

**Matanuska-Susitna Borough
Department of Emergency Services**



EMS Protocols and Procedures

ADULT & PEDIATRIC

Adopted March 2017

Important Telephone Numbers

MSRMC “BAT PHONE”	746-5123
MSRMC ER Telephone	861-6620
MSRMC ER Fax	861-6776
9G-Base Business Line	745-4811
MATCOM (AST, WPD, Animal Control)	352-5401
EMS Shift Supervisor (Medic 1)	861-8029
MSB EMS Chief	Office: 861-8317 Cell: 707-3000
MSB EMS Medical Director	707-3327
MSB Narcotics Control Officer (NCO)	354-4196
MSB Health & Safety Hotline	982-7380
MSB EMS QA Manager	Office: 861-8010 Cell: 707-4433
Providence Alaska Medical Center ER	212-3111
Providence STEMI Fax Line	212-3647
Alaska Regional ER	264-1222
Alaska Native Medical Center ER	729-1729
JBER Hospital ER	580-5555
Poison Control Center	800-222-1222
Life Alaska (Organ and Tissue Donation)	800-719-5433 562-5433
Diver’s Alert Network (DAN)	919-684-9111
Office of Children’s Services (OCS)	800-478-4444 357-9797
Division of Senior Services (Vulnerable Adult Reporting)	800-478-9996 269-3666
Cottonwood Public Safety Building (Station 6-5)	861-6000

EMS Protocols and Procedures

Matanuska Susitna Borough Department of Emergency Services

ETT, EMT-1, EMT-2, EMT-3, MICP

This document applies to all ETTs, EMTs, and MICPs performing their scope of duties, in the employment of the Matanuska-Susitna Borough Department of Emergency Services. They do not apply to actions taken by any individual when employed by, or acting on behalf of, an agency other than the Matanuska-Susitna Borough Department of Emergency Services, nor are they valid outside the context of an emergency response or Borough-approved EMS function.

ETTs, EMTs and MICPs who are compliant with Matanuska-Susitna Borough EMS training and quality assurance requirements, including expanded scope of practice, as well as requirements set forth at the Federal, State of Alaska and Matanuska-Susitna Borough levels, are authorized to provide pre-hospital and interfacility care in accordance with these standing orders.

All EMT-3 and MICP providers are required to hold valid ACLS certification, as well as PALS or PEPP (or Medical Director approved equivalent) certifications. EMT-3 and MICP providers must maintain active membership in a MSB-DES emergency service, and be compliant with all regulatory requirements, MSB-DES policies, procedures, quality assurance and training requirements.

Treatment protocols are subject to revision by the Medical Director. EMS providers will be notified of changes via electronic and/or written format.



Thomas Check, MD
Medical Director



Otto Feather
Emergency Services Director



Lisa Behrens, MICP
Deputy Director – EMS



Steven Heyano
EMS Chief

Communications

Reporting Errors

The information contained in this document has been extensively reviewed and is believed to be current and accurate on the indicated revision date of each section. If errors or omissions are discovered please notify the MSB EMS Medical Director and/or EMS Chief. Medical providers are expected to use their knowledge and experience to act in the patient's best interest at all times.

On-line Medical Direction

Pre-hospital providers will contact the emergency department physician to obtain patient care orders when indicated. On-line medical direction must occur directly between the ordering physician and the EMS crew.

Communication Failure

In the event that Medical Control is desirable, but not possible due to communication failure, MSB EMS providers are expected to act in the best interest of the patient, based upon these treatment protocols, and their knowledge and experience. Give a verbal report to the receiving physician upon arrival at the emergency department, provide details in the ePCR, and forward documentation to the MSB EMS Medical Director and EMS Chief.

Verbal Orders Beyond Scope of Certification

This set of written standing orders is intended to guide actions of MSB EMS providers in the majority of circumstances; however, it is not possible to anticipate every situation that may arise.

EMS providers may not exceed their scope of certification except with specific on-line emergency physician direction. If such a situation arises, the following conditions apply:

1. The EMS provider shall notify the ordering physician that the procedure is outside of the provider's scope of certification.
2. The physician must give specific verbal orders directly to the EMS provider who will perform the procedure.
3. The EMS provider must understand the orders, and be comfortable carrying them out.
4. A verbal report shall be provided to the receiving physician upon arrival at the emergency department, and detailed in the ePCR. Documentation shall be forwarded to the MSB EMS Medical Director and EMS Chief.

Rationale – Key Points

Mat Su Borough EMS Protocols and Procedures

These protocols and procedures are the result of an exhaustive process of research and collaboration to produce a framework for excellence in pre-hospital care. The primary motivation in developing this document is to provide every citizen of the Mat Su Borough the highest possible level of emergency medical care; bridging as seamlessly as possible, the pre-hospital and emergency department environments.

Mat Su Borough EMS providers who utilize these protocols and procedures must, at all times, remain aware of the following:

- Protocols are for both adult and pediatric use except where specified.
- Doses for pediatric patients should be confirmed using a length/weight tape (Broselow tape or similar) and a second provider when possible.
- Quick Reference Checklists are considerations for seriously ill patients, not step-by-step prescriptions for care.
- Pre-hospital medicine is a complex, dynamic field where some degree of individualized provider judgment is required to optimize patient care.
- Protocols are designed to be general guidelines for patient care, utilized within a given provider's level of certification, skill, and experience.
- Protocols are not intended to teach medicine or to be exhaustive or definitive references.
- Protocols are often summaries of complex concepts; refer to AHA and/or ATLS guidelines for more detailed information in pertinent subject areas.
- Providers are expected to remain current with MSB-EMS training requirements and to meet or exceed minimum patient contact requirements, as well as to engage in regular ongoing self-education in order to achieve excellent patient care.
- The EMS Medical Director will be the final authority regarding creation, revision and interpretation of protocols.

Table of Contents

<u>SECTION</u>	<u>PAGE #</u>
Introduction	i – viii
Important Telephone Numbers	ii
Definition of Scope and Authorizing Signatures	iii
Communications	iv
Key Points.....	v
Quick Reference Checklists	1 – 30
Anaphylaxis/Angioedema (Allergy).....	3
Asthma	5
Bradycardia with Poor Perfusion (Brady).....	7
Moderate/Major/Severe Burns (Burns).....	9
COPD Exacerbation (COPD)	11
Mass Casualty Incident – S.A.L.T. (MCI).....	13
Mass Casualty Incident – S.T.A.R.T. (MCI)	14
Neonatal Resuscitation (NRP)	15
Pulmonary Edema (CHF)	17
Sepsis	19
Status Epilepticus (Seizure).....	21
STEMI	23
Stroke.....	25
Tachydysrhythmia (Tachy).....	27
Trauma.....	29
Patient Care Protocols	31-78
Initial Patient Care Protocol.....	32
Abdominal Pain	34
Acute Coronary Syndrome	35
Airway	37
Allergic Reaction	38
Altered Mental Status	39
Amputated Part	40
Asthma and COPD.....	41
Behavioral Emergencies	42
Burns.....	43
Cardiac Arrest Management	46
Cardiac Dysrhythmias.....	47
Child Abuse – Suspected	49
Childbirth / Newborn Care.....	50
Congestive Heart Failure	53
Drowning Event.....	55
Dystonic Reaction.....	57
Frostbite	58
Heat Illness	59
Hypothermia	60
Left Ventricular Assist Device (LVAD) Problem	61
Nausea & Vomiting	62
Pain Control	63
Poisoning	64

Table of Contents - continued

<u>SECTION</u>	<u>PAGE #</u>
Patient Care Protocols – continued	31-78
Post Resuscitation with Return of Spontaneous Circulation	65
Pregnancy Complication	66
Seizure	67
Sexual Assault.....	68
Shock	69
Stroke.....	72
Trauma	73
Thoracic Injuries	76
Operational and Logistical Guidelines.....	79-92
Ambulance Staffing Requirements	80
Dispatch Priority	81
Apparent Death	82
DNR Protocol	83
Termination of Resuscitation.....	84
Special Patient Equipment	85
Patient Refusal	86
Physician on Scene	87
Hospital Destination.....	88
Patient Status Criteria	88
Flight Guidelines.....	89
Trauma Activation Criteria.....	91
Transition of Care	92
Patient Assessment Scales and Tools	93-98
Tuberculosis Risk Assessment.....	94
Assessment Scales (APGAR and GCS).....	95
Cincinnati Pre-Hospital Stroke Scale.....	96
Rule of Nines – Adult	97
Rule of Nines – Pediatric	98
Medical Procedures and Devices	99-124
Procedural Sedation	100
Airway: Continuous Positive Airway Pressure (CPAP)	101
Airway: King LT-SD	102
Airway: Endotracheal Intubation	103
Airway: Cricothyrotomy	105
Airway: Confirmation Adjuncts	107
Airway: Nasogastric Tube Insertion	108
Breathing: Needle Chest Decompression	109
Circulation: External Jugular Cannulation.....	110
Circulation: Intraosseous (IO) Access	111
Circulation: AutoPulse.....	113
Circulation: 12-lead EKG	114
Circulation: Synchronized Cardioversion.....	115
Circulation: Transcutaneous Pacing.....	116

