Emesis (vomiting).

M: Miosis/Muscle activity (twitching).

A single symptom of AB-SLUDGEM will almost certainly not be due to a poisoning.

Organophosphates occur in liquid or powder form, may or may not smell like insecticide, can be absorbed through the skin, and are often found in farms or gardens.

Attend to scene safety. Do not enter any area where nerve agent or significant quantity of organophosphate is suspected without proper personal protection.

If your team is exposed AND symptomatic, evacuate the team from the area.

Prevent continued exposure by removing all clothing from any symptomatic person, flushing the patient with water, and moving the patient from the scene.

Ingestion/Poisoning

Poison Control

Base contact and discussion with on-line medical oversight is preferred for all ingestions/poisonings. However, for parks without a base, but with LEMA approval, a discussion with poison control for advice and disposition decision making is acceptable.

Medication Issues

Activated Charcoal should only be used for an oral ingestion. Do NOT use if:

- Patient cannot sit and sip water without choking or gagging.
- Active seizures or postictal status.
- Hydrocarbon ingestion (i.e. gasoline, kerosene, turpentine).
- Caustic ingestion (i.e. agents with a high/basic pH e.g. lye or oven cleaner).
- Acids.
- Medications likely to cause rapid mental status decline (i.e. antidepressants, cardiac meds).
- Time of ingestion is known to be more than 2 hours prior to EMS contact.

Charcoal is likely to be beneficial only with life threatening medications within 1 hour (e.g. beta blockers, calcium channel blockers, digoxin, oral hypoglycemics, etc) . After 2 hours it may be beneficial only in selected circumstances (e.g. long acting drugs, drugs that slow GI motility).

Documentation

Time of ingestion
Circumstances of ingestion
Substances available
Substances ingested (type and amount?)
Any vomiting that occurred, whether pill fragments or other ingested substances were seen.
Pill containers found, expiration date?

Cross Reference

Procedures:

12 Lead ECG
Blood Glucose Determination
Endotracheal Intubation
Intraosseous Access
IV Access and IV Fluid Administration
King Tube
NAAK/Mark I (Nerve Agent Antidote Kit)
Nasogastric/Orogastric Tube Insertion
Oxygen Administration
Transtacheal Jet Insufflation

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmia
Pediatric – Cardiac Arrest /Dysrhythmia
Seizures
Shock Without Trauma

Drugs:

Activated Charcoal
Albuterol
Atropine
Dextrose 50% (D50)
Glucagon
Glucose Paste or Gel
Midazolam (Versed)
Naloxone (Narcan)
Pralidoxime Chloride (2 PAM)
Sodium Bicarbonate

Major Trauma - Adult

Paramedic Standing Orders

If patient is ≤ 14 yrs or shorter than 5 feet tall, **GO TO PROTOCOL: Pediatric – Major Trauma.**

1. ABCs
Perform all ABC's with consideration of spine immobilization per PROCEDURE: *Spine Immobilization*.
Secure airway.
Assist respirations, utilizing OPA/NPA or ALS airway (*King Tube/ETT*).
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
Maintain C-spine precautions with ALL airway maneuvers.
If patient in cardiac arrest, **GO TO PROTOCOL: Trauma Arrest (Adult and Pediatric)**.
Apply occlusive dressing to any open chest or neck wounds.
If signs/symptoms of tension pneumothorax develop vent dressing OR perform needle decompression. Per PROCEDURE: *Needle Thoracostomy*.
2. Primary Assessment
Vitals – categorize:
Stable if ALL present: SBP > 100; HR < 100; 10 < RR < 24; GCS=15.
Unstable if ANY present: SBP < 100; HR > 100; RR < 10 or RR > 24; GCS < 15; unstable airway; neurovascular deficit; GSW to head, neck or torso; amputations other than digits (except thumb).
Check the back for penetrating thoracic/abdominal injury. Check perineum.
3. Control Bleeding
Direct pressure and tourniquet per PROCEDURE *Wound Care*.
Occlusive dressing to any open chest or neck wounds.
Bandage non life/limb threatening injuries en route.
4. Monitor
Apply cardiac monitor when indicated (ALS level care or Transport)
If not placed during ABC's above, timing of monitor application is dependent on patient severity
5. Transport
On-scene time < 10 MINUTES when transport available.
Consider air transport, especially if ALOC or abnormal vital signs.
6. Oxygen
Per PROCEDURE: *Oxygen Administration*.
Stable: Low flow.
Unstable: Hi flow or BVM as indicated.
7. Prevent Hypothermia
Remove wet clothing and apply blankets.
8. Pelvic Stabilization
Per PROCEDURE: *Pelvic Stabilization*.
9. Secondary Assessment
Repeat vital signs and mental status.
Perform secondary survey.
Determine PMH, medications, allergies.
Calculate trauma score per local medical advisor approved EMS policy.
10. IV/IO
Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Stable: One 14-16 gauge IV/IO.
Unstable: Two 14-16 gauge IV/IOs.
If SBP > 100 AND HR < 100, then administer LR/NS at maintenance (120ml/hr).
If SBP 80-100 OR HR > 100, then bolus LR/NS 500ml.
If SBP < 80, then bolus LR/NS 1-L under pressure.
Recheck vitals after boluses, and run IV fluids as above. Continue IVF to 3-L maximum.

Major Trauma - Adult

Note: Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).

11. Check Glucose Only if ALOC, per PROCEDURE: *Blood Glucose Determination*.
If no ALOC, proceed to **Step 15**.
Note: ALOC secondary to hypoglycemia may have preceded the event.
12. Dextrose If glucose < 80 or ALOC and unable to determine glucose:
Administer 1 amp **D50** IV/IO (1 amp = 25g in 50ml).
May repeat in 5 minutes if ALOC persists and glucose still < 80.
13. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 14**.
14. Glucagon 1mg IM (if no IV/IO and unable to give Glucose Paste).
May repeat once in 15 minutes if ALOC persists and glucose remains < 80.
15. Ondansetron (Zofran) For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV/IO: 4mg IV/IO/ over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV/IO, give 8mg IM, repeat in 15 min x1 prn nausea.
16. Base Contact
17. Splint/Bandage Injuries Immobilize and splint fractures en route per PROCEDURE: *Fracture/Dislocation Management and Wound Care*.
Reduce any fracture/dislocation with deformity affecting ability to splint/transport, or any fracture/dislocation with decreased distal pulses.

Major Trauma - Adult

Paramedic Base Hospital/Communication Failure Orders

1. Needle Thoracostomy

Per PROCEDURE: *Needle Thoracostomy*.
 If not in arrest, **ALL** of the following must be present:

Severe respiratory distress (RR < 10 or RR > 24).
 Hemodynamic compromise (SBP < 80).
 Decreased or absent breath sounds on one side.

Note: Tension pneumothorax is a rare, but life threatening condition and is often difficult to assess clinically. Early base contact is advised if tension pneumothorax is suspected and patient does not meet all of the above criteria.
2. IV/IO Fluid

After administering 3-L of IVF, continue with boluses per Standing Orders, based on SBP only, not HR.
3. Oral Fluids

Base Order ONLY, NOT in communication failure.
 Oral fluid rehydration may be attempted in a patient if ALL of the following conditions are met:

Normal mental status.
 Stable and protected airway.
 Unstable SBP or unstable HR as defined in PROTOCOL.
 Greater than 4 hours between injury and anticipated arrival at hospital.

If ALL of these conditions are met, the patient may be given frequent small sips of water or non-carbonated electrolyte replenishment drink.
4. Cefazolin (Ancef)

Consider for serious wounds if > 2 hours between injury and arrival at hospital/clinic, per PROCEDURE: *Wound Care*.
 1g IV/IO (IM if no IV/IO access) every 8 hours.
5. Fentanyl

Adult: If severe pain, SBP > 100, and normal mental status.
 IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes.
 i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
 i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.
6. Long Acting Narcotic (Morphine OR Hydromorphone (Dilaudid)).
 Only to be used 30 minutes after fentanyl dosing schedule above is completed.

Morphine	Adult:	If severe pain, SBP > 100, and normal mental status. IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg) IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).
OR		
Hydromorphone (Dilaudid)	Adult:	If severe pain, SBP > 100, and normal mental status. IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg) IM: 1mg (1ml) every 30 min prn pain (max 2mg).

Major Trauma - Adult

SPECIAL CONSIDERATIONS

General

On-scene time SHOULD BE < 10 MINUTES unless multiple patients, prolonged extrication, or transport unavailable. All delays on scene must be documented. On-scene treatment should be limited to airway management, pressure control of major bleeding, covering an open chest wound and spine immobilization. Begin organizing transport immediately. Contact base as soon as transport underway, or immediately if transport delayed. Reassess ABCs & vital signs frequently once en route, and after any treatment.

Assessment

Primary assessment:

- A: Airway with cervical spine control
- B: Breathing**
- C: Circulation/uncontrolled bleeding
- D: Disability/neuro status
- E: Exposure (undress) with Environmental control (temperature)

**Tension Pneumothorax can develop at any time.

If not in arrest, **ALL** of the following must be present:

Severe respiratory distress (RR < 10 or RR > 24).

Hemodynamic compromise (SBP < 80).

Decreased or absent breath sounds on one side.

Either distended neck veins **or** tracheal deviation AWAY from side with tension.

IF patient is intubated, increasing difficulty ventilating the patient along with all of the above should prompt a search for development of tension pneumothorax. Per PROCEDURE: *Needle Thoracostomy*.

Secondary assessment: (head-to-toe) Identify immediate life threats: head injury, neck vein distention, tracheal shift, chest trauma/flail chest, unequal lung sounds, abdominal trauma, pelvic/femur fractures, back trauma, shock, major hemorrhage, survey of injuries. If ALOC, document pupil size/reactivity, and continuously monitor neuro status.

History: Mechanism of injury: Penetrating or blunt trauma? Speed of vehicles? Angle of impact, rollover, secondary impacts, exterior damage, airbags deployed? Seatbelt? Damage to steering wheel or windshield? Patient ejected? What did patient actually hit? Loss of consciousness? Fatality on scene? Extrication time > 20 minutes? Height of fall? Helmet? Possible cause of incident: medical problem, drug overdose, alcohol, MI, seizure? AMPLE history.

Vitals: Repeat frequently during transport, including mental status. Tachycardia is an early sign of shock. A palpable radial pulse corresponds to SBP ≥ 80, and a palpable carotid pulse corresponds to SBP ≥ 60.

Shock: In trauma, hypotension is usually from internal blood loss, NOT from isolated head injury.

Head Trauma: Repeated neuro exams (GCS, pupils, respiratory pattern, posturing) are essential. Deteriorating mental/neuro status is an emergency and air transport should be utilized if available. Agitation may suggest head trauma or hidden medical cause. If patient's respiratory rate is < 10, assist respirations with BVM at a rate of 20/min.

Major Trauma - Adult

Amputations: Per PROCEDURE: *Wound Care*. Wrap extremity in dry sterile gauze, place in plastic bag and keep cool (put on ice if possible). Amputated part should NOT be wet or placed directly in water/ice.

Open Fractures: Per PROCEDURE: *Wound Care*. Irrigate with potable water, apply sterile dressing and splint per PROCEDURE: *Fracture/Dislocation Management*. Apply moist sterile dressing to exposed bone or tendon.

Pelvic Stabilization: Per PROCEDURE: *Pelvic Stabilization*.

Penetrating Trauma: Secure impaled objects and transport. Modify object or patient position for transport as needed. Do not remove object unless necessary for transport or CPR.

Transport

If unstable trauma patient, initiate immediate transport with ALS treatment en route and ultimately air transport to trauma center if available.

AMA/TAR

No patient may be Treated and Released without base contact in the setting of multisystem trauma. A patient over age 18 with normal mental status may AMA after base contact or in communication failure.

Parents or legal guardian must be on scene to sign a pediatric patient AMA after base contact.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation

MOI (mechanism of incident and mechanism of injury).

Loss of consciousness and duration.

Initial and repeat vital signs.

Pertinent exam findings (breath sounds, pelvic stability, fractures and bleeding).

If on scene > 10 minutes, document reason.

Cross Reference

Procedures:

Blood Glucose Determination
Fracture/Dislocation Management
Intraosseous Access
IV Access and IV Fluid Administration
King Tube
Needle Thoracostomy
Oxygen Administration
Pelvic Stabilization
Spine Immobilization
Transtracheal Jet Insufflation
Wound Care

Protocols:

Pediatric-Major Trauma
Trauma Arrest (Adult and Pediatric)

Drugs:

Cefazolin (Ancef)
Dextrose 50% (D50)
Fentanyl
Glucagon
Glucose Paste or Gel
Hydromorphone (Dilaudid)
Morphine
Ondansetron

Minor or Isolated Extremity Trauma

Paramedic Standing Orders

1. ABCs **GO TO PROTOCOL: Major Trauma – Adult, Pediatric – Major Trauma, or Altered Mental Status/Altered Level of Consciousness (ALOC)** if any of the following are present:
SBP < 100; HR > 100; RR < 10 or RR > 24; GCS < 15; unstable airway; neurovascular deficit; GSW to head, neck or torso; amputations other than digits (except thumb); femur fracture with significant mechanism.
2. Assessment Vital signs, other injuries, bones and joints above and below injury, open wounds, deformity, distal circulation, sensation and motor function.
3. Control Bleeding Direct pressure.
4. Wound Care Per PROCEDURE: *Wound Care*. Irrigate thoroughly unless bleeding is/was heavy, and apply dressing.
If fracture/dislocation, proceed to **Step 5**; final dressing should be applied after reduction. Apply Bacitracin to shallow wounds and burns if < 15% TBSA and transport time > 1 hour.
5. Reduce Fracture Per PROCEDURE: *Fracture/Dislocation Management*, reduce any suspected fractured limb with decreased distal pulses or with a deformity affecting ability to adequately splint and/or transport.
6. Immobilize Splint any extremity that has been reduced, has a suspected fracture, a gaping wound, wounds with excessive bleeding, large wounds over joints, or for patient comfort.
7. Reassess Bleeding, comfort, distal circulation, sensation and motor function.
8. IV/IO If abnormal vitals or administration of medications anticipated.
Place IV and administer IV fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
Do not place in injured extremity if possible.
9. Ondansetron (Zofran) For nausea or vomiting or history of vomiting with narcotic administration
Adult: IV: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: ½ tab (2mg) if age 4- 14
IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IV: Base Hospital Order ONLY. 0.1mg/kg SIVP.
IM: Contraindicated for patients < 3 months of age.
10. Transport See Special Considerations for Treat and Release criteria.
11. Base Contact For abnormal vitals, orders, or any AMA.

Minor or Isolated Extremity Trauma

Paramedic Base Hospital/Communication Failure Orders

1. Fentanyl

Adult:	If severe pain, SBP > 100, and normal mental status. IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain. i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.
Pediatric:	IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Hydromorphone (Dilaudid)).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- | | | |
|----------|------------|--|
| Morphine | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). |
| | Pediatric: | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. |

OR

- | | | |
|-----------------------------|-------------------------|--|
| Hydromorphone
(Dilaudid) | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg).
IM: 1mg (1ml) every 30 min prn pain (max 2mg). |
| | Pediatric:
(> 5yrs.) | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg |

***Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
Maximm dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via
any route requires base contact .***

3. Cefazolin
(Ancef)

Consider for serious wounds if > 2 hours between injury and arrival at hospital/clinic, per PROCEDURE: <i>Wound Care</i> .	
> 12-Adult:	1g IV (IM if no IV access) every 8 hours.
6-12 yrs.:	500mg IV (IM if no IV access) every 8 hours.
< 6 yrs.:	250mg IV (IM if no IV access) every 8 hours.
4. Acetaminophen
(Tylenol)

> 10-Adult:	1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
0-10 yrs:	15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
5. Ibuprofen
(Motrin, Advil)

> 10-Adult:	600mg PO every 6 hours.
6 mos-10 yrs:	10mg/kg PO (liquid or tablet) every 6 hours, max dose 200mg.
6. Reduce Dislocation

If ETA to hospital/clinic > 2 hours AND per Local Medical Advisor approved extended scope of practice, reduce shoulder, patella, or finger dislocations per PROCEDURE: <i>Fracture/Dislocation Management</i> .

Minor or Isolated Extremity Trauma

SPECIAL CONSIDERATIONS

Assessment

Other injuries.
Distal circulation, sensation, and motor function before and after reduction or splinting.
Tenderness, deformity, crepitus, range of motion (ROM).
Open wounds and degree of contamination.
Joint above and below fracture. Bones above and below joint injury.
If isolated joint injury without obvious fracture (i.e., no deformity, crepitus, or extreme pain) test pain-free range of motion.
If isolated lower extremity injury and no obvious fracture (i.e., no deformity, crepitus, or extreme pain) test ability to bear weight.
Wounds potentially needing suture repair include cosmetic areas (i.e. hands, face, neck), gaping lacerations, or if fat/muscle/tendon is visible.
Assess risk for rabies in animals (species: skunk, fox, bat) appearing ill or displaying unusual behavior, e.g., unprovoked attacks.
Suspect a fracture if there is an appropriate mechanism of injury with associated focal pain and tenderness, deformity, significant swelling, and/or loss of function (e.g., unable to walk on leg or grab with hand).
Suspect a joint injury (sprain with or without associated fracture) when there is an appropriate mechanism of injury with pain, swelling, and loss of function or range of motion. Joint injuries may not have significant tenderness.
Suspect a joint dislocation when any of the findings for joint injury are associated with deformity.

Treatment Issues

A splint should be applied whenever a fracture or joint injury is suspected with loss of function. Exceptions: An isolated knee or ankle injury which does not limit function (i.e. patient states and demonstrates that they can still walk) may be supported without splinting to allow self-evacuation from the backcountry. Support without splinting may include heavy hiking boots for an ankle or improvised knee immobilizer.

Response to narcotic analgesics (Fentanyl/Morphine/Dilaudid) is both situation and patient specific. If prolonged patient contact is anticipated, dose adjustment within the protocol parameters may be warranted. If additional medication is indicated, contact base.