Table of Contents - continued

<u>SECTION</u>	<u>PAGE #</u>
Medical Procedures and Devices – continued	99-124
Circulation: Pericardiocentesis	117
Disability: Selective Spinal Immobilization	118
Disability: Rigid Spinal Immobilization	119
Disability: Patient Restraints.....	120
Drugs: Intramuscular (IM) Medication Administration.....	122
Drugs: Intranasal (IN) Medication Administration.....	122
Drugs: Administration of Patient’s Prescribed Medication	123
Device: Glucometer	124
Formulary	125-147
Acetaminophen (Tylenol)	126
Albuterol	127
Amiodarone (Cordarone).....	128
Aspirin	129
Atropine	130
Calcium Chloride	131
Dextrose (D ₅₀ , D ₁₀).....	132
Diphenhydramine (Benadryl)	133
Epinephrine 1:10,000.....	134
Epinephrine 1:1000.....	135
Fentanyl	136
Glucagon.....	137
Ipratropium Bromide (Atrovent).....	138
Ketamine	139
Lidocaine 2%	140
Magnesium Sulfate	141
Midazolam (Versed)	142
Naloxone (Narcan).....	143
Nitroglycerin.....	144
Normal Saline (0.9% NaCl).....	145
Ondansetron (Zofran).....	146
Oral Glucose	147
Oxygen.....	148
Sodium Bicarbonate.....	149
Medical Abbreviations and EMT Scope of Practice	151-155
EMS Approved Abbreviations.....	152
MSB EMT Scope of Practice Matrix.....	155

Mat Su Borough EMS

Quick Reference Checklists



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Anaphylaxis/Angioedema

- **1:1000 Epinephrine** 0.01 ml/kg IM (adult 0.5 ml)
- **Repeat** IM Epi **q5** minutes **x2** if needed
- **Open Airway, Assist Breathing** with O₂ and BVM if needed
- If Complete Airway Obstruction: **Attempt Oral Intubation**
- If Attempt Fails:
 - Age < 8-10 yo: **Needle Cricothyrotomy**
 - Age > 8-10 yo: **Bougie-Assisted Cricothyrotomy**
- **IV/IO** access
- If Persistent Severe Sx: **IV Epi-drip** 0.1 – 0.5 mcg/kg/min
(max 20mcg/min)
- **Expedite Transport** and **Call ER**

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Asthma

- **1:1000 Epinephrine** 0.01 ml/kg IM (adult 0.5 ml)
- **Repeat IM Epi** q5 minutes **x2** if needed
- **Albuterol** 0.5 mg/kg/hr **Continuous Nebs** (adult 20mg)
- **Atrovent** Nebs 0.5 mg (0.25 mg if < 30 kg) q20 minutes **x3**
- **Oxygen** titrated to goal **SpO₂ 90-95%**
- **CPAP** trial
- **IV/IO** access
- **Ketamine** 0.1 mg/kg IV if needed for CPAP tolerance
- **Magnesium** 50 mg/kg IV over 20 minutes (adult 2g)
- If Respiratory Failure: **Assist with BVM**
- Target I:E Ratio = 1:5
- **Manually Expire Chest** if needed
- **Expedite Transport** and **Call ER**

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Bradycardia with Poor Perfusion

- If needed – **Start CPR**
- Turn on Defibrillator / **Apply Pads** to Patient
- Attempt **Transcutaneous Pacing**
- **IV/IO** access
- **Atropine** 0.02 mg/kg IVP (minimum 0.1mg / adult 0.5 mg)
- **Repeat Atropine** in 5 minutes **x1** if needed
- If Persistent Poor Perfusion: **Epi-drip** 0.1-0.5 mcg/kg/min
(max 20mcg/min)
- Obtain **12-lead EKG / Treat STEMI** if present
- If EKG = Suspected Hyperkalemia:
(Peaked Ts, Wide QRS, Long PR/QT)
 - **Calcium Chloride** 20mg/kg slow IV/IO –AND–
 - **Sodium Bicarbonate** 1mEq/kg IV/IO
- **Expedite Transport** and **Call ER**

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Moderate/Major/Severe Burns

- **Airway** – If Stridor, Hoarseness, Swelling, Soot:
Prepare **BVM** and **Cricothyrotomy kit**
- **1:1000 Epi** 5ml Neb if needed (may repeat x1 in 15-30 min)
- If Complete Upper Airway Obstruction:
 - Age < 8-10 yo: **Needle Cricothyrotomy**
 - Age > 8-10 yo: **Bougie-assisted Cricothyrotomy**
- If Altered Mental Status: give **100% O₂** via NRB, CPAP or BVM
- If Wheezing:
 - **Albuterol** 0.5 mg/kg/hr **Continuous Neb** (adult 20mg/hr)
 - **Atrovent** Neb 0.5 mg (0.25 mg if < 30 kg) q20 minutes **x3**
- **IV/IO x2**, Prefer proximal site through intact skin
- **NS 20ml/kg Bolus**, then titrate to good perfusion
- Immobilize C-Spine **ONLY** if concern for injury
- **Check CO level** – If elevated give **100% O₂**
- **Treat Pain** with IV/IO/IN **Fentanyl, Ketamine**
- Remove all jewelry and non-adherent clothing
- **Cover and Warm**: Space Blanket, Cabin Heat
- **Expedite Transport** and **Call ER**

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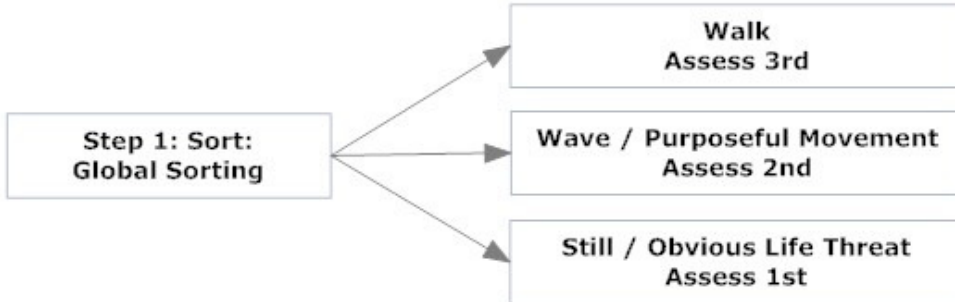
COPD Exacerbation

- **Albuterol** 20 mg/hr **Continuous Neb**s
- **Atrovent** 0.5 mg nebulized q20 minutes **x3**
- **CPAP** trial
- **Oxygen** titrated to goal **SpO₂ 89–94%**
- **IV/IO** access
- **Ketamine** 0.1 mg/kg IV/IO if needed for CPAP tolerance
- If Severe Symptoms **1:1000 Epinephrine** 0.5 ml IM
- If Persistent Severe Symptoms and SBP > 110 give **Magnesium** 2g IV over 20 minutes
- If Respiratory Failure – **Assist with BVM**
- **Expedite Transport** and **Call ER**

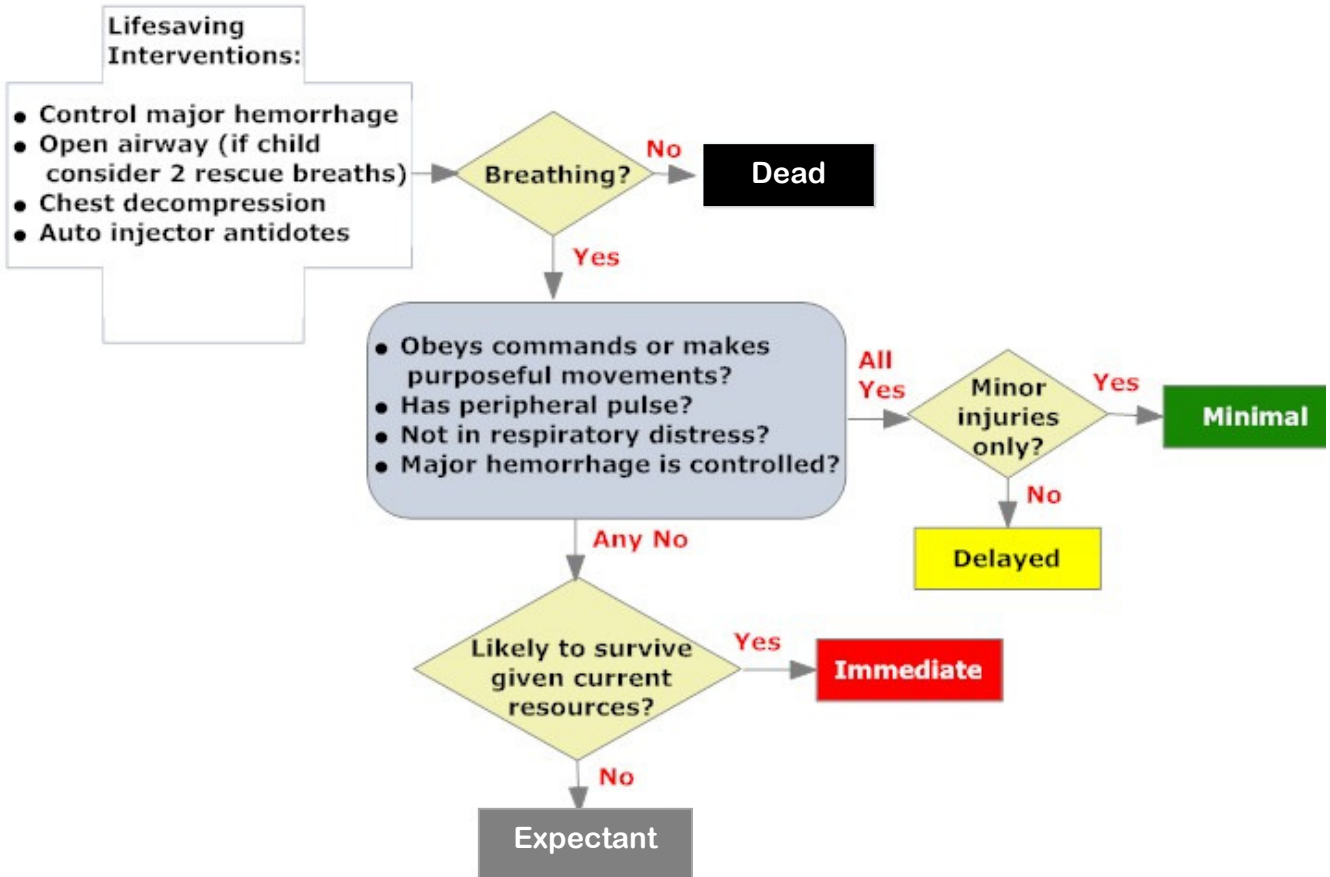
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Mass Casualty Incident – S.A.L.T.