Transport

Consider helicopter evacuation for any of the following:
Any fracture or dislocation with neurovascular compromise.
Ground transport time > 6 hours with: corrected neurovascular compromise; an open fracture; unreduced dislocations; femur, humerus or tibia/fibula fractures; or qualifying wound but no Cefazolin (Ancef).

AMA/TAR

May treat and release if NONE OF THE FOLLOWING ARE PRESENT:

Signs of shock or ALS performed.
Abnormal neurovascular function distal to the injury.
Medications administered.
Tourniquets used (including those applied by patient).
Gross wound contamination, signs of infection, or suspected retained foreign bodies.
Wound depth > 1cm, or bite wounds breaking skin.
Vital structures damaged (tendons, muscle, vessels).
Crush or contaminated wounds to hands or feet.
Open fractures.
Head, neck, or torso involvement.
Splint or reduction required.
PMH: diabetes, age > 65, current steroid use, or immunocompromised state.

Minor or Isolated Extremity Trauma

Advise any patient released to:

Keep wound clean, dry, and bandaged.

Seek medical attention ASAP to evaluate wound for possible suturing and tetanus immunization.

See a doctor ASAP for: any redness, swelling, warmth, pain, pus, or fever; limitation of function or mobility; any other concerns.

Base contact should be attempted for all patients not meeting above criteria.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation

Mechanism of injury.

Tetanus status.

Distal neurovascular function.

Location, depth, length, and width of wound.

Tendon, muscle, or vessel exposure.

Contamination.

Active or pulsatile bleeding.

Care provided: bleeding control, irrigation, foreign material removal, bandaging, splinting, reduction, pre- and post-procedure exam.

Instructions provided.

Cross Reference

Procedures:

Fracture/Dislocation Management

IV Access and IV Fluid

Administration

Wound Care

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)

Major Trauma – Adult

Pediatric – Major Trauma

Drugs:

Acetaminophen (Tylenol)

Bacitracin

Cefazolin (Ancef)

Fentanyl

Hydromorphone (Dilaudid)

Ibuprofen (Motrin, Advil)

Morphine

Ondansetron (Zofran)

Paramedic Standing Orders

Use NPS Pediatric Resuscitation Tape / Broselow Tape to determine equipment sizes.

If patient is taller than Broselow tape (5 feet) or > 14 yrs, **GO TO** PROTOCOL: *Major Trauma – Adult*.

1. ABCs Secure airway. Assist respirations, utilizing BVM, suction, OPA/NPA or ALS airway (*King Tube/ETT*). **REFERENCE PROCEDURE:** *King Tube* or *Endotracheal Intubation* for appropriate ALS tube size for patient age/size. Consider TTJ if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*. Maintain C-spine precautions with ALL airway maneuvers. If trauma arrest, **GO TO** PROTOCOL: *Trauma Arrest (Adult and Pediatric)*.
Apply four-sided dressing to any open chest or neck wounds.
If signs/symptoms of tension pneumothorax develop perform decompressive needle thoracostomy. Per PROCEDURE: *Needle Thoracostomy*.
2. Spine **Stable:** If normal mental status and vitals are within normal limits (per Immobilization PROTOCOL: *Pediatric Parameters*), selectively immobilize per PROCEDURE: *Spine Immobilization*.
Unstable: If abnormal mental status or vitals are abnormal (per PROTOCOL: *Pediatric Parameters*), immobilize ALL patients per PROCEDURE: *Spine Immobilization*.
In all cases, if immobilizing spine, consider car seat for immobilization.
3. Primary Vitals – categorize:
Assessment **Stable** if normal mental status and vitals are within normal limits (per PROTOCOL: *Pediatric Parameters*).
Unstable if abnormal mental status; vitals are abnormal (per PROTOCOL: *Pediatric Parameters*); unstable airway; neurovascular deficit; GSW to head, neck or torso; amputations other than digits (except thumb).
Check the back for penetrating thoracic/abdominal injury. Check perineum.
4. Control Bleeding Direct pressure and elevation.
Four-sided dressing to any open chest or neck wounds.
Bandage non life/limb threatening injuries en route.
5. Transport On-scene time < 10 MINUTES when transport available.
Consider air transport, especially if ALOC or abnormal vital signs.
6. Oxygen Per PROTOCOL: *Oxygen Administration*.
Stable: Low flow.
Unstable: Hi flow or BVM as indicated.
7. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate Pediatric- *Cardiac Arrest/Dysrhythmias Protocol*
8. Prevent Remove wet clothing and apply blankets.
Hypothermia
9. Pelvic Per PROCEDURE: *Pelvic Stabilization*.
Stabilization
10. Secondary Repeat vital signs and mental status.
Assessment Perform secondary survey.
Determine PMH, medications, allergies.
Calculate trauma score per local medical advisor approved EMS policy.

11. IV/IO
Place IV/IO per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous access*.

If no signs of shock, administer 10ml/kg LR/NS bolus, then maintenance IV/IO fluids.
If signs of shock, administer 20ml/kg LR/NS bolus, then recheck vitals.
Bolus may be repeated x2 before base contact if vital signs not improved.
Give bolus via syringe IV/IO push. Establish second IV/IO when able.
Continue to administer maintenance fluids regardless of shock status unless ordered to stop by base.
12. Check Glucose
If ALOC, per PROCEDURE: *Blood Glucose Determination*.
Note: ALOC secondary to hypoglycemia may have preceded the event.
13. Dextrose
If glucose < 80 or ALOC and unable to determine glucose:
 ≥ 2 yrs: 1 amp **D50 IV/IO** (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25 IV/IO** (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
 May repeat in 5 minutes if ALOC persists and glucose still < 80.
 May substitute dose on NPS Pediatric Resuscitation Tape/ Broselow Tape for pediatric dose above.
If hypoglycemia/ALOC persists reference **Paramedic Base Hospital/Communication Failure Orders** for Glucose Paste and Glucagon.
14. Ondansetron
(Zofran)
For nausea or vomiting or history of vomiting with narcotic administration:
3 mos–14 yrs: IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: ½ tab (2mg) if age 4–14
IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.: IVIO: Base Hospital Order ONLY. 0.1mg/kg SIVP.
IM: Contraindicated for patients < 3 months of age.
Note: For severely symptomatic patients, ODT can be administered prior to attempts for IV/IO access
15. Base Contact
16. Splint/Bandage Injuries
Immobilize and splint fractures en route per PROCEDURE: *Fracture/Dislocation Management and Wound Care*.
Reduce any fracture/dislocation with deformity affecting ability to splint/transport, or any fracture/dislocation with decreased distal pulses.

Paramedic Base Hospital/Communication Failure Orders

1. Needle Thoracostomy

Per PROCEDURE: *Needle Thoracostomy*.
 If not in arrest, **ALL** of the following must be present:
 Severe respiratory distress (RR < 10 or RR > 24).
 Hemodynamic compromise (**1-8yrs**: SBP < 60, **0-1yr**: SBP < 50).
 Decreased or absent breath sounds on one side.

Note: Tension pneumothorax is a rare, but life threatening condition and is often difficult to assess clinically. Early base contact is advised if tension pneumothorax is suspected and patient does not meet all of the above criteria.
2. Oral Fluids

Base Hospital Order ONLY, NOT in communication failure.
 Oral fluid rehydration may be attempted in a patient if ALL of the following conditions are met:
 Normal mental status.
 Stable and protected airway.
 Unstable SBP or unstable HR as defined in PROTOCOL: *Pediatric Parameters*.
 Greater than 4 hours between injury and anticipated arrival at hospital.
 If ALL of these conditions are met, the patient may be given frequent small sips of water or non-carbonated electrolyte replenishment drink.
3. Glucose Paste

If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
 If no response to Glucose Paste in 5 minutes, proceed to glucagon administration.
4. Glucagon

0.03mg/kg IM, max dose 1mg (if no IV/IO).
 May repeat once in 15 minutes if ALOC persists and glucose remains < 80.
5. Fentanyl

Pediatric: IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain.
 Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
 IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain.
 Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if no evidence of shock (defined per PROTOCOL: Pediatric Parameters) and normal mental status.
6. Long Acting Narcotic (Morphine OR Dilaudid).

Only to be used 30 minutes after fentanyl dosing schedule above is completed.

Morphine	Pediatric:	Base Hospital Order ONLY, NOT in communication failure. IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
OR		
Dilaudid	Pediatric: (> 5y.o)	Base Hospital Order ONLY, NOT in communication failure. IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg IM: 0.015mg/kg (0.015ml/kg). Max 1mg

Recheck vitals and mental status before and after each dose. Administer ONLY if no evidence of shock (defined per PROTOCOL: Pediatric Parameters) and normal mental status.
Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.

Paramedic Base Hospital/Communication Failure Orders (cont.)

7. Cefazolin (Ancef) Consider for serious wounds if > 2 hours between injury and arrival at hospital/clinic, per PROCEDURE: *Wound Care*.
- | | |
|-------------|--|
| 12-14 yrs.: | 1g IV/IO (IM if no IV/IO access) every 8 hours. |
| 6-12 yrs.: | 500mg IV/IO (IM if no IV/IO access) every 8 hours. |
| < 6 yrs.: | 250mg IV/IO (IM if no IV/IO access) every 8 hours. |

SPECIAL CONSIDERATIONS

General

On-scene time SHOULD BE <10 MINUTES unless multiple patients, prolonged extrication, or transport unavailable. All delays on scene must be documented. On-scene treatment should be limited to airway management, pressure control of major bleeding, covering an open chest wound and spine immobilization. Begin organizing transport immediately. Contact base as soon as transport underway, or immediately if transport delayed. Reassess vital signs frequently once en route, and after any treatment.

Pediatric General

Airway management: most children can be easily ventilated by BVM if proper head position is maintained. Use a King Tube if indicated in children OVER 4 FEET TALL. Use chest rise/fall to indicate adequate ventilation. NPS Pediatric Resuscitation Tape/Broselow tape uses length to estimate weight and has pre-calculated drug doses and appropriate equipment sizes (BVM, oral airways, IV/IOs, cervical collars, BP cuffs, suction). Booster seats, designed for children 40-80 pounds, are NOT adequate for spinal immobilization. IV/IO Access: All IV medications and IV fluids can be given IO. Reference PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous (IO) Access*. Assessment of children is difficult. You must rely on repeated observation, especially for mental status.

Assessment

Primary assessment:

- A: Airway with cervical spine control
- B: Breathing**
- C: Circulation/uncontrolled bleeding
- D: Disability/neuro status
- E: Exposure (undress) with Environmental control (temperature)

**Tension Pneumothorax can develop at any time.

If not in arrest, **ALL** of the following must be present:

Severe respiratory distress (Abnormal RR) defined per PROTOCOL: Pediatric Parameters.).

Hemodynamic compromise (. (Low SBP) defined per PROTOCOL: Pediatric Parameters.

Decreased or absent breath sounds on one side.

Either distended neck veins **or** tracheal deviation AWAY from side with tension.

IF patient is intubated, increasing difficulty ventilating the patient along with all of the above should prompt a search for development of tension pneumothorax.

Per PROCEDURE: *Needle Thoracostomy*.

Secondary assessment: (head-to-toe) Identify immediate life threats: head injury, neck vein distention, tracheal shift, chest trauma/flail chest, unequal lung sounds, abdominal trauma, pelvic/femur fractures, back trauma, shock, major hemorrhage, survey of injuries. If ALOC, document pupil size/reactivity, and continuously monitor neuro status.

History: Mechanism of injury: Penetrating or blunt trauma? Speed of vehicles? Angle of impact, rollover, secondary impacts, exterior damage, airbags deployed? Seatbelt? Damage to steering wheel or windshield? Patient ejected? What did patient actually hit? Loss of consciousness? Fatality on scene? Extrication time >20 minutes? Height of fall? Helmet? Possible cause of incident: medical problem, drug overdose, alcohol, seizure? AMPLE history.

Vitals: Repeat frequently, including mental status. **REFERENCE PROTOCOL:** *Pediatric Parameters* or NPS Pediatric Resuscitation Tape/Broselow Tape for age-appropriate vital signs. Remember that a pediatric patient's SBP will remain normal even in moderate acute blood loss.

Shock: Children have a large capacity to compensate for shock. Tachycardia or ALOC are the best signs and **hypotension is a very late sign**. Children often have masked internal injuries. In trauma, hypotension is usually from internal blood loss, NOT from isolated head injury. **REFERENCE PROTOCOL:** *Pediatric Parameters* or NPS Pediatric Resuscitation Tape/Broselow Tape for age-appropriate vital signs. A fluid bolus of 20ml/kg represents 25% blood volume. A positive response is indicated by decreased heart rate, increased blood pressure, improved perfusion or improved mental status.

Mental status: Consider what would be normal behavior for a child that age. Crying is probably appropriate. A lethargic, non-crying child is often a sign of head injury or shock. If parents are available, ask if the child responds appropriately to them. If ALOC, document pupil size and reactivity, and continuously monitor neuro status. **REFERENCE PROTOCOL:** *Pediatric Parameters* for pediatric GCS calculation.

Head Trauma: Repeated neuro exams (GCS, pupils, respiratory pattern, posturing) are essential. Agitation and/or lethargy suggest head trauma, shock, or other hidden medical cause. Deteriorating mental/neuro status is an emergency and air transport should be utilized if available.

Amputations: Per PROCEDURE: *Wound Care*. Wrap extremity in dry sterile gauze, place in plastic bag and keep cool (put on ice if possible). Amputated part should NOT be wet or placed directly in water/ice.

Fractures: Children will often have no external signs of trauma over a fracture. Failure to move an extremity is often a sign of fracture and failure to move legs could indicate a pelvic fracture. Irrigate with potable water, apply sterile dressing and splint per PROCEDURE: *Fracture/Dislocation Management*. Apply moist sterile dressing to exposed bone or tendon per PROCEDURE: *Wound Care*.

Pelvic Stabilization: Per PROCEDURE: *Pelvic Stabilization*.

Penetrating Trauma: Secure impaled objects and transport. Modify object or patient position for transport as needed. Do not remove object unless necessary for transport or CPR.

Transport

If unstable trauma patient, initiate immediate transport with ALS treatment en route and ultimately air transport to trauma center if available.

Pediatric

Major Trauma

AMA/TAR

No patient may be Treated and Released without base contact in the setting of multisystem trauma.
Parents or legal guardian must be on scene to sign a pediatric patient AMA after base contact.
Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation

MOI (mechanism of incident and mechanism of injury).
Loss of consciousness and duration.
Initial and repeat vital signs.
Pertinent exam findings (breath sounds, pelvic stability, fractures and bleeding).
If on scene > 10 minutes, document reason.

Cross Reference

Procedures:

Blood Glucose Determination
Endotracheal Intubation
Fracture/Dislocation Management
Intraosseous (IO) Access
IV Access and IV Fluid Administration
King Tube
Needle Thoracostomy
Oxygen Administration
Pelvic Stabilization
Spine Immobilization
Transtracheal Jet Insufflation
Wound Care

Protocols:

Major Trauma – Adult
Pediatric Parameters
Trauma Arrest (Adult and Pediatric)

Drugs:

Cefazolin (Ancef)
Fentanyl
Glucagon
Glucose Paste or Gel
Hydromorphone (Dilaudid)
Morphine
Ondansetron

Paramedic Standing Orders

If patient is ≥ 4 yr or taller than NPS Pediatric Resuscitation Tape/Broselow Peditape (5 feet), **GO TO** PROTOCOL: *Adult - Cardiac Arrest/Dysrhythmias*

If patient is a newborn (Birth to 24 hours of life) **GO TO** PROTOCOL: *Pediatric – Newborn Resuscitation*.

Pulseless Arrest (2190 P-1)

Resuscitation Guidelines

Resuscitation Management

This protocol may be followed by a single provider. Ideally, additional provider or bystander help should be solicited. CPR, with emphasis on good BLS airway management and ventilation, then application of defibrillator devices are the priorities. These interventions should not be delayed for IV placement, medication administration or ALS airways.

Once a second provider (even a well-trained bystander) arrives who can perform CPR, then the Paramedic is to attempt IV/IO placement per **Steps 5 or 13** while instructing the second provider to proceed with CPR. Once an IV/IO is placed successfully, administer appropriate medications per PROTOCOL.

An ALS airway will augment the effectiveness of ventilations. Early in the resuscitation, if BLS airway is inadequate or if manpower allows, consideration of ALS airway is warranted. Otherwise, after the first cycle of IV/IO medications has been delivered, the next priority is to convert the BLS airway to an ALS airway.

CPR

CPR, with an emphasis on good BLS airway management and ventilation, is key in pediatrics. ALS airway interventions, IV/IO access, rhythm analysis, and medication administration should be completed with minimal interruptions in ventilation or chest compressions. Either single- or dual-rescuer CPR is conducted with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute: “Push Hard, Push Fast.” Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes.

Medication Note

In a coding pediatric patient, dosing for Amiodarone:

- First dose 5mg/kg Maximum 300mg
- Repeat doses 5mg/kg Maximum 150mg
- Maximum Cumulative Dosing 15mg/kg up to 450mg

However, epinephrine (which has no maximum cumulative dose) should be continued in each cycle.

Cardiac Monitor/ External Defibrillator

Most advanced paramedic practitioners are trained in basic electrocardiogram and monitor interpretation of cardiac rhythms that are either life threatening or not compatible with life. These protocols are designed for practitioners who are adequately trained in interpreting these rhythms and the operation of their respective monitors and external defibrillator devices.

Use biphasic defibrillation with 2 – 4 Joules/kg to a maximum of 200 Joules.

1. Confirm Arrest

Assess airway, breathing, and circulation, prior to resuscitation efforts. There should be no response to aggressive stimulation.

If pulse is present, do not initiate CPR: patient is NOT in cardiac arrest. **GO TO** *PROTOCOL: Altered Mental Status/Altered Level of Consciousness (ALOC)*, or other appropriate protocol.
2. Assessment

Quickly obtain information (15-30 seconds) from witnesses to determine whether resuscitation should be initiated and by what means (e.g., length of downtime determines whether to start with CPR or AED). As time allows, obtain additional information including preceding events and symptoms, PMH.

Do not attempt resuscitation in the following cases:

Rigor mortis, lividity, obviously fatal trauma, or DNR.

Documented pulseless downtime greater than 30 minutes.

In specific SPECIAL CASES (cold water drowning, hypothermia, barbiturate ingestion, electrocution or lightning strike) downtime may be extended to 60 minutes.
3. CPR (Rhythm Check, BLS Airway, Supplemental Oxygen)

Begin with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute. Compress $\geq \frac{1}{3}$ anterior-posterior diameter of chest. Allow complete recoil between compressions. "Push Hard, Push Fast." Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes.

Secure BLS airway utilizing OPA/NPA and BVM, initiate oxygen therapy with 15-L Oxygen. Per *PROCEDURE: Oxygen Administration*.

Apply Cardiac Monitor/External Defibrillator: Attach cardiac monitor or AED pads as soon as available. Provide CPR until the monitor is attached and defibrillator is ready to deliver a shock.

If downtime < 4 minutes, witnessed/confirmed: Initiate rhythm analysis as soon as monitor attached - Shock for VF/VT – proceed to "Shockable Rhythm": VF/Pulseless VT algorithm (**Step 4**). If "Non-shockable Rhythm" proceed to Asystole/PEA algorithm (**Step 13**).

If downtime > 4 minutes, or unknown: Continue a full sequence of CPR. After 5 cycles of CPR analyze rhythm. If "Shockable Rhythm" proceed to VF/Pulseless VT algorithm (**Step 4**). If "Non-shockable Rhythm" proceed to Asystole/PEA algorithm (**Step 13**).

“Shockable Rhythm”: VF/Pulseless VT (Step 4)

Outcome of shock delivery is best if rescuers minimize the time between last compression and shock delivery, so rescuers should be prepared to coordinate (brief) interruptions in chest compressions to deliver shocks, and should resume compressions immediately after shock delivery.

4. Shock

Give 1 shock (2 J/kg) and immediately resume CPR, beginning with chest compressions.
5. CPR
(IV/IO Access)

Continue CPR for approximately 2 minutes.

After shock delivery, resume CPR, beginning with chest compressions. Minimize interruptions of chest compressions. After prolonged arrest defibrillation is more likely to be successful after a period of effective chest compressions. Ideally, chest compressions should be interrupted only for ventilations (until an advanced airway is in place), rhythm check, and shock delivery.

Obtain IV/IO access (IO access preferred as initial access). Per PROCEDURE: *IV Fluid Administration and Intraosseous Access*.
6. Rhythm Check

Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).

If a “Shockable” rhythm persists, proceed to **Step 7**

If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm (**Step 13**).
7. Shock

Give 1 shock (4 J/kg) and resume CPR, beginning with chest compressions.
8. CPR
(Medication Administration)

Immediately resume chest compressions. Continue CPR for approximately 2 minutes.

During CPR give epinephrine and amiodarone.

Give Epinephrine 0.01 mg/kg IV/IO bolus (0.1 mL/kg of 1:10 000 concentration) maximum of 1 mg **every 3 to 5 minutes**.

Give Amiodarone 5mg/kg IV/IO bolus. Maximum dose 300mg.

See Special Considerations (Treatment Section)
9. Rhythm Check

Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).

If the rhythm is “Shockable,” proceed to **Step 10**

If rhythm is “Non-shockable,” continue with the Asystole/PEA algorithm (**Step 13**).
10. Shock

Give 1 shock (4 J/kg; not to exceed 200 Joules (maximum adult dose)) and resume CPR, beginning with chest compressions.

11. CPR (Medication Administration, ALS Airway)

Immediately resume chest compressions. Continue CPR for approximately 2 minutes.

During CPR give epinephrine and amiodarone.

Give Epinephrine 0.01 mg/kg IV/IO bolus (0.1 mL/kg of 1:10 000 concentration) maximum of 1 mg **every 3 to 5 minutes**.

Give amiodarone 5 mg/kg IV/IO bolus (Maximum dose 150mg). May repeat once more at 5 mg/kg. (Max. 3 doses up to 450mg).

Consider placement of ALS airway. Per PROCEDURE: *King Tube/ETT*.

Assess proper placement and effectiveness of ALS airway.

Monitor effectiveness of CPR with continuous capnography/capnometry as available.

Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.

Once an advanced airway is in place, with 2 rescuers, the 1st delivers ventilations of 1 breath every 6-8 seconds (8-10 breaths per minute). The 2nd gives continuous chest compressions at a rate of at least 100 per minute without pause for ventilation.

12. Continuation

Check rhythm every 2 minutes with minimal interruptions in ventilations and chest compressions. If the rhythm is “Non-shockable” continue with cycles of CPR and epinephrine administration until there is evidence of Return of Spontaneous Circulation (ROSC) or you decide to terminate the effort. Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol. If ROSC is achieved, go to **Step 19**.

If at any time the rhythm becomes “Shockable,” give a shock (**Step 7**) and immediately resume ventilations and chest compressions for 2 minutes before rechecking the rhythm. Interruptions between ventilations/chest compressions and shock delivery should be kept to a minimum.

“Non-shockable Rhythm”: Asystole/PEA (Step 13)

PEA is an organized electric activity—most commonly slow, wide QRS complexes—without palpable pulses. Less frequently there is a sudden impairment of cardiac output with an initially normal rhythm but without pulses and with poor perfusion.

13. CPR (IV/IO Access)

Continue CPR for approximately 2 minutes.

Minimize interruptions of chest compressions. Ideally, chest compressions should be interrupted only for ventilations (until an advanced airway is in place), rhythm check, and shock delivery.

Obtain IO/IV access (IO access preferred as initial access). Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.

14. Rhythm Check

Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**).

If a “shockable” rhythm, give a shock (2 J/kg) (**Step 4**).

If rhythm is “nonshockable,” continue with the Asystole/PEA algorithm

15. CPR (Medication Administration)

Immediately resume chest compressions. Continue CPR for approximately 2 minutes.

During CPR give epinephrine.

Give Epinephrine 0.01 mg/kg IO/IV bolus (0.1 mL/kg of 1:10 000 concentration); maximum of 1 mg **every 3 to 5 minutes**.

16. Rhythm Check

Hold compressions for rhythm analysis. Check pulse for 6 seconds while analyzing rhythm. If organized rhythm and pulse is present proceed to post-cardiac arrest care (**Step 19**)

If a “shockable” rhythm, give another shock (recharge at higher dose - 4 J/kg) (**Step 7**).

If rhythm is “nonshockable,” continue with the Asystole/PEA algorithm.

17. CPR (Medication Administration, ALS Airway)

Immediately resume chest compressions. Continue CPR for approximately 2 minutes.

During CPR give epinephrine and bicarbonate.

Give Epinephrine 0.01 mg/kg IO/IV bolus (0.1 mL/kg of 1:10 000 concentration); maximum of 1 mg **every 3 to 5 minutes**.

Give one dose of Bicarbonate 1meq/kg IV/IO maximum dose 50 meq.

Consider placement of ALS airway. Per PROCEDURE: *King Tube/ETT*.

Confirm placement and effectiveness of airway with colorimetric CO₂ detector. Monitor with continuous capnography/capnometry as available per PROCEDURE: *Capnography*

Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.

Once an advanced airway is in place, with 2 rescuers, the 1st delivers ventilations of 1 breath every 6-8 seconds (8-10 breaths per minute). The 2nd gives continuous chest compressions at a rate of at least 100 per minute without pause for ventilation.

18. Continuation Check rhythm every 2 minutes with minimal interruptions in ventilations and chest compressions. If the rhythm is “Non-shockable” continue with cycles of CPR and epinephrine administration until there is evidence of Return of Spontaneous Circulation (ROSC) or you decide to terminate the effort. Refer to Initiation and Termination of Resuscitation algorithm at the end of this protocol. If ROSC is achieved, go to **Step 19**.
- If at any time the rhythm becomes “Shockable,” give a shock (**Step 7**) and immediately resume ventilations and chest compressions for 2 minutes before rechecking the rhythm. Interruptions between ventilations/chest compressions and shock delivery should be kept to a minimum.

Return of Spontaneous Circulation – Post Cardiac Arrest Care

19. Post Cardiac Arrest Care If return of spontaneous circulation (ROSC), initiate transport on monitor, reassess, make base hospital contact, establish vascular access, consider administration of Amiodarone, check glucose.
- Reassess If patient has a palpable pulse or shows signs of life, check pulse every 3 minutes and provide appropriate ventilatory support.
- Base Contact As soon as possible without compromising patient care.
- IV/IO Access If IV/IO not previously attempted or established, obtain IV/IO per PROCEDURE: *IV Access and IV Fluid Administration or Intraosseous Access*.
- Amiodarone If patient was not given Amiodarone during resuscitation reference “Amiodarone” section in Special Considerations.
- Check Glucose Per PROCEDURE: *Blood Glucose Determination*. If glucose < 80 or ALOC and unable to determine glucose:
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
- Dextrose If glucose < 80, or ALOC and unable to determine glucose.
- ≥ 2 yrs: 1 amp **D50** IV/IO (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25** IV/IO (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
- May repeat in 5 minutes if ALOC or seizure persists and glucose still < 80.
 May substitute dose on NPS Pediatric Resuscitation Tape/Broselow Tape for pediatric dose above.
- Glucose Paste If no IV, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
 If no response to Glucose Paste in 5 minutes, then proceed to glucagon.
- Glucagon 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
 May repeat once in 15 minutes if ALOC or seizure persists, and glucose remains < 80.

SPECIAL CONSIDERATIONS

Initiation AND Termination of CPR Guideline

	Adult		Pediatric	
	Standard	Special Circumstance	Standard	Special Circumstance
Medical Arrest	15 min	30 min	30 min	60 min
Trauma Arrest	Adult		Pediatric	
	Blunt	Penetrating	Blunt	Penetrating
	10 min	20 min	10 min	20 min

Notes:

These times apply to either:

Not initiating CPR in the setting of known down time prior to EMS arrival or cessation of CPR in an unsuccessful EMS resuscitation.

Special Circumstances include: Hypothermia, Barbiturate ingestion, Nitrate ingestion, Cold water drowning, Electrocution, and Lightning injury.

Do not initiate if signs of prolonged lifelessness (e.g. rigor mortis, lividity) or obvious non-survivable injury (e.g. severe [100% 3rd degree] burn or decapitation).

CPR Termination

With termination of CPR, consider early base contact.

By definition, all pediatric arrests are “special cases.” As such, continue all resuscitative efforts for 30 minutes. Before terminating CPR, palpate pulse and evaluate for spontaneous respirations for 30 seconds. Confirm with a second provider if available. If no palpable pulse nor spontaneous respirations, CPR may be terminated.

Any return of spontaneous circulation restarts the clock (time for CPR termination) should the patient subsequently re-arrest.

Assessment

Patient condition or events immediately prior to arrest: nausea/vomiting, diarrhea, ingestions, shortness of breath, choking, near-drowning, swimming, trauma, extreme heat or cold exposure, bite/sting exposure?

Bystander resuscitation: downtime before CPR, duration of CPR, bystander experience?

Physical Exam:

Respirations: Shallow? Rate? Spontaneous?

Breath sounds: Equal? Crackles? Rhonchi?

Heart: Beating? Regular or irregular?

Pulses: Carotid? Peripheral? Regular? All pulse checks during resuscitation should be for 6 seconds. Pulse checks for termination are for 30 seconds. Do not stop CPR to perform pulse checks unless specified by protocol.

Abdomen: Soft? Signs of GI bleeding?

Skin: Warm? Dry? Cyanosis? Rigor/lividity? Cold? Surgical scars/implants?

Pupils: Reactive? Size?

Evidence of trauma? Acute blood loss?

Previous medical history: medications, allergies, depression/previous attempt at self injury, drug ingestions, history of renal failure?

Differential Diagnosis

Cardiac arrest is the final common pathway for every cause of death. It is important to differentiate irreversible causes of cardiac arrest from potentially reversible causes of cardiac arrest. Some examples of potentially reversible causes of cardiac arrest include: cardiogenic shock, cardiac arrhythmia, hypovolemia, tension pneumothorax, pericardial tamponade, respiratory arrest, allergic reaction, drug/medication/toxin ingestion, hypothermia, hyperthermia, drowning, electrical injury or trauma.

Treatment

**** In selected circumstances, at Step 8, considered inserting any/all of the therapies below:

1. NS 20ml/kg IV/IO bolus - History of possible dehydration
2. Sodium bicarbonate 1 mEq/kg IV/IO - History of Toxicologic exposure or renal failure
3. Atropine IV/IO: 0.2ml/kg (0.02mg/kg) minimum dose 0.1 mg, max dose 1mg - in young pediatric patients with bradycardia
4. Dextrose - History of diabetes medication or starvation
 - ≥ 2 yrs: 1 amp D50 IV/IO (1 amp = 25g in 50ml).
 - < 2 yrs: 2 ml/kg D25 IV/IO (12.5g in 50ml), up to a max of 100ml. (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
5. Calcium Gluconate - 60-100 mg/kg (0.6-1 ml/kg), max 3 gms (3 vials) per dose. Administered at a rate not to exceed 200mg/min. History of toxicologic calcium channel blocker exposure (nifedipine, verapamil, etc.) or patients with renal failure.
6. Amiodarone:
 - Actively coding with shockable rhythm:
 - 1 mo-14 yrs: IV/IO:
 - First dose 5mg/kg Maximum 300mg
 - Repeat doses 5mg/kg Maximum 150mg
 - Maximum Cumulative Dosing 15mg/kg up to 450mg
 - < 1 month: Not Used
 - Patients suffering rearrest who did not receive the full 15mg/kg dose (maximum 450mg) during the initial resuscitation may receive an additional dose.
 - 1 mo-14 yrs: IV/IO: 5mg/kg IVP (max dose 150mg)
 - < 1 month: Not Used
 - Patients suffering cardiac arrest responsive to shock who did not receive Amiodarone during resuscitation, Base contact advised

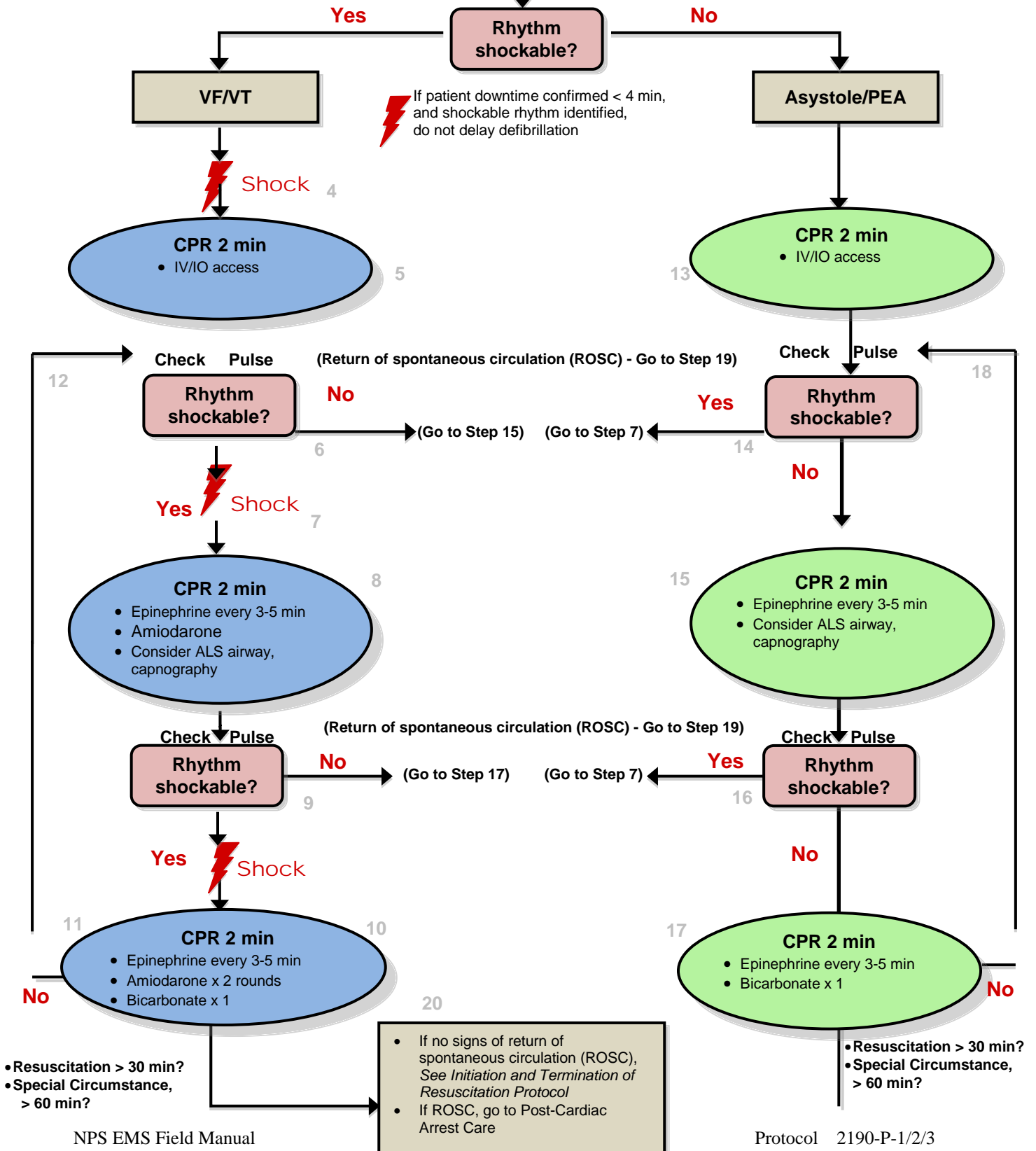
Documentation

Initial and subsequent vital signs and mental status.
 Downtime before CPR, duration of CPR, and by whom.
 Time and response to interventions administered.
 Time of death if applicable.
 If outcome unsuccessful, leave airway, IV, etc. in place.
 If CPR was not initiated, the reason for not initiating CPR.