(Sort, Assess, Lifesaving interventions, Treatment/transport)

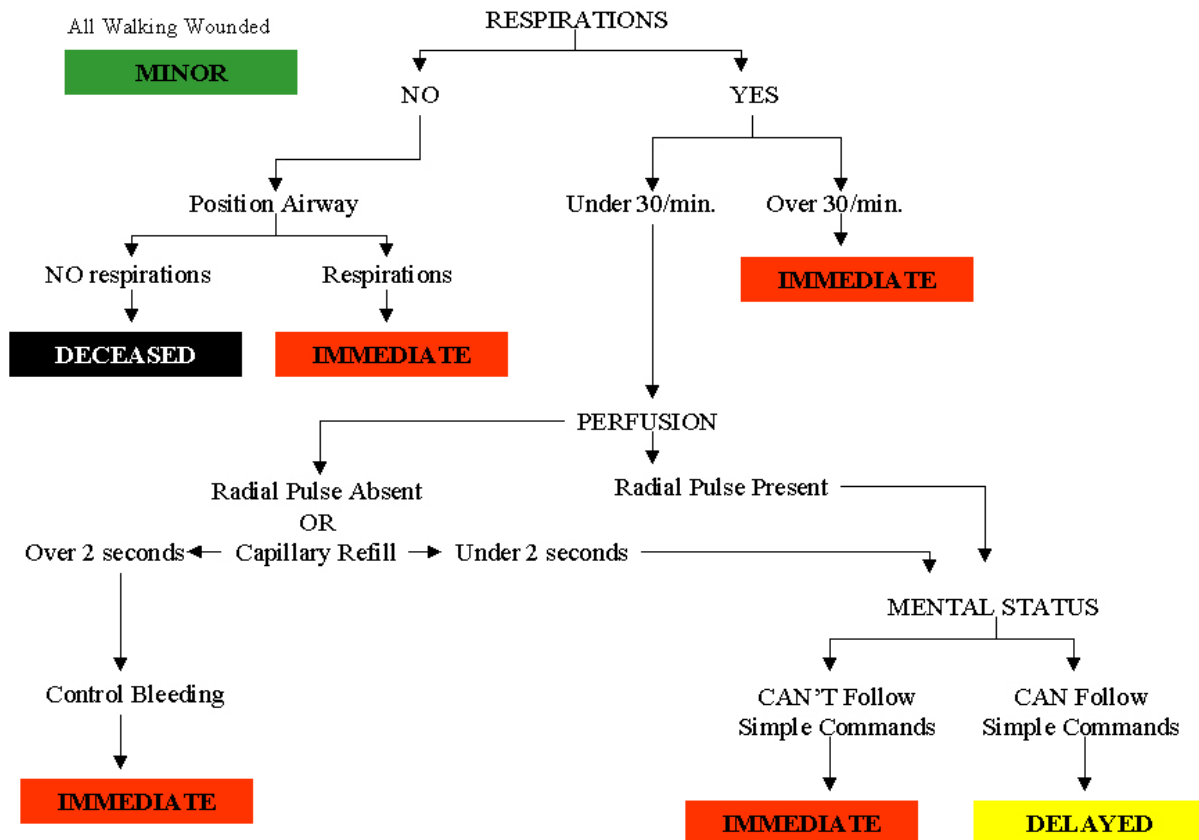


**Step 2 - Assess:
Individual Assessment**



Mass Casualty Incident – S.T.A.R.T.

(Simple, Triage, And, Rapid, Treatment)



S.T.A.R.T. is the triage system currently in use for multi-jurisdictional and multi-agency responses, as outlined in the MSB Emergency Operations Plan.

Neonatal Resuscitation

- **Stimulate, Warm, Dry, Position and Clear Airway**
- Apply: Right arm **SpO₂**, Cardiac **Monitor**
- At 30 seconds: Evaluate **HR, Respiration, Color, Tone**
- If HR < 100 or Apneic: **BVM** on **Room Air** at 30-60/min
- If Isolated Central Cyanosis or Labored Respirations:
Reposition/Clear Airway, give **100% O₂** via NC or BVM
- At 60 seconds:
 - If HR 60-100 – continue **BVM** on **Room Air**
 - If HR < 60 – **START CPR**
Compressions:Ventilations = 3:1 Rate = 120 Events/Minute
- **Intubate**, change to **100% Oxygen**
- **IV/IO** access – Broselow Tape
- At 90 seconds:
 - If HR<60 – **1:10,000 Epi**, 0.1ml/kg IV/IO
- At 120 seconds:
 - If HR <60 – **NS Bolus** 10ml/kg IV/IO over 5-10 minutes
- Check Glucose – If BGL < 40 give **D₁₀** 2ml/kg IV/IO
- If Hx of maternal opiates: **Narcan** 0.1mg/kg IV/IO/IM
- **SpO₂** target ranges: 1 minute 60-65%, 5 min 80-85%
- **Expedite Transport** and **Call ER**

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Pulmonary Edema

- Apply **Cardiac Monitor** – Obtain **VS**
- Obtain **12-lead EKG / Treat STEMI** if present
- If SBP > 110: **Nitroglycerin** 0.4 mg SL q5 minutes until improved respiratory status or SBP 110
- **CPAP** trial
- **Oxygen** – titrated to goal SpO₂ 90-95%
- **IV/IO** access
- **Ketamine** 0.1 mg/kg if needed for CPAP tolerance
- If Respiratory Failure: Assist w/ **BVM** and **PEEP** valve
Titrate to goal SpO₂ 90-95%
- If SBP < 90: Give 250-500 ml **NS Bolus** with frequent reassessment of BP, HR, and Perfusion
- If Persistent SBP < 90: IV **Epi-drip** 0.05-0.1 mcg/kg/min
(max 10mcg/minute)
- **Expedite Transport** and **Call ER**

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Sepsis

- Criteria:
- **Suspected Infection** via Hx or Exam
 - **HR > SBP** (adult) or **Poor Perfusion**
 - **Elevated** or **Decreased Temperature**
-
- If Respiratory Distress: Support w/**Oxygen**, NC/NRB/CPAP/BVM
 - Goal **SpO₂ 90-95%**
 - Assist w/**BVM** if needed – Abnormal lungs may need **PEEP**,
Attempt to match pt's respiratory rate
 - Proximal **IV/IO** access **x2**
 - 30 ml/kg **NS Bolus** – Repeat for low BP or Poor Perfusion
 - If Persistent or Severe Hypotension / Poor Perfusion:
 - **Epi-Drip** 0.1-0.5 mcg/kg/min
(adult: 5-20 mcg/minute)
 - If Fever: **Acetaminophen** 15mg/kg PO
 - **Expedite Transport** and **Call ER**

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Status Epilepticus

- **Check Pulse** – If No Pulse: **Start CPR**
 - Turn on Defibrillator
 - Apply Pads – **Confirm VF/VT**
 - **Defibrillate** at 4J/kg (adult 200J)
- **Open Airway**
- **Assist Breathing** with **O₂** and **BVM** if needed (goal SpO₂ 95%)
- **Midazolam** (Versed) 0.1 mg/kg IM (max 10 mg)
- **IV/IO** access
- Check Glucose – If BGL < 60: **D₁₀** 2ml/kg –OR-
If No IV/IO: **Glucagon** 0.025 mg/kg IM (adult 1mg)
- **Repeat Midazolam** 0.1 mg/kg IV/IO/IM q5 min **x2** PRN
- Prepare for Hypoxia/Hypotension
- If Persistent BGL < 60: **Repeat D₁₀** IV/IO
- **Expedite Transport** and **Call ER**

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STEMI

- Obtain and **Transmit 12-lead EKG** to ER
- Call ER Immediately to **Activate STEMI Alert**
- **Place Defibrillator Pads** – Monitor Vitals
- **IV/IO x2** – Proximal preferred (avoid right wrist)
- **Aspirin** 324 mg PO chewed
- **NTG** 0.4 mg SL q5 minutes PRN for Chest Pain (hold for SBP < 110)
- If Inferior MI –OR- erectile dysfunction medication w/in 72 hr:
 - Start 250 ml **NS Bolus**
 - If Inferior MI: Obtain **Right-side EKG**
 - If RV Infarct: **NO NTG**
 - If NO RV Infarct: **Cautious NTG**
- **Fentanyl** 0.5-1.5 mcg/kg IV PRN for Pain (hold for AMS / SBP < 110)
- If VF or Pulseless VT: **Defibrillate** at 200J for VF / Pulseless VT
–AND- **Perform CPR** PRN
- If Persistent VT w/Pulse: **Sync Cardioversion** at 100J/200J
- If Terminated VF/VT: **Amiodarone** 150 mg IV –AND-
Amiodarone-drip 1mg/min
- If Persistent VF: **Amiodarone** 300mg IV (repeat 150 mg per ACLS)
–AND- **Epinephrine** q3-5 minutes per ACLS
- If Cardiogenic Shock: **Cautious NS boluses** 250-500ml
Monitor pt status closely
No NTG
- If Persistent Hypotension / Poor Perfusion: **Epi-drip** 0.05-0.1 mcg/kg/min
(max 10 mcg/minute)
- **Expedite Transport**

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Stroke

ACUTE AMS / NEURO DEFICIT:

- **ABCs and Cardiac Monitor**
- Complete **Vital Signs** – Including Temperature
- Proximal **IV** – 18g
- Check **Glucose** – If BGL < 60: **D₁₀** 2ml/kg IV
- Identify/Document: Exact **Last Known Well Time**
- Perform/Document: **Cincinnati Stroke Score / GCS**
- If Suspected Acute Stroke < 4.5 Hours: Call **Stroke Alert** to ER
- Keep Patient **NPO**
- **Elevate Patient's Head** 30-45 degrees
- Obtain/Transmit **12-lead EKG** to ER
- **Expedite Transport**
- On Arrival to ER: Coordinate **Immediate CT** with ER RN/MD

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Tachydysrhythmia

- If Needed: **Start CPR**
- Turn on Defibrillator / **Apply Pads** to Patient
- If VF/VT/Polymorphic VT/Torsades w/ NO Pulse: **Defibrillate**
4J/kg (adult 200J)
- If VT/SVT w/Pulse: **Synchronized Cardioversion**
1J/kg then 2J/kg
(adult 100J/200J – Afib requires 200J)
- **IV/IO** access
- If Torsades w/Pulse: **Magnesium** 50mg/kg
(adult 2g) IV/IO over 20 min
- If Persistent VT w/Pulse: **Amiodarone** 150mg IV –AND–
Amiodarone-drip 1mg/min
- Obtain **12-lead EKG** / **Treat STEMI** if present
- Provide **NS Bolus** 30ml/kg (unless Pulmonary Edema present)
- **Treat Dysrhythmia Cause** if identified
(Hs/Ts, Pain, Anxiety, Fever)
- **Expedite Transport** and **Call ER**

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Trauma

- If Major Bleeding: **Tourniquet(s), Packing, Pressure**
- If Compromised Airway: **Jaw Thrust, Suction, OPA**, or **ET Intubation** for GCS < 8
- If Failed Airway:
 - Age < 8-10 yo: **Needle Cricothyrotomy**
 - Age > 8-10 yo: **Bougie-assisted Cricothyrotomy**
- If Breathing Compromise:
 - Tension Pneumothorax: **Needle Decompression**
- Give **Oxygen** via: NC/NRB/CPAP/BVM or ET Tube
Goals – SpO₂ 94-99%, EtCO₂ 35-40
- If Threat to Circulation: **Pelvic Wrap, Traction Splint**
if indicated
- Proximal **IV/IO x2** – Titrate **NS** to good perfusion –OR– Target SBP:
 - Without TBI: SBP 80-90 mmHg
 - With TBI: SBP 110 mmHg
- Treat Pain: **Ketamine** IV/IO/IN
Fentanyl IV/IO/IN (CAUTION if hypotension present)
- Address Orthopedic Injuries: **C-Collar / Spinal Protection**
Reduce Dislocations / Splint Fx
- **Expose** Entire Patient
- Perform Neurovascular Exam: **GCS/CSM**
- Keep Pt Warm: **Space Blanket, Warm Packs, Cabin Heat**
- **Expedite Transport** and **Call ER**

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Mat Su Borough EMS

Patient Care Protocols

REVISED March 2017



Initial Patient Care Protocol

REVISED March 2017

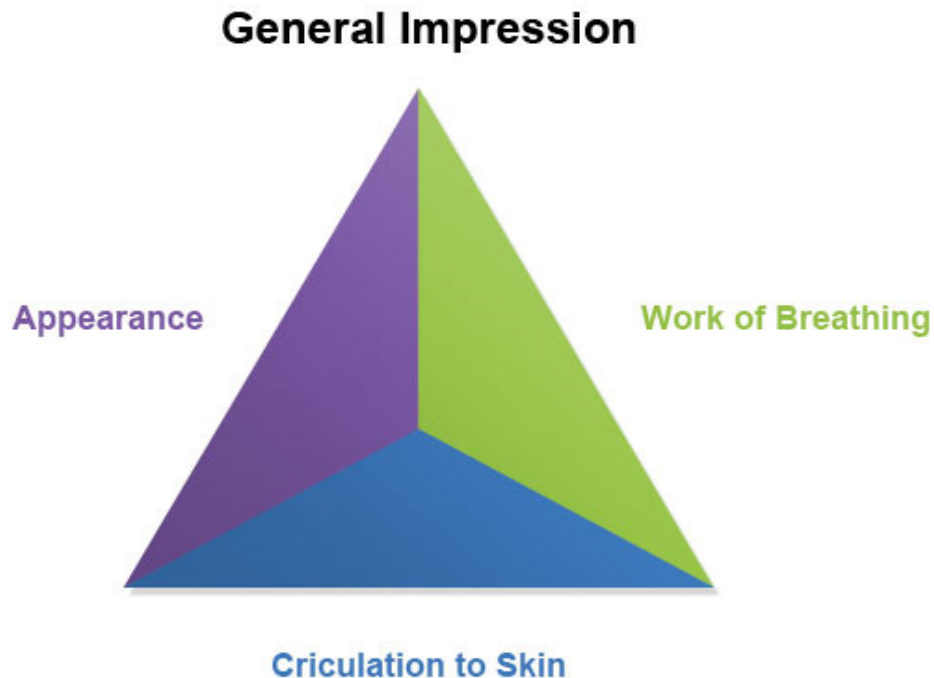
Scene Size Up:

- Review dispatch information.
- As you approach the scene consider safety for yourself and your patient including tactical considerations and potential for interpersonal violence.
- Observe universal precautions.
- After determining number and location of patients, consider need for additional resources.
- Determine mechanism of injury and/or nature of illness.
- Reassess the situation often.

Primary Survey:

For adult and pediatric patients, use the Patient Assessment Triangle, to obtain immediate general impression of patient and determine severity of illness/injury.

- Determine responsiveness.
- Assess airway.
- Assess breathing.
- Assess circulation.



Initial Patient Care Protocol - continued

Initial Interventions:

- Control severe external hemorrhage.
- Treat airway/breathing problems.
- Establish IV/IO access if indicated.
- Treat circulation problems (first priority in cardiac arrest).
- Apply cardiac monitor if indicated.
- Apply pulse oximetry and EtCO₂ monitor if available and indicated.
- Treat pain or nausea if present.
- Maintain normal body temperature.
- Undress patient if possible to facilitate thorough exam.
- Be alert for concealed weapons; secure if discovered.

Secondary Survey:

- Perform secondary assessment after initial interventions are completed.
- Address problems identified in the secondary survey utilizing the appropriate protocol(s).
- Obtain complete vital signs including temperature; also assess blood glucose as indicated.
- Assess for disability: neurologic exam and extremity neurovascular exam.
- If not already performed, obtain a chief complaint and more detailed history of present illness and past medical history (SAMPLE and OPQRST).

Ongoing Assessment:

- Repeated evaluation of patient.
- Vitals every 5 minutes for unstable patients
- Vitals every 15 minutes for stable patients.
- Assess effect of interventions.
- Anticipate and prepare for possible patient decompensation.

Important:

- Make reasonable effort to transport patient's medication containers, as well as the list of medications and doses, if at all possible.

Transport / Contact Medical Control:

- Patients should be transported as soon as possible to the closest appropriate medical facility.
- Immediate transport with treatment en route is recommended for patients with significant trauma or unstable airways.
- Consider air transport for patients with significant traumatic brain injury or other severe illness / injury if needed to reduce transport time to ER.
- Tier with an appropriate service if level of care indicates or assistance is needed and can be accomplished in a timely manner.
- Contact medical direction if needed for orders not specified in protocols.
- For seriously injured or critically ill patients, give a brief initial report from the scene when possible, with a more detailed phone or radio report given to receiving ER while en route, no less than 10 minutes prior to arrival.

Abdominal Pain

(non-traumatic)

REVISED March 2017

Follow Initial Care Protocol for all Patients

Basic Care Guidelines

Abdominal pain is considered a time critical, potentially life threatening emergency in the prehospital setting.

Expedite transport and prepare for patient decompensation.

Give nothing by mouth.

Advanced Care Guidelines

IV/IO access, prefer proximal large bore IV.

Consider 20ml/kg fluid bolus if indicated.

Evaluate the need for pain and nausea control.

Acute Coronary Syndrome

REVISED March 2017

IF STEMI: See Checklist

Follow Initial Patient Care Protocol.

Consider ACS and acquire/transmit prompt 12-lead EKG if:

- Prior history of ACS and same or similar symptoms as prior event(s)
- Non-traumatic chest or epigastric discomfort with or without radiation, including: crushing pain, pressure, tightness, heaviness, cramping, burning, and aching.
- Shortness of breath, nausea/vomiting, diaphoresis, palpitations, irregular pulse, arrhythmia, syncope, near-syncope, indigestion, and belching.

Basic Care Guidelines

Place patient in position of comfort, loosen tight clothing and provide reassurance.

If patient is complaining of shortness of breath, has signs of respiratory distress and pulse oximetry of less than 94% then titrate oxygen to maintain a saturation of 94-99%

Have patient chew aspirin 324 mg IF:

- Hx, symptoms, and/or EKG suspicious for ACS
- Patient is alert and oriented
- Patient has no allergy to aspirin.

An initial management goal should be to identify STEMI and rapidly transport the patient with cardiac symptoms to the facility most appropriate for their needs.

Assist the patient with their prescribed nitroglycerin IF:

- It is the patient's own prescribed nitroglycerin, and
- Systolic blood pressure > 110, and
- Patient is NOT experiencing marked bradycardia or tachycardia.
- Important: If patient is taking erectile dysfunction drugs, contact medical direction prior to giving nitroglycerin.
- Repeat nitroglycerin at 3-5 minute intervals if pain continues and systolic blood pressure is >110 (maximum three doses total); recheck vital signs between each dose.