Cardiac Arrest/Dysrhythmias

Post Cardiac Arrest Care: Return of spontaneous circulation (ROSC)

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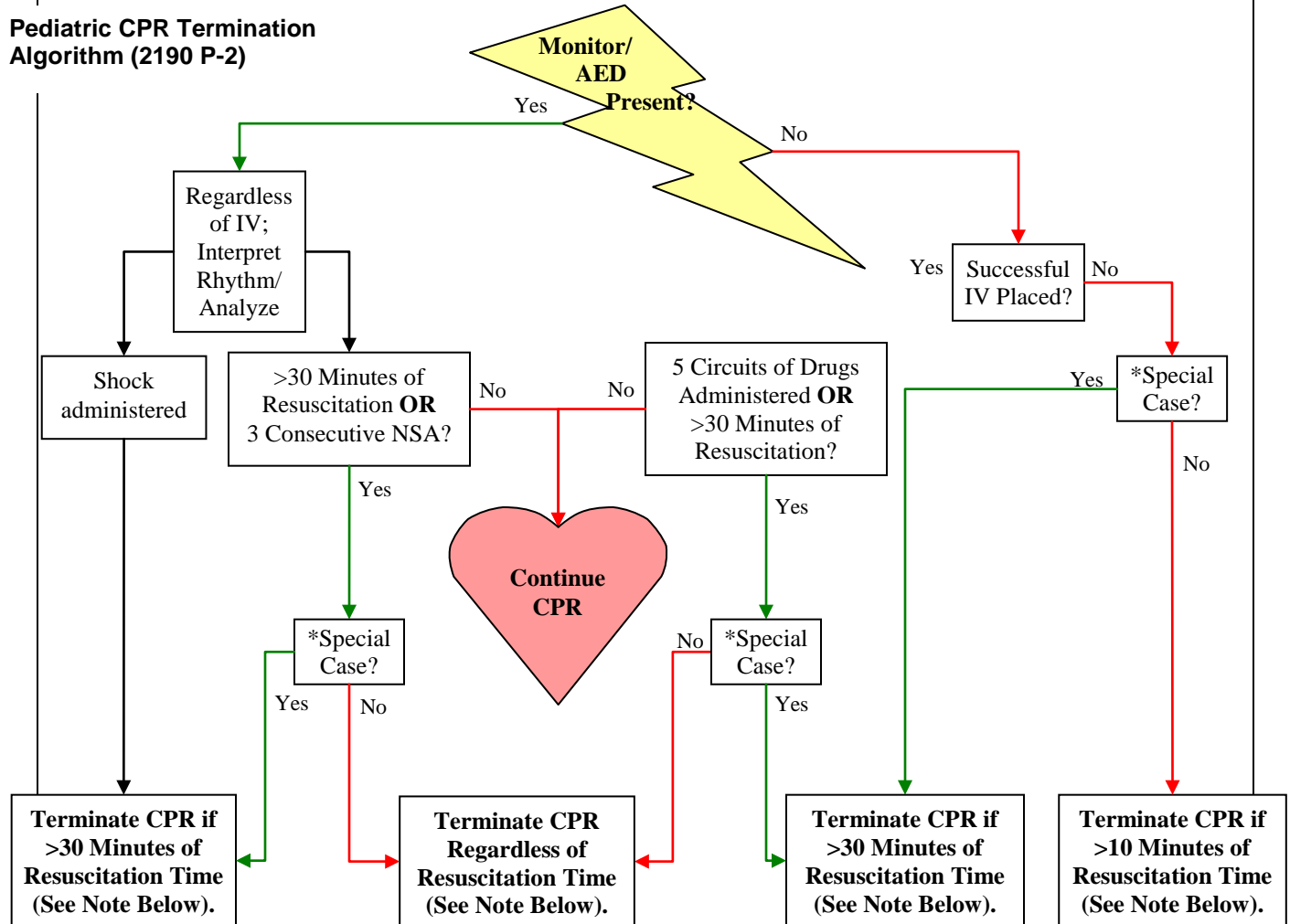


Yes

Yes



Pediatric CPR Termination Algorithm (2190 P-2)



***Special Cases:** cold water drowning, hypothermia, barbiturate ingestion, electrocution, lightning, or pediatric patients (age <14yrs).

NSA: No Shock Advised or No Shock Administered based on monitor rhythm.

Note: Before terminating CPR, palpate pulse and evaluate for spontaneous respirations for 30 seconds. Confirm with a second provider if available. If no palpable pulse nor spontaneous respirations, CPR may be terminated.

If patient has a palpable pulse or spontaneous respirations, continue with PROTOCOL: *Cardiac Arrest Without AED-Adult Medical*. Any return of spontaneous circulation restarts the clock (time for CPR termination) should the patient subsequently re-arrest.

Bradydysrhythmia (2190 P-3)**Treatment Guidelines****ABC's**

Assess ABCs, obtain brief history
Is the patients' bradycardia inappropriate or pathologic for their clinical condition?
Look for signs/symptoms of poor ventilation/perfusion.

For CPR, medication administration, and pacing, the sequence of actions may differ depending on the age of the patient. See algorithm.

CPR

Emphasis should be on continuous CPR. Airway interventions, IV/IO access, rhythm analysis, and medications administration should be completed with minimal interruptions in chest compressions. Either single- or dual-rescuer CPR is conducted with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute: "Push Hard, Push Fast." Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes. Single-rescuer resuscitation may be initiated with Compressions-only CPR depending upon available assistance and necessary airway equipment.

Medication Note

All of the following medications may be indicated depending on the patient age, condition or complaint: Atropine, Epinephrine
For transcutaneous pacing, see protocol for medication dosing (Fentanyl, Midazolam).

**Cardiac Monitor/
Transcutaneous pacing**

Most advanced paramedic practitioners are trained in basic electrocardiogram and monitor interpretation of cardiac rhythms that are either life threatening or not compatible with life. These protocols are designed for practitioners who are adequately trained in interpreting these rhythms and the operation of their respective monitors and transcutaneous pacers. Placement of pacer pads should be performed as soon as possible as they may be needed for either pacing or cardioversion/defibrillation.

1. ABCs

Assess airway and breathing:
 Secure airway. Assist respirations, utilizing BVM, suction, OPA/NPA or ALS airway (*King Tube/ETT*). **REFERENCE PROCEDURE:** *King Tube* or *Endotracheal Intubation* for appropriate ALS tube size for patient age/size.
 Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtracheal Jet Insufflation*.

Assess circulation:
 Evaluate for signs/symptoms of poor perfusion. Poor tissue perfusion (signs of shock) may present as, but is not limited to:
 Bradypnea, tachypnea, cool and pale distal extremities, prolonged (> 2 seconds) capillary refill, weak or absent peripheral pulses, weak central pulses, deterioration in color (i.e., pallor, peripheral cyanosis), mottling of the skin, depressed mental status, decreased urine output, and hypotension.

If at any time pulse is absent, initiate CPR: patient is in cardiac arrest. **GO TO PROTOCOL:** *Pediatric Cardiac Arrest/Dysrhythmia*.
2. Assessment

Quickly obtain information (15-30 seconds) from witnesses to identify preceding events, duration and onset of symptoms, previous medical history, medications, and possible ingestions.
 If Hypothermic, core temperature < 35C **GO TO PROTOCOL:** *Hypothermia*
3. Identify and Treat (Oxygen, Cardiac Monitor, IV/IO Access, check glucose)

Provide high flow **oxygen**, per PROCEDURE: *Oxygen Administration*.

Apply Cardiac Monitor/External Defibrillator: Attach cardiac monitor and pulse oximetry.
 Check blood pressure.

Obtain IV/IO access. Administer 20ml/kg bolus Per PROCEDURE: *IV/IO Access and IV Fluid Administration*.

If altered mental status, **check/give glucose** Per PROCEDURE: *Blood Glucose Determination*.
 Consider early base contact.
4. Reassess

Determine if bradycardia persists despite adequate oxygenation and ventilation.

Cardiopulmonary Compromise? HR < 60 and poor perfusion despite above therapies (especially ventilation)?

If age < 2 **GO TO STEP 5**
 If age 2 – 8 **GO TO STEP 6**
 If age > 8 **GO TO STEP 9**
5. CPR

Begin with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute. Compress $\geq \frac{1}{3}$ anterior-posterior diameter of chest. Allow complete recoil between compressions. “Push Hard, Push Fast.” Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes. **GO TO STEP 14.**
6. Atropine

0.02 mg/kg IV/IO. Minimum dose 0.1 mg, maximum single dose 0.5mg.
 *** treat underlying causes, especially ventilation, volume depletion, hypoglycemia***
7. Reassess

Bradycardia persists with signs of cardiopulmonary compromise?

NO- **GO TO STEP 16** Symptomatic support.
 YES – **GO TO STEP 8** CPR.

- | | |
|---|--|
| 8. CPR | Begin with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute. Compress $\geq \frac{1}{3}$ anterior-posterior diameter of chest. Allow complete recoil between compressions. "Push Hard, Push Fast." Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes. GO TO STEP 14. |
| 9. Atropine | 0.02 mg/kg IV/IO. Minimum dose 0.1 mg, maximum single dose 0.5mg.
*** treat underlying causes, especially ventilation, volume depletion, hypoglycemia*** |
| 10. Reassess | Bradycardia persists with signs of cardiopulmonary compromise?
NO- GO TO STEP 16 Symptomatic support.
YES – GO TO STEP 11 |
| 11. Atropine/
Transcutaneous
Pacing | Repeat dose 0.02 mg/kg IV/IO. Minimum dose 0.1 mg, maximum single dose 0.5mg.
Begin transcutaneous pacing PER PROCEDURE <i>Transcutaneous Pacing</i>
*** treat underlying causes, especially ventilation, volume depletion, hypoglycemia*** |
| 12. Reassess | Bradycardia persists with signs of cardiopulmonary compromise?
NO- GO TO STEP 16 Symptomatic support.
YES – GO TO STEP 13 |
| 13. CPR | Begin with a compression-to-ventilation ratio of 15:2. Compression rate is 100/minute. Compress $\geq \frac{1}{3}$ anterior-posterior diameter of chest. Allow complete recoil between compressions. "Push Hard, Push Fast." Continue with 5 cycles of CPR (15:2) – approximately 2-3 minutes. GO TO STEP 14. |
| 14. Reassess | Bradycardia persists with signs of cardiopulmonary compromise?
NO- GO TO STEP 16 Symptomatic support.
YES – GO TO STEP 13. |
| 15. CPR/Additional
Medication/TCP | Continue CPR, 2 minute cycles.
Epinephrine, 0.01 mg/kg (0.1ml/kg of 1:10,000 concentration). Repeat every 3-5 minutes.
Atropine, Repeat dose 0.02 mg/kg IV/IO. Minimum dose 0.1 mg, maximum single dose 0.5mg. May repeat to a total of 4 doses for any age group.
Transcutaneous pacing (TCP) PER PROCEDURE <i>Transcutaneous Pacing</i> . |
| 16. Symptomatic
Support | Support ABC's
Give oxygen
Observe/Reassess |
| 17. Transport/Base
Contact | |

SPECIAL CONSIDERATIONS

Increased vagal tone or primary AV block, may require multiple doses of Atropine

Pediatric

Bradydysrhythmia Algorithm (2190 P-3)

1 & 2

Bradydysrhythmia (with pulse)

Assess ABCs, obtain brief history
Is the patients' bradycardia inappropriate or pathologic for their clinical condition?
Look for signs/symptoms of poor ventilation/perfusion

3

Identify and Treat underlying causes

- Maintain patent airway; assist breathing as necessary
- High flow oxygen
- Cardiac monitor; monitor blood pressure and pulse oximetry
- IV/IO Access, NS bolus 20 ml/kg
- Check/give Glucose if Altered Mental Status

4

NO

Cardiopulmonary Compromise? HR < 60 and poor perfusion despite above therapies (especially ventilation)?

YES

Age < 2 years

5

CPR for 2 minutes

YES

Age 2 to 8 years

6

- Atropine
- Treat underlying causes

7

Bradycardia persists w/ cardiopulmonary compromise?

Go to Symptomatic Support

YES

8

CPR for 2 minutes

YES

Age > 8 years

9

- Atropine
- Treat underlying causes

10

Bradycardia persists w/ cardiopulmonary compromise?

Go to Symptomatic Support

YES

11

- Atropine
- Transcutaneous pacing
- Treat underlying causes

12

Bradycardia persists w/ cardiopulmonary compromise?

YES

13

CPR for 2 minutes

NO

14

Bradycardia persists w/ cardiopulmonary compromise?

YES

16

Symptomatic Support

- Support ABCs
- Give oxygen
- Observe/Reassess

15

- Continue CPR, 2 minute cycles
- Epinephrine, repeat every 3-5 minutes
- Atropine, may repeat to a maximum of 3 mg regardless of age
- Transcutaneous pacing

GO TO Cardiac Arrest Algorithm

Table 1. Pediatric Normal Resting Vital Signs

Age	Heart Rate (beats/min)	Respiratory Rate (breaths/min)
Premature	120-170	40-70
0-3 months	100-150	35-55
3-6 months	90-120	30-45
6-12 months	80-120	25-40
1-3 year (s)	70-110	20-30
3-6 years	65-110	20-25
6-12 years	60-95	14-22
>12 years	55-85	12-18

Pediatric Hypotension

- <60 mm Hg in term neonates (0 to 28 days)
- <70 mm Hg in infants (1 month to 12 months)
- <70 mm Hg + (2 x age in years) in children 1 to 10 years
- <90 mm Hg in children >10 years of age

Cardiopulmonary Compromise

- Hypotension
- Acute altered mental status
- Signs of shock

Doses/Details

Epinephrine IO/IV Dose:

0.01 mg/kg (0.1ml/kg of 1:10,000 concentration).

Repeat every 3-5 minutes.
Protocol 2190-P-1/2/3

Atropine IO/IV Dose:

0.02 mg/kg.

Minimum dose 0.1 mg and maximum single dose 0.5 mg.

Cross Reference

Procedures:

Capnography
Endotracheal Intubation
Glucose Determination
Intraosseous (IO) Access
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration
Transcutaneous Pacing
Transtracheal Jet Insufflation

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmia
Hypothermia
Pediatric – Cardiac Arrest/
Dysrhythmia
Pediatric Newborn Resuscitation
Respiratory Distress
Shock Without Trauma

Drugs:

Amiodarone
Atropine
Dextrose 50% (D50)
Epinephrine
Fentanyl
Glucagon
Glucose Paste or Gel
Midazolam
Sodium Bicarbonate

Paramedic Standing Orders

If patient is taller than Broselow tape/NPS Pediatric Resuscitation Tape (5 feet) or >14 yrs, **GO TO PROTOCOL:** *General Medical Illness-Adult* or other appropriate protocol.

1. ABC's
2. Assessment

Vitals including temperature and mental status.
 History of present illness including seizures, rash, vomiting, or diarrhea.
 If altered mental status **GO TO PROTOCOL:** *Altered Mental Status/Altered Level of Consciousness (ALOC)s*
 If shock **GO TO PROTOCOL:** *Shock Without Trauma*
 If Respiratory Distress **GO TO PROTOCOL:** *Respiratory Distress*
3. Monitor:

Apply cardiac monitor when indicated (ALS level care or Transport)
 If not placed during ABC's above, timing of monitor application is dependent on patient severity
4. Oral Fluids

If normal mental status and protecting airway, attempt oral trial of electrolyte drink or any salt-containing liquid (10-15 ml at a time, small sips if vomiting).
5. Acetaminophen (Tylenol)

If temperature greater than 38.5° C (101°F) and tolerating oral fluid.
 Acetaminophen 15mg/kg (max 1,000mg) PO.
6. Base Contact
7. IV/IO

If patient fails oral fluid trial, consider IV/IO placement per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*.
 IV fluid bolus: LR/NS 20ml/kg. Reassess vitals after fluid bolus.
8. Ondansetron

For nausea or vomiting

3 mos–14 yrs:	IV/IO: 0.1mg/kg (max 4mg) SIVP over 2–5 min, repeat in 15 min x2 prn nausea.
	ODT: ½ tab (2mg) <u>if age 4- 14</u>
	IM: If no IV, give 0.2mg/kg (max 8mg) IM, repeat in 15 min x1 prn nausea.
0 – 3 mos.:	IV/IO: Base Hospital Order ONLY. 0.1mg/kg SIVP.
	IM: Contraindicated for patients < 3 months of age.

Note: For severely symptomatic patients, ODT can be administered prior to attempts for IV/IO access
9. Transport

Any child with decreased mental status or abnormal vitals (unless elevated temperature is the only abnormal vital sign).
10. AMA/TAR

NO AMA/TAR without attempted base contact.

Paramedic Base Contact/Communication Failure Orders

1. Ibuprofen (Motrin, Advil) If temperature over 38.5°C (101°F), no response to acetaminophen after 60 minutes, and tolerating oral fluid, administer Ibuprofen.
10-14 yrs: 600mg PO every 6 hours.
6 mon-10 yrs: 10mg/kg PO every 6 hours, max dose 200mg.
 2. Acetaminophen If unable to administer Acetaminophen PO give , 15mg/kg (max 1,000mg) PR per
PROCEDURE: *Rectal Drug Administration*.
- Repeat Doses
- | | |
|-----------|---|
| > 10 yrs: | 1,000mg PO/PR every 4-6 hours, not to exceed 4,000mg in 24 hours. |
| 0-10 yrs: | 15mg/kg PO/PR every 4-6 hours, not to exceed 4,000mg in 24 hours. |

SPECIAL CONSIDERATIONS

Assessment	<p>If patient presents with a specific complaint (e.g. shortness of breath, altered mental status), then GO TO the appropriate protocol. This protocol is intended for pediatric fever or general illness ("I feel sick").</p> <p>History: duration of symptoms, fever (subjective or measured orally, tympanic, rectally). Associated symptoms such as runny nose; cough (productive or dry); respiratory difficulties; vomiting; diarrhea (frequency, soft or watery, bloody); sore throat; headache; neck pain; sick contacts; tolerating fluids or not; change in urine output (number of wet diapers); jaundice; irritability.</p> <p>PMH: immunization status (up to date?); recent or past hospitalizations (if any); operations; birth and perinatal history; congenital problems.</p> <p>Physical Exam: Overall appearance of child (e.g. lethargic, active, playful); eye contact; attentiveness for age; consolable or not; ability to sit, stand, ambulate; vitals; full physical exam with particular attention to capillary refill, fontanelle, mucous membranes (moist or dry), skin turgor, color, rash.</p>
Differential Diagnosis	Common illnesses: upper respiratory illness including croup, epiglottitis, common cold, ear infection; pneumonia, meningitis, measles, chicken pox, acute gastritis or gastroenteritis.
AMA/TAR	Parks without base hospitals should follow local medical advisor approved EMS policy.
Documentation	Overall appearance of child, vitals, ability to tolerate oral fluid.