If systolic blood pressure < 110 or patient does not have prescribed nitroglycerin, transport promptly, continuing assessment and supportive measures.

Further assess the patient and evaluate the nature of pain (unless other treatment priorities exist).

Acute Coronary Syndrome - continued

Advanced Care Guidelines

If capability exists, obtain a 12-Lead EKG and transmit to the receiving facility and/or medical control for interpretation as soon as possible.

Establish IV/IO, prefer proximal large bore IV; avoid right wrist.

Monitor EKG and treat dysrhythmias following appropriate protocols, referencing AHA guidelines. For symptomatic bradycardia or tachycardia see appropriate Checklist.

If patient is taking erectile dysfunction medication, and has no acute CHF, start NS 250 ml bolus prior to nitroglycerin. Be alert and prepared to treat hypotension.

Administer nitroglycerin (tab or spray) 0.4 mg SL –IF–

- Systolic blood pressure > 110, and
- Patient is NOT experiencing marked bradycardia or tachycardia.
- Important: If patient is taking erectile dysfunction drugs, contact medical direction prior to giving nitroglycerin.
- Repeat nitroglycerin at 3-5 minute intervals if pain continues and systolic blood pressure >110. Repeat vital signs before each dose.
- In patients with ACS and marked hypertension, avoid excessive drops in blood pressure (>30mmHg drop in SBP or 25% drop in MAP).
- Up to a maximum of three doses should be given before administering fentanyl.

If pain continues after nitroglycerin x3 and systolic blood pressure remains > 110 give fentanyl 0.5-1.5 micrograms/kg IV/IO.

Airway

REVISED March 2017

Follow Initial Patient Care Protocol.

CARE GUIDELINES

Spontaneous Breathing WITH Adequate Ventilation:

Maintain oxygenation with cannula or mask if oxygen saturations are below 94% titrate to 94% - 99% (89-94% if COPD).

Spontaneous Breathing WITHOUT Adequate Ventilation:

If infant or child with suspected partial upper airway obstruction be very cautious in approaching patient, allow to assume position of comfort, often in parent's arms. Attempt blow by oxygen and/or blow by nebulized 1:1000 epinephrine, 5ml, administered by parent.

Position airway; assess for swelling, stridor or foreign body.

If foreign body obstruction, use age/situation appropriate method to dislodge (Heimlich, back blows, abdominal thrusts, chest compressions).

After airway is clear, assist ventilation with an appropriate adjunct and oxygen.

If adequate ventilation is not maintained or rapid decompensation, proceed to an advanced airway.

Not Breathing:

Open airway with head tilt, chin lift (jaw thrust if suspected c-spine injury) If successful, assist ventilations at an adequate rate and depth then reassess.

If attempt to open airway is not successful, reposition, check airway for obstruction and clear if needed, use Magill forceps with direct vision if needed to remove obstructing object.

After airway is clear, assist ventilation.

If adequate ventilation is not maintained, proceed to an advanced airway.

If complete foreign body airway obstruction below vocal cords, attempt to push distally with styleted endotracheal tube and then ventilate patient.

If failed airway: < 8-10 year old: needle cricothyrotomy;
>8-10 year old: bougie assisted surgical cricothyrotomy.

Allergic Reaction

REVISED March 2017

IF SERIOUS SYMPTOMS: See Checklist

Follow Initial Patient Care Protocol.

Care Guidelines

Assess airway via Airway Protocol.

If the patient has a physician prescribed auto-injectable epinephrine assist with administration and monitor for signs of anaphylaxis.

For isolated mild to moderate urticaria provide supportive care, frequent reassessment, and for patients > age 6, consider diphenhydramine IV 1mg/kg (adult 25mg)

For severe urticaria see Anaphylaxis Checklist

Altered Mental Status

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Assess ABCs, VS, temperature, assess for focal neurological deficit.

Obtain blood glucose.

If BGL <60, conscious & able to swallow, >2 yo, administer glucose 15 grams by mouth.

Advanced Care Guidelines

IV/IO access, cardiac monitor: if dysrhythmia, use appropriate protocol

If blood sugar less than 60 mg/dL administer D10 2ml/kg IV; stop if mental status normalizes and glucose >60.

If no vascular access administer glucagon 0.025mg/kg IM (adult 1 mg).

If suspected opioid OD, give naloxone 0.1 mg/kg IV/IO (typical adult dose 0.1- 0.4mg –OR- 2mg IN). If no response may repeat in 3-5 minutes. Dosing dependent on severity of symptoms.

IMPORTANT: Fentanyl/carfentanil overdoses may require large doses of naloxone, up to 10-16mg total, plus CPR, fluid boluses, vasopressors, and intubation.

If suspected stroke, See Checklist.

If dehydration, shock or significant hyperglycemia, give 20ml/kg NS bolus

If shock persists, may repeat bolus x2 as needed.

Evaluate the need for intubation.

Amputated Part

REVISED March 2017

Follow Initial Patient Care Protocol.

Follow Trauma Protocol if indicated.

Care Guidelines

Locate amputated part if possible.

Wrap amputated part in saline moistened gauze.

Place wrapped amputated part in empty plastic bag.

Place the plastic bag with the amputated part in a water and ice mixture.

Do not use ice alone or dry ice.

Label with patient name, the date, and time.

Make sure the part is transported with the patient, if possible.

Asthma and COPD

REVISED March 2017

IF SERIOUS SYMPTOMS: See Checklist (Asthma or COPD)

Follow Initial Patient Care Protocol.

Basic Care Guidelines

If patient has a physician prescribed hand-held metered dose inhaler:

Assist patient in administering a single dose if they have not done so already.

Reassess patient and assist with second dose if necessary.

Titrate oxygen if needed to maintain saturation >94% (89% if COPD).

Evaluate the need for CPAP, if available.

Advanced Care Guidelines

Evaluate the need for epinephrine 1:1,000 concentration 0.01mg/kg IM (adult 0.5 mg).

Albuterol up to 0.5 mg/kg/hr (adult 20) continuous or intermittent nebulized.

Ipratropium 0.5 mg (0.25 mg if < 30 kg) every 20 minutes up to 3 doses.

Evaluate the need for CPAP, if available.

IV/IO access, prefer proximal large bore IV.

Evaluate the need for intubation.

Behavioral Emergencies

REVISED March 2017

Follow Initial Patient Care Protocol.

Maintain situational and tactical awareness.

If there is evidence of immediate danger, protect yourself and others by summoning law enforcement to help ensure safety.

Be vigilant for potential concealed weapons.

Basic Care Guidelines

Consider medical or traumatic causes of behavior problems.
Keep environment calm, use verbal de-escalation.

Advanced Care Guidelines

For severe anxiety, EITHER consider midazolam 0.05mg/kg (adult 2.5 mg) IV/IO/IN or 0.1mg/kg IM (adult 5-10 mg)

May repeat IV/IO dose once in 10 minutes if needed

-OR-

For excited delirium, consider ketamine 1.5 mg/kg IV/IO or 4mg/kg IM

Burns

REVISED March 2017

IF SERIOUS BURN: See Checklist

Follow Initial Patient Care Protocol.

Continually monitor the airway for evidence of obstruction.

Do not use any type of ointment, lotion, or antiseptic.

Maintain normal patient temperature.

Transport according to Hospital Destinations, Flight Guidelines

Thermal Burns:

Basic Care Guidelines

Stop the burning process.

Estimate percent of body surface area injured and depth of injury.

If wound is less than 10% body surface area, cool burn with normal saline.

Remove clothing and jewelry and expose area.

Cover the burned area with plastic wrap or a clean dry dressing.

Advanced Care Guidelines

Establish IV/IO access, prefer proximal large bore IV through non-burned skin.

Refer to Pain Control protocol.

Burns - continued

Chemical Burns:

Basic Care Guidelines

Avoid contamination of crew.

Brush off powders prior to flushing.

Immediately begin to flush with water, unless known contraindication (eg. sodium metal, lithium).

Continue flushing the contaminated area when en route to the receiving facility.

Do not contaminate uninjured areas while flushing.

Attempt to identify contaminant.

Advanced Care Guidelines

IV/IO access, prefer proximal large bore IV through non-burned skin.

Refer to Pain Control protocol.

Toxin in Eye:

Basic Care Guidelines

Flood eye(s) with room temperature water or NS and have patient blink frequently during irrigation.

Use caution to not contaminate other body areas.

Attempt to identify contaminant.

Advanced Care Guidelines

IV/IO access, prefer proximal large bore IV.

Refer to Pain Control protocol

Burns - continued

Electrical Burns:

Basic Care Guidelines

Treat soft tissue injuries associated with the burn with dry dressing.

Treat for shock if indicated.

Monitor cardiac rhythm.