Cross Reference**Procedures:**

Intraosseous Access
 IV Access and IV Fluid
 Administration
 Rectal Drug Administration

Protocols:

Abdominal Pain
 Altered Mental Status/Altered Level
 of Consciousness (ALOC)
 General Medical Illness- Adult
 Shock Without Trauma

Drugs:

Acetaminophen (Tylenol)
 Ibuprofen (Motrin, Advil)
 Ondansetron

Paramedic Standing Orders

1. Dry Newborn Dry the newborn. Place newborn in as warm an environment as possible, removing all wet clothing. Keep newborn covered, especially the head, to minimize heat loss.
NOTE: Newborns less than 500 grams do not survive and resuscitation should NOT be attempted. (500 grams is approximately the size of a 12-ounce soda can).
2. Position/
Suction Place on back with head in neutral position. A towel may be placed under the neck to maintain position.
3. Stimulate Rub newborn's body. Flick the soles of the feet and/or rub the back.
4. Base Contact Consider early base contact especially if infant in distress.
5. Respirations 30-60 breaths/minute is normal.
6. Respiratory
Status **If RR > 30** with pink body and face and no respiratory distress, proceed to **Step 7**.
If RR < 30, central cyanosis of the body or face, or respiratory distress***, administer O2 at 15L via blow-by. Reassess RR in 30 seconds:
If RR > 30 with no cyanosis or gasping, continue blow-by and proceed to **Step 7**.
If no improvement, assist ventilation with BVM with 15-L O2 at a rate of 40-60 breaths/min, and proceed to **Step 7**.
If apnea or RR < 15, proceed directly to PPV with BVM. Reassess RR in 30 seconds.
If RR < 30 or central cyanosis or respiratory distress, continue PPV with BVM for 3 minutes and proceed to **Step 7**.
Note: PPV with BVM with 15L O2 at 40-60 breaths/min, watching chest rise and fall to ensure adequate ventilation.
7. Heart Rate Palpate heart rate (HR) at the umbilical cord base or brachial artery, or listen to heart.
If HR < 60, begin PPV with BVM and start chest compressions, proceed to **Step 8**.
If HR 60-100, begin PPV with BVM for 3 minutes, then reassess HR and proceed to **Step 8**.
If HR > 100 with any RR, assist respirations as needed with 15-L O2 via blow-by and proceed to **Step 12**.
8. CPR **If HR < 60**, continue PPV (BVM) and begin chest compressions. Proceed to **Step 9**.
Compressions should be delivered on the lower third of the sternum, to a depth of 1/3 the anterior/posterior diameter of the chest.
Cycle rate: 3:1 ratio of compressions:ventilations per minute
If HR 60-100 continue PPV (BVM) but do not begin chest compressions. Proceed to **Step 9**.
If HR > 100 proceed to **Step 12**.
Note: during CPR, the rate of assisted ventilations decreases from 40-60/min to 30/min
9. Place IV/IO Place IV in umbilical cord while keeping distal cord clamped or place IO per
PROCEDURE: *IV Access and IV Fluid Administration or IO Access and IV Fluid Administration.*
10. Dextrose If HR < 100, and newborn has experienced any resuscitation including assisted respirations or compressions, then administer dextrose:
D12.5 IV/IO 4ml/kg
(Assuming a 3kg newborn, give 12mL of D12.5)
Note: To make D12.5, mix NS and D50 in a 3:1 ratio. For example, with a 12mL syringe, mix 3mL D50 and 9mL NS

11. Epinephrine/
IV Fluids
- If spontaneous HR < 60 despite 3 minutes of coordinated compressions and PPV with BVM, administer:
Epinephrine: 0.03 mg/kg (0.3 ml/kg) of 1:10,000 IV, may repeat every 3-5 min.
 (Assuming 3kg newborn, give 0.9 mL of 1:10,000 epinephrine)
IVF: 10ml/kg of LR/NS bolus, may repeat once after first bolus finished.
 (Assuming 3kg newborn, give 30mL LR or NS via IV/IO)

12. Reassess
- Reassess HR, respirations and color of newborn every 3 minutes for a period of 6 seconds.
 Coordinated compressions and ventilations should continue until HR \geq 60.
 Ventilations assisted with BVM should continue until HR \geq 100, newborn demonstrates no respiratory distress, **and** color is pink throughout.

13. Transport
- All newborns should be transported unless instructed otherwise by base, or newborn falls under declaration of death criteria listed below.

14. APGAR
- APGAR should be assessed and recorded at 1 and 5 minutes after birth; but do not let APGAR scoring delay or interfere with resuscitative activities. See APGAR chart below in Special Considerations..

*Respiratory distress – increased respiratory rate and/or effort seen as nasal flaring, chest retractions, abnormal breath sounds, belly breathing, head bobbing, etc.

** Central cyanosis – blue appearance of lips, gums

Parkmedic Base Hospital/Communication Failure Orders

1. Declaration
of Death
- Code may be terminated if ordered by base or in communication failure if there are no signs of life (apneic and pulseless) after 30 minutes of continuous and adequate resuscitative efforts, per *PROTOCOL Initiation and Termination of CPR*.

SPECIAL CONSIDERATIONS**General**

Asphyxiation/respiratory difficulty is the most common cause of newborn arrest. Prompt warming, suctioning, and oxygen is the key to a successful resuscitation.

If the newborn does not respond immediately to ventilation, successful resuscitation is unlikely.

Newborns less than 500 grams do not survive and resuscitation should NOT be attempted. (500 grams is approximately the size of a 12-ounce soda can).

NOTIFY BASE as soon as possible to help utilize all available resources.

Begin transport early.

Make sure BVM fits the face well; maintain a good seal. Pressure on the newborn's eyes can induce bradycardia.

Warmth is critical and all measures to minimize heat loss should be taken.

Use the umbilical cord vessels like a regular vein to start an IV. Remember the drug has to get into the body, so keep the distal cord clamped, start your IV close to the baby, and flush with NS to ensure drugs get into the circulation.

IO should be inserted in the proximal tibia (first choice) or distal femur (second choice) per PROTOCOL: IO Access

Assessment

Vitals: Newborn normal HR = 160 (120-190).

Normal respiratory rate = 30-60/min.

Determine APGAR 1 and 5 minutes after delivery; but do not let APGAR scoring delay or interfere with resuscitative activities.

APGAR Chart

	0	1	2
Appearance	Blue or Pale	Body pink, limbs blue	Completely pink
Pulse	0	< 100	> 100
Grimace	No response	Grimace	Cough, sneeze, cry
Activity	Flaccid	Some Flexion	Active Movement
Respirations	Absent	Slow, Irregular, Weak	Strongly crying

Color: Distinction should be made between peripheral cyanosis (i.e. of the extremities) and central cyanosis (i.e. of the trunk or face). It is normal for a newborn to have peripheral cyanosis in the first few minutes after delivery; central cyanosis is never normal. In addition to RR and HR indicators, resuscitation should be triggered by central cyanosis as detailed in the protocol, but not by peripheral cyanosis.

History: Number of weeks pregnant? Expected birth date? Prenatal care? Maternal medications/drug use? Problems with pregnancy?

Treatment

Once PPV

with BVM has been initiated, it should be continued until the newborn is entirely pink with HR >100 and good respiratory effort. Although respiratory support via BVM/blow-by oxygen is key to newborn resuscitation, use caution with BVM as excessive pressure may induce barotrauma (damage to lungs).

Once chest compressions are initiated, continue until HR > 100.

Once PPV with BVM is initiated, it should be continued until HR > 100 for three minutes without needing chest compressions.

If HR > 100 after three minutes without chest compressions, a trial of blow-by oxygen may be attempted.

Once initiated, oxygen blow-by therapy should be continued unless directed otherwise by base hospital.

CPR may be terminated after 30 minutes of continuous resuscitation without return of any

palpable pulse or spontaneous respirations (30-second evaluation). Confirm with a second provider if available. Any return of spontaneous circulation restarts the 30-minute clock (time for CPR termination)

Suction the baby's nose and mouth only if there is thick meconium and the baby is demonstrating signs of respiratory distress.

Pulse oximetry, if used, should be placed on the right hand after resuscitation and stabilization have occurred.

Advanced airway and/or capnography per LEMA approval.

Transport

In all resuscitations, begin arrangements for transport and/or ALS rendezvous early. If no spontaneous pulse, transport should NOT commence until patient either has return of spontaneous pulse or as designated in protocol.

AMA/TAR

All newborns should be transported unless instructed otherwise by base, or newborn falls under declaration of death criteria.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation

Detailed maternal history, including drug, tobacco and alcohol use, hypertension, maternal medications, history of previous pregnancies, complications with past and current pregnancies.

Continuous monitoring of heart rate, respiratory rate, color and responsiveness.

Detailed account of resuscitation drugs utilized and response.

Cross Reference**Procedures:**

Capnography (with LEMA approval)

IV Access and IV Fluid Administration

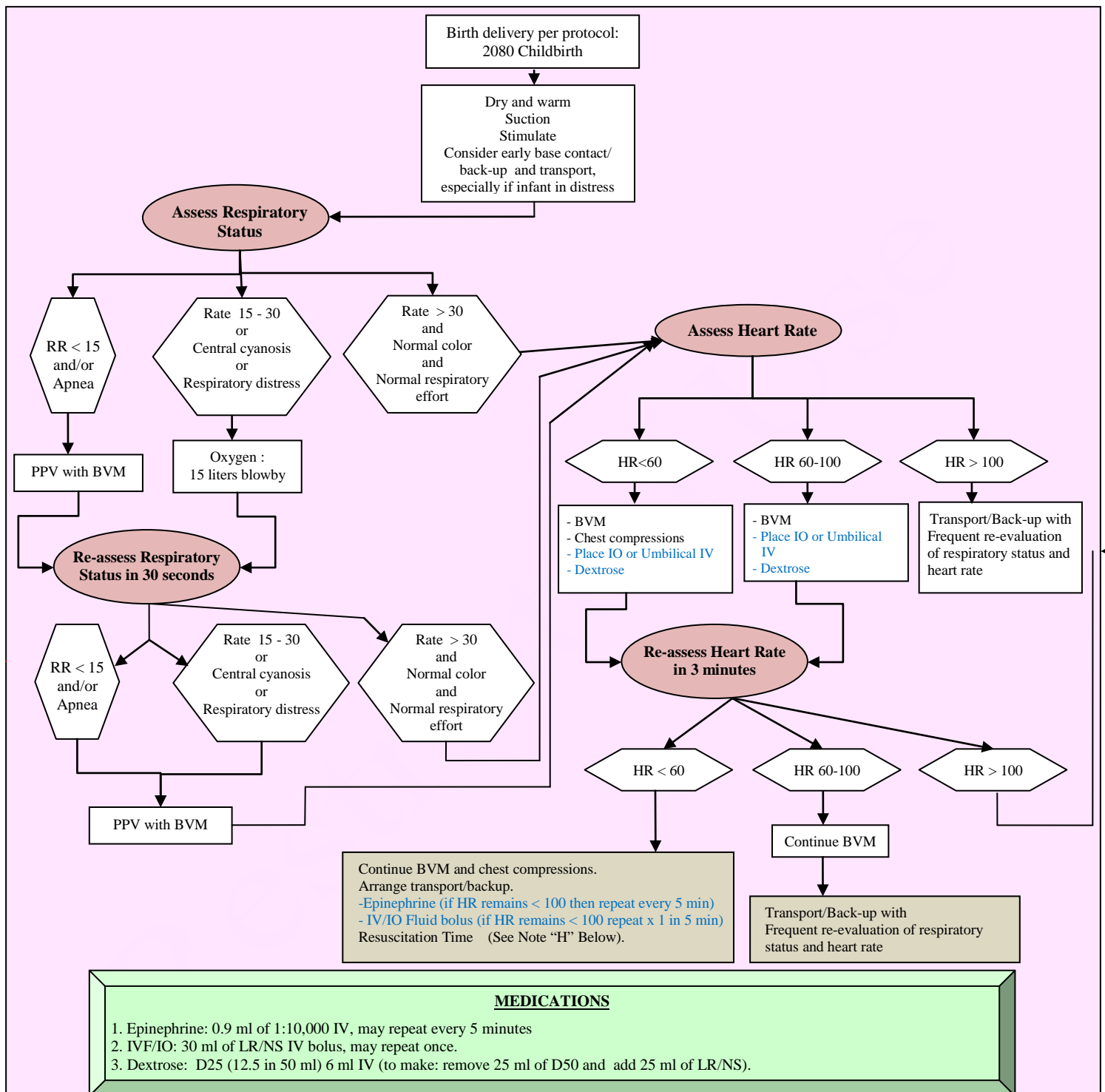
Intraosseous Access

Oxygen Administration

Drugs:

Dextrose 50% (D50)

Epinephrine



- A. Blue text is used to denote actions in the Parkmedic scope of practice, all other actions apply to providers at all levels.
- B. CPR Cycle rate: 3:1 ratio of 90 compressions to 30 ventilations per minute
- C. Drug doses are given for an average 3 kg neonate (may be adjusted for extremely large neonate).
- D. APGAR score should ideally be calculated at 1 and 5 minutes, but must not delay or interfere with resuscitative activities.
- E. Once chest compressions are initiated, it should be continued until HR > 100.
- F. Once BVM is initiated, it should be continued until HR > 100 for three minutes without the benefit of chest compressions.
If HR > 100 after three minutes of NO chest compressions, a trial of blow-by O₂ may be attempted.
- G. Once initiated, oxygen blow-by therapy should be continued, unless directed otherwise by base hospital.
- H. CPR may be terminated after 30 minutes of continuous resuscitation without return of any palpable pulse or spontaneous respirations (30-second evaluation).
Confirm with a second provider if available. Any return of spontaneous circulation restarts the 30-minute clock (time for CPR termination)

Pediatric Parameters

Normal Ranges for Pediatric Vital Signs				
Age	Estimated Weight (kg)	Heart Rate	Systolic Blood Pressure	Respiratory Rate
PREEMIES	2 kg	120-170	55-75	40-70
FULL TERM	3-4 kg	100-150	65-85	35-55
0-3 months	3-6 kg	100-150	65-85	35-55
3-6 months	6-7 kg	90-120	70-90	30-45
6-12 months	7-10 kg	80-120	80-100	25-40
1-3 years	10-16 kg	70-110	90-105	20-30
3-6 years	16-22 kg	65-110	95-110	20-25
6-12 years	22-35 kg	60-95	100-120	14-22
> 12 years	> 35 kg	55-85	110-135	12-18

NPS Pediatric Resuscitation Tape/Broselow Tape

This is your best source for pediatric weights and drug dosages.

****Broselow tape is 4 feet at the blue/orange junction, and 5 feet overall. If the child is longer than the tape (> 5 feet), treat them as an adult.****

Pediatric Formulas

Weight: < 1yr: $4 + \frac{1}{2} \times (\text{age in months}) = \text{Weight (kg)}$
 > 1yr: $10 + 2 \times (\text{age in years}) = \text{Weight (kg)}$
 SBP: Normal: $80 + 2 \times (\text{age in years}) = \text{Point estimate for Normal SBP}$
 Lower Limit: $70 + 2 \times (\text{age in years}) = \text{Lower SBP Limit}$
 Ratio of Heart Rate : Respiratory rate = 4:1.

Child/Infant CPR Reference						
Age	Position	Hands	Depth	Compression Rate	Compression:Ventilation	
					1 Rescuer	2 Rescuers
Newborn	Lower third of sternum	2 fingers/ 2 thumbs	$\frac{1}{3}$ depth of chest	90/min	3 : 1	3 : 1
0-1 Infant	Mid-sternum	2 fingers/ 2 thumbs	$\frac{1}{3} - \frac{1}{2}$ chest	100/min	15 : 2	15 : 2
1-8 Child	Mid-sternum	Heel of one hand	$\frac{1}{3} - \frac{1}{2}$ chest	100/min	15 : 2	15 : 2

Systemic Responses to Blood Loss in the Pediatric Patient			
Blood Volume Loss	Mild (< 30%)	Moderate (30-45%)	Severe (> 45%)
Cardiovascular	Tachycardia Normal BP Weak/thready peripheral pulses	Marked tachycardia Low/normal BP Absent peripheral pulses	Tachycardia/Bradycardia Hypotension
CNS	Anxious Irritable Confused	Lethargic Dulled response to pain	Comatose
Skin	Cool Mottled Prolonged capillary refill	Cyanotic Markedly prolonged capillary refill	Pale Cold
Urinary Output	Decreased	Minimal	None

Pediatric Parameters

Estimation of Dehydration in Pediatric Patients			
Clinical Signs	Degree of Dehydration		
	Mild	Moderate	Severe
Weight Loss (%)	5	10	15
Behavior	Normal	Irritable	Irritable to Lethargic
Thirst	Slight	Moderate	Intense
Mucous Membrane	May be normal	Dry	Parched
Tears	Present	Decreased	Absent
Anterior Fontanel	Flat	Flat to Sunken	Sunken
Skin Turgor	Normal	Mildly Increased	Increased

Pediatric Glasgow Coma Score (GCS)			
Points	Eye Opening Response	Best Verbal Response	Best Motor Response
6	-----	-----	Normal spontaneous movement
5	-----	Cries appropriately, coos, babbles	Withdraws to touch
4	Open spontaneously	Irritable cry, but consolable	Withdraws to pain
3	To speech or shout	Inappropriate crying/screaming	Flexion withdrawal (Decorticate)
2	To painful stimuli	Grunts	Extension (Decerebrate)
1	No response	No response	No response

Trauma Score					
Points	Respiratory Rate (per minute)	Respiratory Effort	Systolic Blood Pressure (mmHg)	Capillary Return	Glasgow Coma Score
5	-----	-----	-----	-----	14-15
4	10-24	-----	≥ 90	-----	11-13
3	25-35	-----	70-89	-----	8-10
2	≥ 36	-----	50-69	Normal	5-7
1	1-9	Normal	1-49	Delayed	3-4
0	Absent	Shallow/Retractions	Absent	None	-----

The best possible Trauma Score is 16:

4 (RR of 10-24) + 1 (normal respiratory effort) + 4 (SBP ≥ 90) + 2 (normal capillary refill) + 5 (GCS 14-15).