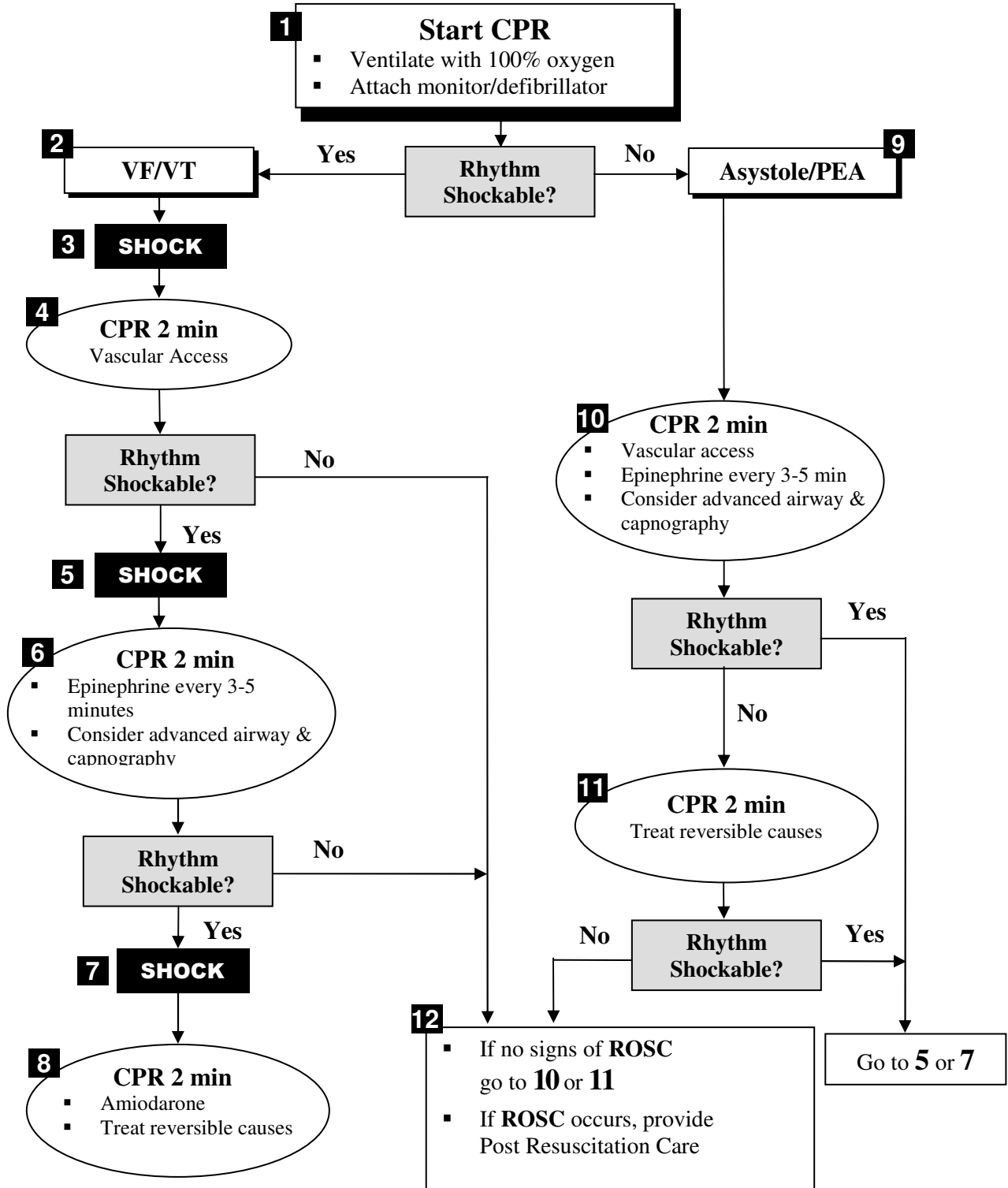
Advanced Care Guidelines

IV/IO access, prefer proximal large bore IV through non-burned skin.

Refer to Pain Control protocol.

Cardiac Arrest Management – Adult/Pediatric

REVISED March 2017



Cardiac Dysrhythmias

REVISED March 2017

IF SERIOUS DYSRHYTHMIA: See Checklist

Follow Initial Care Protocol for all Patients.

Cardiac Dysrhythmias with NO Pulse:

Basic Care Guidelines

Perform high quality CPR immediately, apply AED and follow device prompts.

Advanced Care Guidelines

Perform high quality CPR immediately, apply monitor and check rhythm as soon as possible

VF/VT or pulseless Torsades de Pointes:

Defibrillate 4J/kg (adult 200J), immediately resume CPR for two minutes.

Organize therapies such as rhythm and pulse checks, defibrillation, IV/IO access, medication administration and airway management around two minute cycles of CPR.

Evaluate for treatable causes.

Administer epinephrine 1:10,000 concentration 0.01 mg/kg IV/IO (adult 1mg) every 3-5 minutes

Administer amiodarone 5mg/kg (adult 300 mg) IV/IO, may repeat 5mg/kg every 5 minutes x 2 for pediatric or 150 mg once for adult.

If Torsades de Pointes give magnesium sulfate 2g IV/IO push

Asystole/PEA:

Organize therapies such as rhythm and pulse checks, IV/IO access, medication administration and airway management around two minute cycles of CPR.

Evaluate for treatable causes (H's & T's)

Administer epinephrine 1:10,000 concentration 1 mg IV or IO every 3-5 minutes, as close to the rhythm check as possible

Cardiac Dysrhythmias (continued)

Cardiac Dysrhythmias with Pulse:

Basic Care Guidelines

Provide supportive care. Transmit EKG to receiving facility.

Advanced Care Guidelines

Bradycardia:

IV/IO access

Place defibrillation pads – prepare to pace, if needed.

Consider hyperkalemia (based on EKG changes / clinical situation)

Atropine is not indicated for: Type 2 second degree AV block, 3rd degree AV block, ventricular escape beats and patients with heart transplants. It should be used with caution in acute coronary syndrome. Large doses may be required in organophosphate poisoning/chemical weapons exposure.

Tachydysrhythmia: (rates greater than 150 Adult, 180 Child, 210 Infant)

- If patient Stable with Regular Wide QRS:
 - Consider amiodarone 5mg/kg (adult 150 mg) over 10 minutes IV/IO
- If patient Stable with Irregular Wide QRS:
 - If Torsades de Pointes w/pulse, magnesium 50mg/kg IV/IO over 5-20 minutes (adult 2g)
 - If A-fib with aberrancy or uncertain rhythm – call Medical Control
- If patient Stable with Narrow QRS:
 - Evaluate for treatable causes (H's & T's, pain, anxiety, fever, etc...)
 - Perform vagal maneuvers with passive leg raise.
 - Consider 20ml/kg fluid bolus if no CHF.

Child Abuse - Suspected

REVISED March 2017

Follow Initial Patient Care Protocol.

Care Guidelines

Approach child slowly, at their height level, to establish rapport (except in life-threatening situations), then perform exam.

Treat obvious injuries according to appropriate protocol.

Genital exam only if indicated in the presence of suspected serious injury.

Interview parents separate from child, if possible.

Transport if permitted by parents.

If parents do not allow transport, notify law enforcement for assistance.

Carefully document observations and factual information in ePCR.

Childbirth / Newborn Care

REVISED March 2017

IF NEONATAL RESUSCITATION NEEDED: See Checklist

Follow Initial Patient Care Protocol.

Normal Delivery:

Care Guidelines

If delivery is imminent with crowning, commit to delivery on site and prepare OB kit.

Place drapes below mother's buttocks if time permits.

If the amniotic sac does not break, or has not broken, use a clamp to puncture the sac and push it away from the infant's head and mouth as they appear.

Guide and support delivery of newborn head through perineum.

Once head delivers, pass a finger around the neck to ensure umbilical cord does not encircle newborn's neck.

If cord is felt, slip over head prior to delivery of body.

If cord is too tight; place 2 clamps and cut between clamps prior to delivery.

Guide delivery of newborn body, applying gentle downward traction to deliver anterior shoulder, then gentle upward traction to deliver posterior shoulder.

Note time of delivery.

Using 2 clamps, clamp cord about 3-4 inches from umbilicus and another inch distally.

Cut between clamps.

Begin drying and stimulating newborn.

Wait for placenta to deliver; a gush of blood may precede delivery.

Patient may express an urge to bear down and may push gently to facilitate delivery.

Avoid putting excess traction on cord.

Note whether placenta is intact and transport with patients.

Once placenta is delivered begin uterine massage at fundus until it is firm.

Forceful massage and/or bimanual uterine compression may be required in cases of significant postpartum hemorrhage.

Childbirth / Newborn Care - continued

Abnormal Deliveries:

Breech Delivery: (Buttocks presentation)

Allow spontaneous delivery.

Support infant's body as it's delivered.

If head delivers spontaneously, follow Normal Delivery guidelines.

If head does not deliver within 3 minutes, insert gloved hand into the vagina, keeping your palm toward baby's face; form a "V" with your fingers and push wall of vagina away from baby's face, thereby creating an airway for baby.

Do not remove your hand until relieved by advanced EMS or hospital staff.

Presentation of any fetal part besides head or buttocks is an emergency heralding a complex delivery: call medical control and expedite transport.

Shoulder Dystocia:

Inability to deliver anterior shoulder may require a series of maneuvers to allow successful, timely delivery of newborn:

Place mother supine with thighs hyperflexed, knees toward ears.

Apply suprapubic pressure with provider pushing down toward maternal spine, using steady pressure first, then rocking pressure if needed.

Allowing mother to assume a hands and knees position may allow successful delivery.

Reaching in the vagina to gently extract the fetal anterior arm may create more space.

Manually rotating infant 180 degrees in birth canal may create more space.

Manually fracturing the anterior clavicle as a second to last resort may allow successful delivery.

Replacing infant head immediately prior to emergency cesarean section is a final resort.

Shoulder dystocia is a time critical emergency: expedite transport and contact medical control if possible.

Childbirth / Newborn Care – continued

Abnormal Deliveries:

Cord Prolapse:

If umbilical cord precedes newborn, push firmly on newborn presenting part to prevent cord compression maintaining position throughout transport, tell mother not to push. Expedite transport and call ER.

Perineal Tear:

Apply direct pressure.

Uterine Inversion:

Attempt to replace uterus by gently pushing it back up into the vagina; if unable, cover with moist dressing.

Newborn Care:

Place newborn on mother's abdomen, if appropriate.

Dry newborn, gently stimulate, wrap in blanket or towel (plastic wrap if premature), cover scalp to keep warm.

Note APGAR scores, obtain vital signs.

Monitor clinical status and vital signs, with frequent reassessment.

If thick meconium and resuscitation required, intubate newborn, using meconium aspirator while withdrawing endotracheal tube and repeating if necessary. If newborn heart rate slows or oxygen saturation drops, ventilate patient.

Congestive Heart Failure

REVISED March 2017

IF SERIOUS SYMPTOMS: See Checklist

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Place patient in position of comfort, typically sitting up, loosen tight clothing and reassure.

Maintain oxygenation with cannula or mask if SpO₂ < 94% titrate to 94 - 99%

Transport immediately if the patient has any of the following:

- No history of cardiac problems.
- Systolic blood pressure < 110.
- A history of cardiac problems, but does not have nitroglycerin.

If capability exists, obtain a 12-lead EKG and transmit it to the receiving ER.

Contact medical direction for orders.

If the patient has been prescribed nitroglycerin (patient's NTG only) and systolic blood pressure > 110, give one dose. If patient is taking erectile dysfunction drugs such as Viagra, Levitra or Cialis, contact medical direction prior to giving nitroglycerin.

Repeat one dose of nitroglycerin in 3-5 minutes if respiratory distress continues, systolic blood pressure > 110, and authorized by medical direction, up to a maximum of three doses.

Reassess patient and vital signs after each dose of nitroglycerin.

Further assess the patient and evaluate possible causes (unless other treatment priorities exist).

Congestive Heart Failure - continued

Advanced Care Guidelines

If not already preformed, obtain a 12-lead EKG and if possible transmit it to the receiving facility and/or medical control.

Establish IV access at TKO rate unless otherwise ordered or indicated.

If SBP > 110, give nitroglycerin spray 0.4mg SL every 5 minutes with repeat vital signs between doses until improvement of respiratory status, resolution of chest pain, or SBP = 110. Hold for SBP < 110.

Be very cautious with nitroglycerin use if the patient has been taking erectile dysfunction medication; blood pressure may drop precipitously, requiring IV fluid bolus.

Use CPAP for respiratory distress.

Monitor cardiac rhythm and treat dysrhythmias according to appropriate protocol or Checklist.

Drowning Event

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Establish patient responsiveness.

If cervical spine trauma is suspected, manually stabilize c-spine.

Assess airway for patency, protective reflexes and the possible need for advanced airway management. Look for signs of airway obstruction.

Open the airway using head tilt/chin lift if no spinal trauma is suspected, or modified jaw thrust if spinal trauma is suspected.

Suction as necessary.

Consider placing an oropharyngeal or nasopharyngeal airway adjunct if the airway cannot be maintained with positioning and the patient is unconscious.

Assess breathing. Obtain pulse oximeter reading.

If breathing is inadequate, assist ventilation using an appropriate adjunct with high-flow oxygen.

Assess circulation and perfusion.

If breathing is adequate, place the patient in a position of comfort and maintain oxygenation with NC/NRB/CPAP titrating oxygen to maintain saturation 94-99%

Assess mental status and neurologic exam.

If spinal trauma is suspected, continue manual stabilization, apply a rigid cervical collar, and immobilize the patient on a scoop stretcher or similar device.

Obtain core temperature, warm patient if hypothermic. If suspected brain injury and hypothermic, avoid hyperthermia and contact medical control for temperature target.

Monitor cardiac rhythm and vital signs; acquire and transmit 12-lead EKG.

Drowning Event - continued

Advanced Care Guidelines

If the airway cannot be maintained by other means, including attempts at assisted ventilation, or if prolonged assisted ventilation is anticipated, place advanced airway, confirming placement of endotracheal tube or supraglottic airway using clinical assessment and EtCO₂ monitoring.

Consult the appropriate protocol for treatment of specific dysrhythmias.

IV/IO access.

Perform focused history and detailed physical examination en route to the hospital, considering medical and traumatic causes and effects of drowning event.

Dystonic Reaction

REVISED March 2017

Follow Initial Care Protocol for all Patients.

Basic Care Guidelines

Evaluate airway patency.

Allow patient to assume position of comfort, provide reassurance.

Advanced Care Guidelines

Patient > 6 years old: diphenhydramine 1mg/kg IV/IO/IM (adult 25-50 mg).

Frostbite

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Move the patient to warm environment.

Protect the cold injured extremity from further injury, elevate if possible.

Remove wet or restrictive clothing.

Do not rub or massage.

Do not re-expose to the cold.

Remove jewelry.

Advanced Care Guidelines

IV/IO access.

Refer to pain control protocol.

Heat Illness

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Remove from the hot environment and place in a cool environment.

Loosen or remove clothing.

Moisten patient with water and promote evaporative cooling.

If the patient is unresponsive or is vomiting, position patient appropriately, manage airway and expedite transport to ER.

Advanced Care Guidelines

IV/IO access.

Monitor EKG and treat dysrhythmias following the appropriate protocol(s).

Check glucose and treat hypoglycemia if BGL < 60.

Hypothermia

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Remove wet clothing.

If able, check core temperature.

Handle patient very gently.

Increase ambient temperature >90 degrees F, use blankets or sleeping bag for patient as appropriate.

Monitor cardiac rhythm and vital signs.

Advanced Care Guidelines

IV/IO access

20ml/kg bolus warmed IV fluid (as close to 104°F as possible) may repeat x2, titrated to good perfusion

Check glucose, treat if BGL <60

Cardiac dysrhythmias in the setting of severe hypothermia are common and generally should be treated by rewarming the patient if perfusing.

If hypothermic cardiac arrest:

- Start CPR
- Consider defibrillation x1 and IV/IO epinephrine x1
- If unsuccessful, continue CPR with rewarming
- Prolonged resuscitation is indicated unless definitive signs of apparent death are present
- Expedite transport with resuscitation in progress and call Medical Control

Left Ventricular Assist Device (LVAD) Problem

REVISED March 2017

Follow Initial Care Protocol for all Patients.

Patients with LVAD and their families / caretakers have been given extensive education on troubleshooting their devices. Enlist their help. Chest compressions may cause fatal bleeding.

Care Guidelines

Call **801-581-2121**; ask to page On-Call University of Utah LVAD Coordinator.

Auscultate left lower chest: if humming sound, pump is running.

Patient may not have palpable pulse, measurable automated BP or pulse ox; blood pressure may be obtainable by doppler; clinically evaluate perfusion.

Pump IS Running & Controller is NOT alarming:

No chest compressions! All other ACLS protocols OK.

Treat patient problem.

Pump IS Running & Controller IS alarming: (continuous tone = urgent, beeping = warning).

Check power source.

Check cable connections.

Change controller if instructed.

Pump NOT Running: (no chest hum, controller alarming, continuous tone = urgent)

Attempt to restart pump before CPR! Other ACLS protocols OK.

Check power source.

Check cable connections.

Change controller if instructed.

Expedite transport and call ER.

Nausea & Vomiting

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Give nothing by mouth.

Advanced Care Guidelines

Consider fluid bolus IV/IO if evidence of hypovolemia and lung sounds are clear.

If pediatric patient > 2 years old with nausea/vomiting, consider ondansetron 0.15mg/kg IV/IO/IM/SL (max 4mg)

If adult patient with nausea/vomiting, consider ondansetron 4mg IV/IO/IM (may repeat after 20-30 minutes) –OR- 8mg SL. Avoid in first trimester pregnancy.

Consider advanced airway if patient is unable to protect airway.

Pain Control

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

First, attempt to manage all painful conditions:

Splint extremity injuries.

Place the patient in a position of comfort.

Advanced Care Guidelines

Use age appropriate pain scale.

Contact medical control for orders for pain control if patient < 2 year old.

Consider administration of pain medications for patients that have significant pain, do not have a decreased level of consciousness, are hemodynamically stable, and have oxygen saturations above 94%

Fentanyl 0.5-1.5 mcg/kg IV/IO/IN to a maximum of 100 micrograms.

If needed, may repeat in 10 minutes if stable vitals and respiratory status.

Administer naloxone 0.1mg/kg (typical adult dose 0.1- 0.4mg IV/IO –OR- 2mg IN) for respiratory depression from opioids. May repeat q3-5 minutes if needed.

AND/OR

Ketamine 0.1-0.3 mg/kg IV/IO or 1mg/kg IN

If needed, may repeat in 10 minutes if stable vitals and respiratory status.

The patient must have vital signs taken prior to each dose and be monitored closely. If at any time there is a decreased level of consciousness, decrease in oxygen saturation below 92%, or systolic blood pressure < 110, administration of pain medication must stop.

Poisoning

REVISED March 2017

Follow Initial Patient Care Protocol.

Identify contaminate and call Poison Control **1-800-222-1222**: follow directions given to provide care

Contact medical control as soon as possible with information given by Poison Control and care given.

Transport packaging from poisonous substance with patient if available / appropriate.

Monitor cardiac rhythm and vital signs.

Consider IV/IO access.

Care Guidelines

Ingested poisons:

Identify and estimate amount of substance ingested.

Inhaled poisons (including carbon monoxide):

Remove patient to fresh air.

Administer high flow oxygen.

Estimate duration of exposure to inhaled poison (check CO level).

Absorbed poisons:

Identify contaminant. If it will be a hazard to you, use protective gear and extreme caution.

Note: Tiny amounts of absorbed/ingested/inhaled carfentanil may be harmful/fatal to first responders

Injected poisons

Be alert for respiratory difficulty or vital sign instability.

Check patient for marks, rashes, or welts.

Try to identify source of injected poison.

Post Resuscitation with Return of Spontaneous Circulation

REVISED March 2017

Follow Initial Patient Care Protocol.

Basic Care Guidelines

Maintain SpO₂ 94 - 99%

Advanced Care Guidelines

Consider advanced airway.