Respiratory Distress

Paramedic Standing Orders

1. ABC's Protect airway and assist ventilation if needed.
2. Oxygen Per PROCEDURE: *Oxygen Administration*. High flow if moderate to severe distress, or ALOC.
3. Assessment Vitals including temperature if possible, mental status, lung sounds, pulse ox if available.
Obtain history of present illness, meds, PMH.
Consider nerve agent/organophosphate exposure if multiple victims and/or AB-SLUDGEM, (see Special Considerations).
If appropriate, **GO TO** PROTOCOL: *Ingestions/Poisoning*.
4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate PROTOCOL *Cardiac Arrest/Dysrhythmias*.
5. Classify Based on assessment, make a provisional diagnosis and go to appropriate section.
Consider early base contact if diagnosis unclear.

Note: This table gives you the most common findings to help you differentiate the cause of respiratory distress. Each case is unique and may not exactly fit one category.

PROVISIONAL DIAGNOSIS	HISTORY	SPUTUM	PHYSICAL EXAM
<u>UPPER AIRWAY OBSTRUCTION (MECHANICAL)</u> Foreign Body Obstruction (food/toy)	Onset during meal/play.	None.	Grabbing neck, unable to speak, drooling.
<u>UPPER AIRWAY OBSTRUCTION (NON-MECHANICAL)</u> Croup/Epiglottitis	Fever, drooling, sore throat.	None.	Inspiratory stridor , anxious, leaning forward to breathe, drooling.
Anaphylaxis	Known allergy + exposure.	None.	Airway edema (swelling), chest tightness, low BP.
<u>BRONCHOSPASM</u> Asthma and/or COPD	PMH: asthma, emphysema, bronchitis, heavy smoking. Meds: albuterol, atrovent, prednisone, home oxygen.	Thick, white or yellow/green.	Prolonged expiration with wheezes , poor air movement, very little to no pitting edema, pursed lip breathing in emphysema.
<u>CARDIOGENIC PULMONARY EDEMA-CHF</u> Congestive Heart Failure (CHF)	PMH: CHF, MI, Angina, Paroxysmal Nocturnal Dyspnea, Orthopnea. Meds: Digoxin, BP Meds (diuretics, ACE inhibitors, Lasix), Nitroglycerin.	May be watery/foamy white or pink/blood-tinged.	Inspiratory crackles , pitting edema in legs, distended neck veins. Typically have very elevated BP.
<u>HAPE</u> High Altitude Pulmonary Edema	Rapid ascent to altitudes > 8,000 feet with worsening SOB.	May be watery/foamy white or pink/blood-tinged.	Inspiratory crackles , usually no lower extremity pitting edema.
<u>PNEUMONIA</u>	Any age. Progressive SOB with cough, fever, chills, sputum. May be on antibiotics.	Thick, any color.	Asymmetric or localized crackles , may have mild wheezing, no peripheral edema.

Respiratory Distress

Note: If patients do not respond to initial treatment it may be due to the severity of the disease
e.g., patients needs more nitrates for severe congestive heart failure or,
you have chosen the wrong provisional diagnosis
e.g. patients does not need more nitrates, but rather needs albuterol for their COPD

Therefore, if patient worsens or fails to respond to appropriate initial treatment aimed at your provisional diagnosis, reassess, reconsider, and contact base for assistance.

Respiratory Distress

Upper Airway Obstruction (Mechanical)

Paramedic Standing Orders

1. ABCs
If **Incomplete Obstruction** suspected (patient is awake, coughing, or gagging), protect airway with position. Allow patient to assume position of comfort.
Assist respirations and suction as needed, but minimize stimulation to airway.
If **Complete Obstruction** (patient collapses or loses consciousness) and foreign body suspected, follow table below:

COMPLETE AIRWAY OBSTRUCTION – FOREIGN BODY			
	Adult (> 8 yrs old)	Child (1-8 yrs old)	Infant (birth – 1 yr)
Ventilations	10-12 per min.	20 per min.	20 per min.
<i>If unable to ventilate, reposition head and reattempt ventilation. If still unsuccessful:</i>			
Tongue/Jaw Lift	Yes	Yes	Yes
Finger Sweep	Only if object is seen	Only if object is seen	Only if object is seen
Abdominal Thrusts	Sets of 5	Sets of 5	Not Used
Chest Thrusts	Only if pregnant or obese	Not Used	Sets of 5 back blows followed by 5 chest thrusts
Back Blows	Not Used	Not Used	

If unable to visualize foreign body, perform: direct laryngoscopy and REFERENCE PROCEDURE: *Foreign Body Airway Obstruction*.

2. Oxygen
Per PROCEDURE: *Oxygen Administration*.
High flow if ALOC or moderate to severe respiratory distress.
3. Assessment
Age, vitals, history of event (onset during meal/play), ability to speak, drooling, , stridor, lung sounds, mental status.
4. Transport
Rapid transport is indicated in foreign body airway obstruction. Use caution when transporting airway obstructed patients via air medevac since airway interventions mid-flight are often very difficult due to limited space in the patient compartment of a helicopter or fixed-wing aircraft.
5. Base Contact
No TAR without base contact.

Respiratory Distress

Upper Airway Obstruction (Non-Mechanical)

Paramedic Standing Orders

- | | |
|-----------------------------|--|
| 1. ABCs | Protect airway with position. Allow patient to assume position of comfort.
Assist respirations and suction as needed, but minimize stimulations to airway.
If anaphylaxis suspected, GO TO PROTOCOL: <i>Allergic Reactions</i> .
If unable to manage airway with BLS maneuvers. Establish airway (King Tube/ETT).
If unable to establish ALS airway perform TTJL. REFERENCE PROCEDURE:
<i>Transtracheal Jet Insufflation</i> . |
| 2. Oxygen | Per PROCEDURE: <i>Oxygen Administration</i> .
High flow if ALOC or moderate to severe respiratory distress. |
| 3. Assessment | Age, vitals, history, ability to speak, drooling, sore throat, stridor, sputum, lung sounds, fever, temperature (if possible), mental status |
| 4. Epinephrine | Per PROCEDURE: <i>Epinephrine Auto-Injector</i> or <i>Epinephrine Ampule</i> .

<div style="margin-left: 100px;"> > 10 yrs: 0.3ml (0.3mg) of 1:1,000 concentration IM.
 4–10 yrs: 0.2ml (0.2mg) of 1:1,000 concentration IM.
 < 4 yrs: 0.1ml (0.1mg) of 1:1,000 concentration IM.
 Repeat dose every 10 minutes until severe symptoms resolve.
 Increase frequency to every 5 minutes if symptoms worsening. </div> |
| 5. IV/IO | Fluids per PROCEDURE: <i>IV Access and IV Fluid Administration and Intraosseous Access</i> . |
| 6. Dexamethasone (Decadron) | <div style="margin-left: 100px;"> \geq 12-Adults: 8mg PO/IV/IO/IM, then 4mg every 6 hours
 $<$ 12 yrs: 4mg PO/IV/IO/IM, then 2mg every 6 hours. </div> |
| 7. Transport | Consider air transport if febrile child, severe distress, or unstable vitals. |
| 8. Base Contact | No TAR without base contact. |

Respiratory Distress

Bronchospasm (COPD/Asthma)

Paramedic Standing Orders

1. ABCs Protect airway, assist respirations, and suction as needed.
OPA/NPA or ALS airway if indicated REFERENCE PROCEDURE *King Tube/ETT*.
2. Oxygen Per PROCEDURE: *Oxygen Administration*.
High flow if ALOC or moderate to severe respiratory distress.
3. Assessment Vitals including temperature if possible, mental status, lung sounds, pulse ox if available.
4. Albuterol If wheezing or stridor:
Nebulizer: All ages: 2.5mg in 3ml of LR/NS premixed solution.
Use with standard acorn-type jet nebulizer.
For all patients, start oxygen at 10 l/min. If not improved by 3–5 minutes, increase oxygen to 15 l/min.
For patients who fail to respond to a single nebulized dose, repeat above dosing up to six times without allowing “acorn” to run dry.

MDI: All ages: 4 puffs on consecutive breaths during mid inspiration, then start 10-puff dose sequence (1 puff every minute for up to 10 minutes) if symptoms persist.
May repeat 10-puff dose sequence starting 10 minutes after last puff if symptoms persist. Use spacer (Aerochamber) if available to increase inhaled dose.
5. Atrovent (MDI) 2 puffs during mid inspiration, may be repeated in 4 hours if symptoms persist.
Note: Atrovent does not have an immediate effect.
Complete first dose of Albuterol (5mg nebulizer or 14-puff MDI initial cycle) before giving Atrovent.
6. Epinephrine Severe distress (unable to speak, cyanotic, severe retractions, accessory muscle use), AND history of asthma or COPD.
Contact base before administration if patient is known to be on beta-blockers, or has a history of angina or MI
 > 10 yrs: 0.3ml (0.3mg) of 1:1,000 concentration IM.
 4–10 yrs: 0.2ml (0.2mg) of 1:1,000 concentration IM.
 < 4 yrs: 0.1ml (0.1mg) of 1:1,000 concentration IM.
 May repeat once in ten minutes if not significantly improved.
7. CPAP For most patients treated under this protocol, the medications above take precedence over CPAP. Administer CPAP; REFERENCE PROCEDURE: *CPAP*. Continue inline nebulized therapy.
8. Ondansetron If nausea develops IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.

If vomiting, discontinue CPAP, then administer:
IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea
Contact base if considering resumption of CPAP.
9. Dexamethasone (Decadron) ≥ 12-Adults: 8mg PO/IV/IO/IM, then 4mg every 6 hours
< 12 yrs: 4mg PO/IV/IO/IM, then 2mg every 6 hours.

Respiratory Distress

- | | |
|------------------|---|
| 10. Transport | See Special Considerations for AMA/TAR and transport criteria. |
| 11. Base Contact | |
| 12. IV/IO | Fluids per PROCEDURE: <i>IV Access and IV Fluid Administration and Intraosseous Access.</i> |

Paramedic Base Hospital/Communication Failure Orders

- | | |
|----------------|---|
| 1. Epinephrine | Repeat IM dose every 10 minutes until severe symptoms resolve.
Increase frequency to every 5 minutes if symptoms worsening.
Consider IV/IO epinephrine if worsening despite above measures. |
| All ages: | 1ml (0.1mg) of 1:10,000 SIVP/IO over 20–30 seconds. |
| | Repeat every 1–2 minutes if symptoms worsening or no improvement.
Flush with 20ml LR/NS after each dose |

Respiratory Distress

Cardiogenic Pulmonary Edema/Congestive Heart Failure (CHF)

Paramedic Standing Orders

1. ABCs Protect airway, assist respirations, and suction as needed. OPA/NPA or ALS airway if indicated REFERENCE PROCEDURE /King Tube/ETT. ∴
2. Oxygen Per PROCEDURE: *Oxygen Administration*.
High flow if ALOC or moderate to severe respiratory distress.
3. Assessment Vitals, mental status, lung sounds, sputum, peripheral edema.
If SBP < 90 base contact advised, see Special Considerations, Assessment.
4. Sit Patient Up Legs lower than heart if possible.
5. HAPE If suspected, **GO TO PROTOCOL: *Altitude Illness***.
6. Nitroglycerin If SBP 100-120: 0.4mg (1 tab/spray) sublingual.
If SBP 120-200: 0.8mg (2 tabs/sprays) sublingual.
If SBP > 200: 1.2mg (3 tabs/sprays) sublingual and call base.
Repeat single dose 0.4mg (1 tab/spray) sublingual every 5 minutes if patient still symptomatic and SBP >100, to a total of 8 tablets/sprays.
7. Aspirin 325mg PO x 1
8. CPAP For patients treated under this protocol, the medications above take precedence over CPAP. Administer CPAP; REFERENCE PROCEDURE: *CPAP*. Continue nitroglycerin dosing.
9. Ondansetron If nausea develops IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.

If vomiting, discontinue CPAP, then administer:
IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea
Contact base if considering resumption of CPAP.
10. Nitropaste If SBP still above 100: Apply 1 inch of Nitropaste to chest wall
If SBP drops below 90: Wipe paste off chest wall.
11. ECG Obtain 12-lead ECG in accordance with manufacturer's guidelines.
Relay any relevant read (e.g. ***AMI***) to base hospital
12. Transport Consider air transport if patient condition is worsening.
13. Base Contact
14. IV/IO Saline lock.

Paramedic Base Hospital/Communication Failure Orders

1. Nitroglycerin Repeat dose 0.4mg (1 tab/spray) sublingual every 5 minutes if patient still symptomatic and SBP >100, 8 additional doses to a grand total of 16 tablets/sprays.
2. Nitropaste Apply a second 1-inch dose if still in distress after above treatments and SBP > 100.

Respiratory Distress

Pneumonia

Paramedic Standing Orders

1. ABCs Protect airway, assist respirations and suction as needed.
OPA/NPA or ALS airway if indicated (*/King Tube/ETT*).
If patient is in shock, **GO TO PROTOCOL: Shock Without Trauma**.
2. Oxygen Per PROCEDURE: *Oxygen Administration*.
High flow if ALOC, moderate to severe respiratory distress, or unstable vitals.
3. Assessment Vitals including temperature and pulse ox mental status, lung sounds.
4. Transport
5. IV/IO Adults: 500ml LR/NS bolus.
0-14 yrs: 20ml/kg LR/NS bolus to a max of 500ml.
Additional IV Fluids per IV Access and IV Fluid Administration
6. Base Contact
7. Acetaminophen (Tylenol) If temperature > 38.5°C (> 101.3°F).
> 10-Adult: 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
0-10 yrs.: 15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
8. Ondansetron IV/IO: 4mg IV over 2–5 min, repeat in 15 min x2 prn nausea.
ODT: 4mg, repeat in 15 min x2 prn nausea.
IM: If no IV, give 8mg IM, repeat in 15 min x1 prn nausea.

Paramedic Base Hospital/Communication Failure Orders

1. Albuterol If patient is wheezing or has prolonged expirations, give one nebulizer treatment and reassess.
If wheezing/prolonged expirations are partially improved, repeat treatment up to 3 times.
If wheezing/prolonged expirations resolve, hold any further treatments.

Use spacer (Aerochamber) if available to increase inhaled dose.
2. CPAP For patients treated under this protocol, the therapies above take precedence over CPAP.
Administer CPAP; REFERENCE PROCEDURE: *CPAP*.

If vomiting develops, administer Ondansetron as above.
Contact base if considering resumption of CPAP.

Respiratory Distress

SPECIAL CONSIDERATIONS (for entire Respiratory Distress section)

Assessment	<p>Mental status, vital signs, breath sounds, peripheral edema, cyanosis, inspiratory/expiratory ratio, accessory muscle use, retractions, neck vein distention, tracheal position, increased AP diameter of chest, diaphoresis, chest pain.</p> <p>Be prepared to assist ventilations.</p> <p>Patients with SBP < 90 and severe CHF are in cardiogenic shock. Base contact is strongly advised as these patients are critically ill requiring advanced therapies that are only available in the hospital setting. In the pre-hospital setting a combination of a dopamine drip and CPAP may be of some benefit but is best managed with base consultation.</p> <p>Patients with severe COPD may retain CO₂ as they recover from hypoxemia. All patients on high flow oxygen must be watched carefully for decreasing mental status and decreased respiratory effort. Respirations may need to be assisted.</p> <p>“AB-SLUDGEM” Mnemonic for organophosphate poisoning.</p> <p>A: Altered mental status.</p> <p>B: Bronchorrhea, Breathing difficulty or wheezing, Bradycardia.</p> <p>S: Salivation, Sweating, Seizures.</p> <p>L: Lacrimation (tearing).</p> <p>U: Urination.</p> <p>D: Defecation or Diarrhea.</p> <p>G: GI upset (abdominal cramps).</p> <p>E: Emesis (vomiting).</p> <p>M: Miosis/Muscle Activity (twitching).</p>
Differential Diagnosis	<p>Other causes of respiratory distress may include hyperthyroidism, aspirin overdose, diabetic ketoacidosis, amphetamine or cocaine abuse, anxiety attack, hyperventilation, pulmonary embolism, anemia, early shock, or MI.</p>
AMA/TAR	<p>All patients are either transported or signed out AMA unless specified otherwise by base.</p> <p>Exception: TAR only after base contact, and only for mild asthma/COPD attacks completely resolved with treatment (3-4 puffs of MDI or one nebulized Albuterol) and ambulates without respiratory distress.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>
Documentation	<p>Document repeated lung exams, vitals and response to treatments.</p>
Medication Issues	<p>Albuterol: Relatively contraindicated in active heart disease; No maximum for a young asthmatic.</p> <p>Epinephrine: Relatively contraindicated in active heart disease unless patient is in cardiac arrest. Only EMTs certified in Epinephrine Auto-Injectors/Epi Ampule Draw-up may use it.</p> <p>Paramedics may use the Epinephrine Auto-Injector if available.</p> <p>Use caution with COPD patients, as they are less likely to benefit from Epinephrine as compared to asthmatics.</p> <p>Nitropaste: When applying Nitropaste to chest wall, avoid AED pad placement areas as Nitropaste will impede adherence of the pads.</p> <p>Ondansetron: Use caution with oral medications in patients with respiratory distress, especially those requiring CPAP.</p>

Respiratory Distress

Cross Reference

Procedures:

12-Lead ECG
CPAP
Endotracheal Intubation
Epinephrine Auto-Injector
Foreign Body Obstruction Removal
Intraosseous Access
IV Access and IV Fluid
Administration
King Tube
Oxygen Administration
Transtracheal Jet Insufflation

Protocols:

Allergic Reactions
Altitude Illness
Ingestions/Poisoning
Shock Without Trauma

Drugs:

Acetaminophen (Tylenol)
Albuterol
Aspirin
Atrovent
Dexamethasone (Decadron)
Epinephrine
Nitroglycerin
Ondansetron

SCUBA/Dive Injury

Paramedic Standing Orders

NOTE: There are multiple medical and trauma circumstances that may occur simultaneously and complicate a dive injury. Ideally both the dive injury and any other underlying issues (e.g. bite, sting, anaphylaxis, trauma, airway obstruction, hypothermia) may need to be addressed simultaneously.

For example, a patient with a sting inducing anaphylaxis and subsequent rapid ascent may need epinephrine, oxygen and rapid transport to a dive chamber If there is an obvious medical or trauma complaint e.g., an extremity fracture, and a scuba/dive injury follow the dive injury and the minor and isolated extremity trauma simultaneously.

Exceptions: -If pulseless or in cardiac arrest; **GO TO PROTOCOL: Cardiac Arrest/Dysrhythmia or Pediatric – Arrest/Dysrhythmia.**

1. ABCs Protect airway, assist respirations, and suction as needed. OPA/NPA or ALS airway if indicated (*King Tube/ETT*).
Consider C-spine protection if indicated by mechanism of injury, signs of trauma, presence of fast currents. See PROCEDURE: *Spine Immobilization*.
2. Oxygen 10-15L/min by non-rebreather mask. See PROCEDURE: *Oxygen Administration*. **DO NOT** discontinue even if symptoms improve. Keep patient on oxygen throughout transport unless instructed to discontinue by base hospital or Diver's Alert Network (see **Special Considerations**).
3. Environment Protect from excess heat, cold, wet, and noxious fumes. Consider hypo/hyperthermia.
4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
5. Position If conscious, position patient horizontally on left side with no obstruction to blood flow (no crossed arms/legs). Patients in spinal precautions can have a towel roll placed under the right side of the spine board.
6. Assessment Vitals signs including temperature, respiratory distress or tachycardia, lung sounds, sputum, LOC/mental status. Trauma exam. Frequent lung examinations.

6a. The following symptoms suggest Arterial Gas Embolism (AGE) and urgent transport to a recompression chamber. STAT 100% oxygen at 10-15LPM is critical. Lay patient flat, elevate extremities. Return to ABCs above and see **Special Considerations**:
 - unconsciousness
 - disorientation
 - paralysis or weakness
 - convulsions
 - visual blurring
 - personality changes
 - bloody froth from airway
 - apnea
 - chest pain
- 6b. Delayed presentation (up to 24 hrs after a dive) of the following symptoms suggest Decompression Sickness (DCS) and will require transport to a recompression chamber:
 - Joint, muscle, extremity, or torso pain
 - Numbness or tingling
 - Dizziness, instability
 - Coughing spasms
 - Excessive fatigue
 - Paralysis or weakness
 - Collapse or unconsciousness
 - Shortness of breath
 - Skin itch or rash

SCUBA/Dive Injury

7. IV/IO Saline lock or TKO per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access.*
8. Base Contact -For all patients, especially those who may require air transport or whose symptoms up to 24 hrs after a dive suggest AGE or DCS, Consider contacting Divers Alert Network (DAN) at 919-684-9111
-DAN should be considered a first line alternative in case of failed Base Contact.

Paramedic Base Hospital/Communication Failure Orders

1. Fentanyl

Adult:	If severe pain, SBP > 100, and normal mental status. IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain. i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.
Pediatric:	IV/IO/IN: 1 mcg/kg (max 50 mcg). Repeat in 15 min x1 prn pain. Subsequent doses (2 max) every 30 minutes. i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min. IM: 2 mcg/kg (max 100 mcg). Repeat in 30 min x2 prn pain. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Dilaudid).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.

- | | | |
|-----------|------------------------|--|
| Morphine | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 4–10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg). |
| | Pediatric: | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.1mg/kg (0.01ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain.
IM: 0.2mg/kg (0.02ml/kg). (Max 10mg) Repeat in 30 min x1 prn pain. |
| OR | | |
| Dilaudid | Adult: | If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg)
IM: 1mg (1ml) every 30 min prn pain (max 2mg). |
| | Pediatric:
(> 5y.o) | <u>Base Hospital Order ONLY</u> , NOT in communication failure.
IV/IO: 0.15mg/kg (0.015ml/kg). Max 1mg
IM: 0.015mg/kg (0.015ml/kg). Max 1mg |

***Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status
Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.***

SCUBA/Dive Injury

SPECIAL CONSIDERATIONS

General

Base hospital may use DIVER'S ALERT NETWORK (DAN) at 919-684-9111 for consultation. Field providers should use base hospital as primary source of advice, but may use DAN if unable to contact base hospital.
Choose the closest ER if stabilization of life threatening injuries is required, before considering transport to hyperbaric chamber.

Assessment

History: If possible, obtain details leading up to event from the victim as well as from witnesses (dive buddy).
Careful neurologic exam is key to identifying subtle findings caused by Decompression Illness. Repeat every 60 minutes and include:

- Pain (O-P-Q-R-S-T questions)
- Nausea/Vomiting
- Ability to urinate
- Mental function by GCS and orientation
- Cranial nerves (vision & ocular motion, facial nerves & muscles, hearing)
- Motor function (strength of major joints)
- Sensory (light touch & pin prick intact everywhere?)
- Coordination & Balance

Transport

If evacuation is by air, fly as low as safety allows (generally 1,000ft) to minimize barometric pressure changes.
Send all equipment, trip dive log, and medical history with diver if possible.

In-Water Recompression

Is defined as re-entering the water to treat Decompression Illness
Should never be performed by those without training
Is not a substitute for transport to a recompression chamber and should never delay transport.
May be performed by certified National Park Service employees with LEMA approval.

Cross Reference

Procedures:

Endotracheal Intubation
Foreign Body Airway Obstruction
Intraosseous Access
IV Access and IV Fluid
Administration
Oxygen Administration
Spine Immobilization

Protocols:

Altered Mental Status/Altered
Level of Consciousness (ALOC)
Cardiac Arrest /Dysrhythmias
Heat Illness
Hypothermia
Pediatric – Cardiac Arrest
/Dysrhythmias

Drugs:

Fentanyl
Hydromorphone (Dilaudid)

Seizures

Paramedic Standing Orders

1. ABCs Protect C-spine if there is evidence of trauma per PROCEDURE: *Spine Immobilization*, and protect patient from additional injury. If there is no evidence of trauma, and actively seizing patient, place in lateral decubitus position.
Secure airway, assist respirations, and suction as needed, utilizing OPA/NPA if indicated. Do not place objects in the mouth while seizing.
 2. Assessment Vitals including temperature and mental status; signs of trauma or drug use; pregnancy; altitude > 8,000ft; history of seizures, diabetes, recent illness, or exercise with water intake but little food.
 3. Oxygen If ALOC, per PROCEDURE: *Oxygen Administration*.
 4. Determine Cause of Seizure If cause of seizure likely due to altitude, heatstroke, trauma, or fever, then **GO TO** PROTOCOL: *Altitude Illness; Heat Illness; Major Trauma – Adult; or Pediatric – Medical Illness/Fever*.
 5. Midazolam (Versed) For actively seizing patients.
Adults: IN: 2mg via MAD every 3 min prn seizure (max 10mg).
< 10 yrs: IN: 0.1mg/kg (max 2mg) via MAD every 3 min prn seizure (max 5 doses).
 6. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
 7. IV/IO Place IV/IO and administer IV/IO fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*
If unsuccessful after 3 attempts, proceed with protocol utilizing IN, IM route for interventions as listed below.
 8. Midazolam (Versed) For actively seizing patients.
Adults: IV/IO: 2mg slow IVP every 3 min prn seizure (max 10mg).
 IN: 2mg via MAD every 3 min prn seizure (max 10mg).
 IM: 5mg every 10 min prn seizure (max 15mg).
< 10 yrs: IV/IO: 0.1mg/kg (max 2mg) every 3 min prn seizure (max 5 doses).
 IN: 0.1mg/kg (max 2mg) via MAD every 3 min prn seizure (max 5 doses).
 IM: 0.15mg/kg (max 5mg) every 10 min prn seizure (max 3 doses).
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
9. Check Glucose If seizures persist, per PROCEDURE: *Blood Glucose Determination*.
 10. Dextrose If glucose < 80, or ALOC and unable to determine glucose:
 ≥ 2 yrs: 1 amp **D50 IV/IO** (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25 IV/IO** (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
May repeat in 5 minutes if ALOC persists and glucose still < 80.
May substitute dose on NPS Pediatric Resuscitation Tape/Broselow Tape for pediatric dose above.

Seizures

11. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
 If no response to Glucose Paste in 5 minutes, then proceed to **Step 10**.
12. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
 May repeat once in 15 minutes if ALOC persists and glucose remains < 80.
13. Transport Consider air transport for ALOC, persistent seizures, or unprotected airway.
14. Base Contact

Paramedic Base Hospital/Communication Failure Orders

1. Midazolam (Versed) In **communication failure**, IV/IO/IN and IM doses may continue to be titrated for control of active seizures at the above dosages and frequencies, without maximum, while carefully monitoring respiratory status, blood pressure, and mental status.
2. Acetaminophen (Tylenol) Consider in pediatric (≤ 6 years) seizures if child is febrile and has regained normal mental status. Utilize rectal route if patient has ALOC.
 PO: 0-6 yrs: 15 mg/kg (max 1,000mg) PO every 4-6 hours, not to exceed 4000mg/24hrs.
 PR: 0-6 yrs: 15 mg/kg (max 1,000mg) PO every 4-6 hours, not to exceed 4,000mg/24hrs.
3. Magnesium Sulfate Consider in pregnant patients with hypertension, after treatment with Midazolam and seizures have stopped.
 5g in 250ml LR/NS IV/IO over 20 minutes.

Seizures

SPECIAL CONSIDERATIONS

Cardiac Monitor

Bring Cardiac Monitor/AED to patients side, if available.

Assessment

History: FACTS.

F: focus.

A: activity (tonic, clonic).

C: color during and after seizure.

T: time (onset, duration).

S: supplemental history: seizures, meds/compliance, drugs, trauma, preceding headache, numbness/weakness, recent illness/fever, heavy exercise with water intake but little food.

Exam: Mental status, vitals, focal neurologic deficits (pupils, facial symmetry, strength/sensation all extremities), trauma.

Differential

Any of the following can present with seizure: High Altitude Cerebral Edema (HACE), heatstroke, fever, hypoglycemia, meningitis, stroke, drugs/overdose, eclampsia, hyponatremia, syncope (clonic jerks).

Remember, patients with a known seizure disorder (epilepsy) may have another cause for their the present seizure.. Always consider trauma.

There are multiple causes for seizures, so ideally both the seizure and the underlying cause are addressed simultaneously. When following this protocol, primary focus should be controlling the seizure and protecting the patient from complications (e.g. aspiration, trauma). However, if a known/suggested cause exists, this should also be addressed (e.g. High Altitude Cerebral Edema [HACE], dehydration, or hyperthermia). Contact base hospital for guidance as this is one of the rare circumstances where two protocols may need to be followed simultaneously. For example, a seizing patient with High Altitude Cerebral Edema (HACE) may need Dexamethasone, Midazolam, and rapid descent to lower altitudes; a hyperthermic, seizing patient may need Acetaminophen, Midazolam, and active cooling measures.

Transport

Consider air transport for patients with unmanageable airways, unstable vital signs, declining mental status or mental status failing to improve, uncontrolled seizures, hyperthermia, or High Altitude Cerebral Edema (HACE).

AMA/TAR

TAR is not acceptable for patients who have seized.

AMA is possible for a patient who has seized but now has a completely normal mental status. This is most likely to occur in a patient with a known seizure disorder who has a typical seizure. All seizure patients should be told to avoid situations that would be dangerous were they to have another seizure, including driving.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Documentation

Reassessment of mental status; treatment rendered and response to therapy; blood glucose.

Cross Reference

Procedures:

Blood Glucose Determination
Endotracheal Intubation
IV Access and IV Fluid Administration
Mucosal Atomizer Device
Oxygen Administration
Rectal Drug Administration
Spine Immobilization

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Altitude Illness
Heat Illness
Major Trauma – Adult
Pediatrics – Medical Illness/Fever

Drugs:

Acetaminophen (Tylenol)
Dextrose 50% (D50)
Glucagon
Glucose Paste or Gel
Magnesium Sulfate 50%
Midazolam (Versed)

SHOCK WITHOUT TRAUMA

Paramedic Standing Orders

1. ABCs Protect airway and assist ventilations as needed. OPA/NPA or ALS airway if indicated (*King Tube/ETT*).
 2. Oxygen Per PROCEDURE: *Oxygen Administration*.
 3. Assessment Vitals, mental status, history, JVD, heart sounds, lung sounds, edema, fever, pain, bleeding, pregnancy, PMH, medications, capillary refill.
Classify type of shock – see **Special Considerations**.
If anaphylaxis, **GO TO** PROTOCOL: *Allergic Reactions*, and start with :
“Epinephrine;” otherwise, continue this protocol.
 4. Monitor Apply cardiac monitor and treat rhythm if appropriate.
If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias*
 5. IV/IO Per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*

Adult: Two 14-16 gauge IV/IOs.
If SBP 80-100 OR HR > 100, then bolus LR/NS 500ml.
If SBP < 80, then bolus LR/NS 1-L under pressure.
Recheck vitals after boluses, and run IV fluids as above. Continue IVF to 3-L max.
Once SBP > 100 AND HR < 100, then administer LR/NS at maintenance (120ml/hr).

0-14yrs: Administer 20ml/kg LR/NS bolus, then recheck vitals. Bolus may be repeated x2 before base contact if vital signs not improved.
Give bolus via syringe IV/IO push. Establish second IV/IO when able.
Continue to administer maintenance fluids regardless of shock status unless ordered to stop by base.
 6. ECG Obtain 12-lead ECG in accordance with manufacturer’s guidelines.
Relay any relevant read (e.g. ***AMI***) to base hospital
 7. Transport Consider air transport for all patients.
 8. Base Contact
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
9. Check Glucose Per PROCEDURE: *Blood Glucose Determination*.
 10. Dextrose If glucose < 80 or ALOC and unable to determine glucose:
Administer 1 amp **D50** IV/IO (1 amp = 25g in 50ml).
May repeat in 5 minutes if ALOC persists and glucose still < 80.

SHOCK WITHOUT TRAUMA

11. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
 If no response to Glucose Paste in 5 minutes, then proceed to **Step 12**.
12. Glucagon 1mg IM (if no IV/IO and unable to give Glucose Paste).
 May repeat once in 15 minutes if ALOC persists and glucose remains < 80.
13. Dopamine After 2-3 liters of fluid IF SBP < 80 and symptomatic (diaphoretic, delayed capillary refill, cool extremities, altered mental status)
- Adults: 10 mcg/kg/min, IV/IO drip. Titrate dosage to desired response; If there is insufficient improvement in hemodynamic status, the infusion may be increased until the desired therapeutic effects are achieved or adverse affects appear. (Maximum dosage is 20 mcg/kg/min).
- Children (0-14 yrs.): Base hospital order only.

SHOCK WITHOUT TRAUMA

SPECIAL CONSIDERATIONS

Classify Type of Shock: (Usual signs/symptoms listed below)

Type of Shock	History	Physical Exam	Patient Medications	Treatment Considerations
Cardiogenic	Heart disease; Chest pain; Orthopnea; SOB; PMH: MI, angina, CHF, dialysis.	Pulmonary edema (wet lung sounds); cool; diaphoretic; peripheral edema.	Lasix; Nitroglycerine; Digoxin; Beta-blocker; Calcium channel blocker; ACE inhibitors, Aspirin.	Difficult to treat in the field. Dopamine.
Pericardial Tamponade	MI in last 2 wks; Chest trauma; Recent heart/chest surgery; Cancer	Normal lung sounds; +/- Muffled heart sounds; JVD.	Similar to cardiogenic meds.	Fluids. Dopamine.
Pulmonary Embolism	Postpartum; Blood clot in leg; Long car/plane ride; Immobilized (cast).	Normal lung sounds; JVD; +/- Swollen leg; +/- Normal exam; +/- Smoker.	Birth control pills; Coumadin.	Fluids. Dopamine.
Tension Pneumothorax	Chest pain; SOB; Recent procedure or prior pneumothorax; Lung disease (COPD); HIV.	Absent breath sounds on one side with hyperresonance; Deviated trachea; JVD.	Inhalers; Isoniazid.	Needle thoracostomy; Consider fluids. Dopamine not indicated.
Hypovolemic	Vomiting; diarrhea; fever; GI/Vaginal bleeding; Decreased PO; Abdominal pain.	Normal lung sounds; Flat neck veins; Signs of bleeding; Fever.	Anti-diarrheal; Anti-emetic; Proton pump inhibitor.	Multiple fluid boluses may be necessary. Dopamine after 2 – 3 liters.
Neurogenic	PMH: spinal cord injury; Lower extremity weakness.	Normal lung sounds; Flat neck veins; Warm skin; Lower extremity weakness; Bradycardia.		IV fluid boluses. Dopamine after 2 – 3 liters.
Septic	Recent fever or infection,	Normal/Wet lung sounds; Flat neck veins; Warm skin; Lethargic.	Antibiotics.	Multiple fluid boluses may be necessary. Dopamine.
Anaphylactic	Onset after food/drug/sting exposure; Prior reactions.	Normal lung sounds or wheezing/stridor; Flat neck veins; Rash; Red skin; Airway edema; +/- Med Alert Tag.	Epinephrine auto-injector; Benadryl.	Consider Epinephrine, Benadryl, Albuterol and fluids. Dopamine not indicated.
Heat Stroke	Hot weather and exertion; Dehydration.	Normal lung sounds; Flat neck veins; High temperature.	None.	IV fluid bolus; Cooling measures. Dopamine potentially harmful.
Drugs (toxin, street drugs, carbon monoxide, organophosphate, cyanide)	IV drug abuse; Closed environment with chemicals or fire; Farm worker.	Highly variable vitals, skin, lung, eye and mental status findings.	None.	Give Naloxone before ALS airway if suspect narcotics; Fluids. Dopamine potentially harmful.

SHOCK WITHOUT TRAUMA

General

Signs of Shock: Any person who is cool and tachycardic is considered to be in shock until proven otherwise.

Adults: Skin signs may vary from cool/moist to hot/flushed.

Altered mental status.

Tachycardia (HR > 100).

Hypotensive (SBP < 100; later sign).

Pediatric: Skin signs may vary from cool/moist to hot/flushed.

Altered mental status or lethargy.

Tachycardia (**REFERENCE PROTOCOL: Pediatric Parameters**):

School age: HR > 120.

Preschool: HR > 140.

Infant: HR > 160.

Hypotensive: Children compensate for shock better than adults.

Tachycardia is an early sign. Decreased blood pressure is a sign of critical shock.

Types of Shock:

Cardiogenic: Inability of heart to pump blood secondary to pump failure (CHF).

May be due to MI without chest pain consider aspirin.

Obstructive shock: Inability of the heart to properly fill, thereby reducing cardiac output (e.g. tamponade, pulmonary embolism, tension pneumothorax).

Hypovolemic: Low blood volume secondary to:

Hemorrhagic shock: external or internal bleeding.

Dehydration: fluid loss (internal or external) or poor fluid intake.

Distributive: Inability to properly distribute fluid in the body due to peripheral vasodilation.

Neurogenic: CNS damage/cord injury.

Septic shock: overwhelming infection.

Anaphylaxis.

Drug ingestion.

Transport

Consider air transport for all patients in shock.

AMA/TAR

All patients should be transported or AMA after attempted base contact.

Parks without base hospitals should follow local medical advisor approved EMS policy.

Cross Reference

Procedures:

Blood Glucose Determination

Endotracheal Intubation

Intraosseous (IO) Access

IV Access and IV Fluid

Administration

King Tube

Oxygen Administration

Protocols:

Allergic Reactions

Pediatric Parameters

Drugs:

Dextrose 50% (D50)

Dopamine

Glucagon

Glucose Paste or Gel

Submersion/Near Drowning

Paramedic Standing Orders

1. Scene Safety
2. Rescue Handle patient as gently as possible. Maintain spinal precautions.
3. ABCs If cardiac arrest, **GO TO** PROTOCOL: *Cardiac Arrest/Dysrhythmia*;
 Pediatric – Cardiac Arrest/Dysrhythmia
Protect airway if ALOC. Assist respirations and suction as needed, utilizing OPA/NPA or ALS airway (*King Tube/ETT*) if indicated.
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
4. Spine If suspicion of neck injury (e.g. secondary to diving) per PROCEDURE: *Spine*
Immobilization *Immobilization*.
5. Oxygen Per PROCEDURE: *Oxygen Administration*.
6. Assessment Vitals, mental status, temperature, pulse oximetry trauma, coughing, lung sounds, preceding events (medical, trauma, intoxication), down/submersion time, loss of consciousness, water temperature/type (saltwater, freshwater, brackish, contaminated).
7. Monitor Apply cardiac monitor and treat rhythm if appropriate.
 If indicated, **GO TO** appropriate *Cardiac Arrest/Dysrhythmias Protocol*
8. Treat Hypothermia Remove wet clothing and apply dry blankets per PROTOCOL: *Hypothermia*.
9. IV/IO If abnormal vitals or ALOC, place IV/IO and administer IV fluids per PROCEDURE: *IV Access and IV Fluid Administration and Intraosseous Access*
- Note:** Perform glucose intervention steps below (dextrose, glucose paste, glucagon) sequentially to address potential or actual low glucose. Allow five minutes for patient response after each intervention. If patient responds, subsequent sugar interventions may be omitted. However, other treatment steps should proceed while awaiting response to glucose intervention(s).
10. Check Glucose Only if ALOC per PROCEDURE: *Blood Glucose Determination*.
11. Dextrose If glucose < 80, or ALOC and unable to determine glucose:
 ≥ 2 yrs: 1 amp **D50** IV/IO (1 amp = 25g in 50ml).
 < 2 yrs: 2 ml/kg **D25** IV/IO (12.5g in 50ml), up to a max of 100ml.
 (To make D25, remove 25ml of D50 and draw up 25ml of LR/NS).
May repeat in 5 minutes if ALOC persists and glucose still < 80.
May substitute dose on Broselow Tape for pediatric dose above.
12. Glucose Paste If no IV/IO, administer 1 tube of Glucose (15g) squeezed into mouth and swallowed.
 If patient is unable to swallow, paste may be placed outside the teeth, between the gum and cheek, while patient is positioned on side. (Maintain spinal precautions if indicated).
If no response to Glucose Paste in 5 minutes, then proceed to **Step 13**.
13. Glucagon Adults: 1mg IM (if no IV/IO and unable to give Glucose Paste).
 0-14 yrs: 0.03mg/kg IM, max dose 1mg (if no IV/IO).
May repeat once in 15 minutes if ALOC persists and glucose remains < 80.

Submersion/Near Drowning

14. Naloxone (Narcan) If still ALOC and narcotic overdose suspected: (IN Route preferred)
 > 10-Adults: 2mg IN/IV/IM/IO every 2 minutes prn ALOC (max 10mg).
 < 10 yrs: 0.1mg/kg up to 2mg IN/IV/IO/IM/.
15. Transport Consider air transport for ALOC or respiratory distress. If appropriate, **GO TO PROTOCOL:**
 Altered Mental Status/Altered Level of Consciousness (ALOC) or Respiratory Distress.
16. Base Contact

Submersion/Near Drowning

SPECIAL CONSIDERATIONS

General	<p>Cardiac arrest in the setting of cold water drowning has an increased chance of survival, especially in pediatrics. Rewarming should therefore be attempted in cold water drowning.</p> <p>Near drowning is the survival of a drowning event involving unconsciousness or water inhalation and can lead to serious secondary complications, including death, after the event.</p>
Differential Diagnosis	Cardiac arrest (initiating or secondary to submersion); hypothermia; spinal injury; trauma (initiating or secondary to submersion); intoxication; preceding medical event (e.g., seizure, hypoglycemia, cardiac arrest).
AMA/TAR	<p>Any patient with cardiopulmonary or neurologic compromise secondary to near drowning requires transport, or AMA.</p> <p>Parks without base hospitals should follow local medical advisor approved EMS policy.</p>
Documentation	<p>Vital Signs, mental status, lung sounds, pulse oximetry serial exams.</p> <p>Events preceding submersion, time submerged (if known).</p>

Cross Reference

Procedures:

Blood Glucose Determination
Endotracheal Intubation
Intraosseous Access
IV Access and IV Fluid Administration
King Tube
Oxygen Administration
Spine Immobilization
Transtracheal Jet Insufflation

Protocols:

Altered Mental Status/Altered Level of Consciousness (ALOC)
Cardiac Arrest/Dysrhythmias
Hypothermia
Respiratory Distress
Pediatric –Cardiac Arrest /Dysrhythmias

Drugs:

Dextrose 50% (D50)
Glucagon
Glucose Paste or Gel
Naloxone (Narcan)

TRAUMA ARREST

(Adult and Pediatric)

Paramedic Standing Orders

1. Confirm Arrest
No response to aggressive stimulation.
Check breathing, give 2 breaths if indicated, and check pulse (preferably carotid).
If pulse is present, patient is NOT in cardiac arrest. **GO TO PROTOCOL:**
Major Trauma – Adult; Pediatric – Major Trauma, or other appropriate protocol.
If patient is victim of electrocution or lightning strike, run arrest as medical arrest;
GO TO PROTOCOL: *Cardiac Arrest/Dysrhythmias or Pediatric Cardiac Arrest/Dysrhythmias*
2. Assessment
Quickly obtain information (15-30 seconds) from witnesses to determine whether resuscitation should be initiated. As time allows, obtain additional information including: bystander CPR, preceding events and symptoms, PMH.

Do not attempt resuscitation in the following cases:
Rigor mortis, lividity, or obviously fatal trauma.
Documented pulseless downtime greater than 15 minutes. In specific SPECIAL CASES (cold water drowning, hypothermia, barbiturate ingestion, pediatric patients, electrocution or lightning strike) downtime is extended to 30 min.

NOTE: Blunt trauma arrest is nearly always fatal. Airway maneuvers, bilateral needle thoracostomies and aggressive control of active bleeding are key to any chance of success.
3. Airway
Secure airway utilizing OPA/NPA or ALS airway (PROCEDURE: *King Tube/Endotracheal Intubation*).
If patient is < 4ft tall, *King Tube* is not indicated.
Consider TTJI if ALS airway unsuccessful per PROCEDURE: *Transtacheal Jet Insufflation*.
4. Needle Thoracostomy
Perform bilateral needle thoracostomies per PROCEDURE: *Needle Thoracostomy*.
5. Oxygen
Active ventilation with 15-L per PROCEDURE: *Oxygen Administration*.
6. CPR
Adult:
Regardless of single- or dual-rescuer CPR, compression-to-ventilation ratio is 30:2.
Compression rate is 100/minute; “Push Hard, Push Fast.”
Continue CPR for **5 minutes**, or until patient has palpable pulse or shows signs of life.
0-14yrs:
Compression-to ventilation ratio differs based on patient age and number of providers:
Single Rescuer 1day – 14yrs Compression:Ventilation ratio is 30:2.
Dual Rescuer 1day – 8yrs Compression:Ventilation ratio is 15:2.
Dual Rescuer 8–14yrs Compression:Ventilation ratio is 30:2.
Compression rate is 100/minute; “Push Hard, Push Fast.”
REFERENCE PROTOCOL: *Pediatric Parameters* for other pediatric CPR details.
Continue CPR for 20 minutes if penetrating injury and 10 minutes if blunt injury.
REFERENCE PROTOCOL Initiation and Termination of CPR or until patient has palpable pulse or shows signs of life.
7. IV/IO
Per PROCEDURE: *Intraosseous (IO) Access and/or IV Access and IV Fluid Administration*.

Adult: If successful, bolus (ideally under pressure) 1-L LR/NS.
0-14yrs: If successful, bolus (ideally under pressure) 20ml/kg LR/NS.

TRAUMA ARREST

(Adult and Pediatric)

8. Transport Transport if patient regains pulse or is within 5 minutes of health care facility (15 minutes for pediatric patients).

9. CPR
Termination

	Adult		Pediatric	
	Standard	Special Circumstance	Standard	Special Circumstance
Medical Arrest	15 min	30 min	30 min	60 min
	Adult		Pediatric	
	Blunt	Penetrating	Blunt	Penetrating
	10 min	20 min	10 min	20 min

Notes:

These times apply to either:

Not initiating CPR in the setting of known down time prior to EMS arrival or
Cessation of CPR in an unsuccessful EMS resuscitation.

Special Circumstances include: Hypothermia, Barbiturate ingestion, Nitrate ingestion, Cold water drowning, Electrocution, and Lightning injury.

Do not initiate if signs of prolonged lifelessness (e.g. rigor mortis, lividity) or obvious non-survivable injury (e.g. severe [100% 3rd degree] burn or decapitation).

10. Base Contact

TRAUMA ARREST

(Adult and Pediatric)

SPECIAL CONSIDERATIONS

General

With termination of CPR, consider early base contact as these situations are highly emotional and the base may assist in difficult decision-making.

Regardless of age, victims of traumatic arrest never survive unless they are within minutes of a hospital. Even in that setting, survival without neurological impairment is rare. Providing futile care will distract you from caring for potentially viable patients, keep personnel unavailable for other emergencies, and puts personnel at risk of injury from rescue, transportation, and body fluid exposures (i.e. needle stick).

In the field, it may be difficult to know that the heart has arrested, or is no longer viable, because of the trauma.

In rare circumstances, an AED may help (see examples below):

Isolated blunt chest trauma (especially in children), e.g. a baseball to the chest.

An electrocution victim with traumatic injuries from falling or being thrown.

A Myocardial Infarction (MI) leading to a Motor Vehicle Collision (MVC).

Assessment

Fixed and dilated pupils are not always reliable as a sign of death (e.g. sympathomimetic overdose).

Hypothermic patients have a higher likelihood of survival, and may be viable while appearing to be dead.

Cross Reference

Procedures:

Endotracheal Intubation

Intraosseous (IO) Access

IV Access and IV Fluid

Administration

King Tube

Needle Thoracostomy

Oxygen Administration

Transtacheal Jet Insufflation

Protocols:

Altered Mental Status/Altered Level
of Consciousness (ALOC)

Cardiac Arrest/Dysrhythmias

Hypothermia

Major Trauma – Adult

Pediatric – Cardiac Arrest/Dysrhythmias

Pediatric – Major Trauma

Pediatric Parameters

Paramedic Standing Orders

- Protocol 2270-P

VAGINAL BLEEDING

Paramedic Base Hospital/Communication Failure Orders

1. Fentanyl Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO/IN: 25-50 mcg. Repeat in 15 min x1 prn pain.
Subsequent doses (2 max) every 30 minutes.
i.e. Fastest possible dosing schedule would be; time 0, 15, 45, 75 min.
IM: 50 - 100 mcg every 30 minutes. Repeat in 30 min x2 prn pain.
i.e. Fastest possible dosing schedule would be; time 0, 30, 60 min.

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status.

2. Long Acting Narcotic (Morphine OR Dilaudid).
Only to be used 30 minutes after fentanyl dosing schedule above is completed.

Morphine Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO: 4-10mg (0.4-1ml) every 30 min prn pain (max 20mg)
IM: 5mg (0.5ml) every 30 min prn pain (max 20mg).

OR

Dilaudid Adult: If severe pain, SBP > 100, and normal mental status.
IV/IO: 0.5-1.0 mg (0.5-1ml) every 30 min prn pain (max 2mg).
IM: 1mg (1ml) every 30 min prn pain (max 2mg).

Recheck vitals and mental status before and after each dose. Administer ONLY if SBP > 100 and normal mental status. Maximum dosing refers to route of administration. Any med administration beyond 20mg of Morphine or 2mg of Dilaudid via any route requires base contact.

3. Acetaminophen > 10-Adult: 1,000mg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.
(Tylenol) 0-10 yrs: 15mg/kg PO every 4-6 hours, not to exceed 4,000mg in 24 hours.

VAGINAL BLEEDING

SPECIAL CONSIDERATIONS

Assessment	<p>Vitals/mental status: tachycardia, hypotension, skin signs, dizziness, syncope. If tachycardic, hypotensive or dizzy, treat as hypovolemic shock.</p> <p>Bleeding: duration and amount (soaked pads per hour), passing tissue, recent trauma.</p> <p>Menstrual history: date of last menstrual period (LMP), was it a typical period (i.e. normal and on time?).</p> <p>Pregnancy: If known pregnancy, how many weeks? Any problems with pregnancy (e.g. high blood pressure/eclampsia?), assess for signs of labor (visible/palpable abdominal contractions, urge to push).</p> <p>Abdominal pain: location (suprapubic, back, isolated R or L lower quadrant), cramping, similarity to prior labor pain or menstrual cramps?</p> <p>PMH: prior pregnancy number and/or problems including ectopic (tubal pregnancy), pelvic infections, or STDs.</p>
Differential Diagnosis	<p><u>First and Second Trimester bleeding (up to 20 wks):</u></p> <p>Ectopic pregnancy: a ruptured ectopic pregnancy is a life threatening emergency. There may be little to no vaginal bleeding but internal hemorrhage may be present. Patients typically complain primarily of abdominal pain as opposed to vaginal bleeding. Watch for shock.</p> <p>Threatened abortion (bleeding during pregnancy): many women will not know or be in denial about being pregnant. Always ask LMP (last menstrual period) and if > 1 month ago, assume pregnancy if in child bearing years (10-50 years old).</p> <p>Spontaneous abortion (miscarriage): if patient is passing tissue, save it and bring it to the hospital. It can be important to determine if all products of conception have passed.</p> <p><u>Delivery:</u> be prepared for possible premature delivery if late term pregnancy;</p> <p>REFERENCE PROTOCOL: <i>Childbirth.</i></p> <p><u>Third Trimester bleeding (> 20 wks):</u></p> <p>Abruptio placentae (placenta separates from uterus): can occur after blunt trauma. High risk of fetal death.</p> <p><u>Eclampsia/Pre-Eclampsia:</u> if patient > 5 months pregnant or has delivered in past 2 weeks, AND is hypertensive or with a headache, ask about prior history of eclampsia or current symptoms (edema of face and hands, seizures). Usually no vaginal bleeding.</p> <p>REFERENCE PROTOCOL: <i>Seizures.</i></p> <p><u>Regular menses:</u> common cause.</p> <p><u>Trauma:</u> consider pelvic fracture, or placental bleeding if in third trimester.</p> <p><u>Foreign body</u> (IUD, rape): consider uterine perforation/rupture (rare).</p> <p><u>Hormonal imbalance:</u> irregular menses (very common).</p> <p><u>Tumors:</u> cervical and uterine, typically painless.</p> <p><u>Non-Vaginal sources:</u> rectal or urethral.</p>
Transport	Immediate transport if suspect pregnancy and/or abnormal vital signs.
AMA/TAR	All patients should be transported or AMA after attempted base contact. Parks without base hospitals should follow local medical advisor approved EMS policy.
Documentation	Frequent vital signs and symptoms of shock (dizziness, syncope, pallor); menstrual history (as above); bleeding amount and duration; presence of passed tissue; abdominal pain.

Cross Reference

Procedures:	Protocols:	Drugs:
Intraosseous Access	Childbirth	Acetaminophen (Tylenol)
IV Access and IV Fluid Administration	Seizures	Fentanyl
Oxygen Administration		Hydromorphone (Dilaudid)
		Morphine
		Ondansetron