Perform continuous cardiac monitoring – treat dysrhythmias per protocol

If available, perform waveform capnography, maintaining EtCO₂ 35-40 mmHg

If SBP < 90, NS 20ml/kg bolus, may repeat twice if needed.

If persistent hypotension or bradycardia, consider IV epi-drip 0.1-0.5 mcg/kg/min
(max 20mcg/min)

Avoid hyperthermia.

Obtain 12-lead EKG and transmit to ER.

Obtain glucose, if BGL < 60 give D₁₀ 2ml/kg IV or IO.

Treat seizures, if present.

Pregnancy Complication

REVISED March 2017

Follow Initial Care Protocol for all Patients.

Optimal care of the unborn fetus requires optimal care of the mother, whether the problem is medical, traumatic or obstetric. Displace uterus to the left in late term pregnancy to avoid compression of the inferior vena cava. Prevent and treat maternal hypotension or hypoxia aggressively with 20ml/kg fluid bolus(s) and high flow oxygen.

Care Guidelines

Cardiac arrest with potentially viable fetus: (>22 weeks gestation or fundus at or above umbilicus)

Follow appropriate BLS/ACLS protocols.

Stop magnesium, if infusing.

Remove fetal monitoring equipment prior to defibrillation if possible.

Auto-pulse is contraindicated in 2nd and 3rd trimester pregnancy.

Resuscitative emergency caesarian section may enhance survival of mother and fetus.

If traumatic arrest, c-section must be performed by physician within 5 minutes of maternal loss of vital signs to facilitate survival of fetus.

Bleeding and/or pain:

Could, depending on gestational age, represent ectopic pregnancy, spontaneous abortion, placenta previa, placental abruption, uterine rupture, or labor.

If preterm labor and authorized, obtain IV/IO access and give NS 20 ml/kg IV/IO.

Seizure: (In pregnancy and up to 6 weeks postpartum could be eclampsia, a life threatening emergency)

First line treatment of eclampsia, if glucose >60 = magnesium sulfate 4g IV/IO over 20 min.

Provide cardiac monitoring with frequent assessment of blood pressure and respiratory status.

Discontinue magnesium for hypotension, bradycardia, conduction block or respiratory compromise.

Give NS 20ml/kg IV for hypotension.

Treat respiratory compromise using methods appropriate to clinical status.

If cardiac instability, give calcium chloride 1 amp slow IV/IO.

If status epilepticus, -ALSO- see Seizure Checklist.

Seizure

REVISED March 2017

IF STATUS EPILEPTICUS: See Checklist

Follow Initial Patient Care Protocol.

Care Guidelines

Protect airway.

Check glucose, if BGL < 60 D₁₀ 2ml/kg IV/IO or glucagon 0.025 mg/kg IM (adult 1mg).

Monitor cardiac rhythm and vital signs.

IV/IO access if authorized.

If febrile and conscious, give acetaminophen 15mg/kg PO (adult 1000mg).

Sexual Assault

REVISED March 2017

Follow Initial Patient Care Protocol.

Care Guidelines

Identify yourself to the patient, assure patient that they are safe and in no further danger.

Do not burden patient with questions about the details of the assault.

Be alert to immediate scene and document what you see.

Do not disturb any evidence unless necessary for treatment of patient. If necessary to disturb evidence, document why and how it was disturbed.

Preserve evidence; such as clothing you may have had to remove for treatment, and make sure that it is never left unattended at any time, to preserve "chain of evidence."

Contact law enforcement if not present.

Treat injuries as indicated.

Be alert for signs and symptoms of strangulation, which may be subtle.

Shock

REVISED March 2017

Also See Appropriate Checklist (Trauma, STEMI, Tachydysrhythmia, Anaphylaxis, or Sepsis)

Follow Initial Care Protocol for all Patients

Maintain SpO₂ 94 - 99%

Hypovolemic Shock – External Bleeding:

Basic Care Guidelines

Control bleeding with direct pressure. Large gaping wounds may need packing, application of a bulky sterile gauze dressing and direct pressure by hand.

Consider application of tourniquet if unable to control extremity hemorrhage with direct pressure.

Splint extremity fractures; traction splint for femur fracture.

Keep patient warm.

Advanced Care Guidelines

IV/IO x2

If radial pulse is absent or SBP < 80-90, give NS 5ml/kg bolus, (adult 250ml) Repeat as needed until radial pulse returns or SBP = 80-90.

Hypovolemic Shock – Internal Bleeding:

Basic Care Guidelines

Apply pelvic binder for suspected pelvis fractures.

Apply traction splint for femur fracture.

Advanced Care Guidelines

IV/IO x2

If radial pulse is absent or SBP < 80-90, give NS 5ml/kg bolus (adult 250ml) Repeat as needed until radial pulse returns or SBP = 80-90.

Shock - continued

Cardiogenic Shock:

Basic Care Guidelines

Obtain a 12-lead EKG and transmit to ER

Advanced Care Guidelines

IV/IO x2

If SBP < 90, give NS 5-10 ml/kg (adult 250-500 ml) bolus with frequent reassessment of BP, HR and perfusion (may repeat bolus if needed).

If persistent hypotension or poor perfusion, epinephrine 0.05- 0.1 mcg/kg/min (max 10mcg/kg)

Obstructive Shock – Tension Pneumothorax:

Basic Care Guidelines

Place in position of comfort; administer high flow oxygen by NRB mask.

Expedite transport.

Advanced Care Guidelines

Perform needle decompression.

IV/IO x2

Obstructive Shock – Pericardial Tamponade:

Basic Care Guidelines

Expedite transport – Monitor vital signs.

Advanced Care Guidelines

IV/IO x2

Give 20ml/kg NS bolus. Repeat as needed to maintain SBP > 90.

If PEA arrest occurs, and provider is authorized: perform pericardiocentesis.

Shock - continued

Obstructive Shock – Pulmonary Embolus:

Basic Care Guidelines

Monitor vital signs – Expedite transport.

Advanced Care Guidelines

Give NS 20 ml/kg bolus. Repeat as needed to maintain SBP > 90.

Obtain 12-lead EKG and transmit to ER.

If persistent SBP < 90 after adequate fluids, epinephrine 0.05-0.1 mcg/kg/min (max 10mcg/min)

Distributive Shock – Neurogenic:

Basic Care Guidelines

Place supine – Keep patient warm.

Advanced Care Guidelines

Give NS 20 ml/kg bolus. Repeat as needed to maintain SBP > 90.

If symptomatic bradycardia, consider atropine 0.02mg/kg IV/IO (min 0.1 mg, adult 0.5 mg) q5 minutes (max total: 1mg child, 3 mg adult) – AND/OR-

Transcutaneous Pacing

If persistent SBP < 90 after adequate fluid, epinephrine 0.1-0.5 mcg/kg/min (max 20 mcg/min)

Distributive Shock – Anaphylactic:

Care Guidelines

Assist patient with prescribed epinephrine auto-injector

Distributive Shock – Septic:

Basic Care Guidelines

Maintain SpO₂ 94-99%

Advanced Care Guidelines

If temperature > 100.4° F, give acetaminophen 15mg/kg PO (adult 1000mg).

Stroke

REVISED March 2017

IF ACUTE NEUROLOGIC SYMPTOMS < 4.5 HOURS: See Checklist

Follow Initial Patient Care Protocol.

Care Guidelines

Any acute neurologic deficit in the absence of hypoglycemia could be a stroke.

Perform “FAST” Cincinnati Prehospital Stroke Scale – checking: **F**acial droop,
Arm drift,
Speech, and
Time of onset.

Perform a more detailed neurologic exam if time and clinical status permit.

Notify receiving facility ASAP if suspected acute stroke < 4.5 hours since time of onset.

Check glucose, treat if BGL < 60.

Monitor patient's level of consciousness, neurologic exam, and vital signs frequently.

Consider air transport if needed to facilitate hospital arrival within 4.5 hours of symptom onset.

Trauma

REVISED March 2017

IF SERIOUS: See Checklist

Follow Initial Patient Protocol for all patients.

Follow Hospital Destinations and Flight Guidelines Protocols.

An important goal is to minimize scene time, ideally arriving at receiving facility within one hour of major trauma.

Hemorrhage Control:

Basic Care Guidelines

Control bleeding with direct pressure. Large gaping wounds may need application of a bulky sterile gauze pressure dressing and/or packing.

If direct pressure / pressure dressing is ineffective or impractical, apply a tourniquet to extremity.

If bleeding site is not amenable to tourniquet placement (i.e. junctional injury), consider packing with gauze, then direct pressure.

Advanced Care Guidelines

If radial pulse is absent or SBP < 80-90, give NS 5ml/kg bolus (adult 250ml) Repeat as needed until radial pulse returns or SBP = 80-90.

Chest Trauma:

Basic Care Guidelines

Seal open chest wounds immediately. Use occlusive dressing taped down. If the breathing becomes worse, loosen one side of the dressing to release pressure and then reseal.

Impaled objects must be left in place and should be stabilized by building up around the object with multiple trauma dressings or other cushioning material

Take care that the penetrating object is not allowed to do further damage.

Place patients with suspected pneumothorax on high flow oxygen by NRB mask.

Advanced Care Guidelines

If suspected pneumothorax with patient decompensation, perform needle decompression.

Trauma - continued

Abdominal Trauma:

Care Guidelines

Control external bleeding. Dress open wounds to prevent further contamination.

Evisceration should be covered with a sterile saline soaked occlusive dressing.

Impaled objects should be stabilized with bulky dressings for transport.

Head, Neck, and Face Trauma:

Basic Care Guidelines

Place the head in a neutral in-line position unless the patient complains of pain or the head does not easily move into this position.

Closely monitor the airway. Provide suctioning of secretions or vomit as needed. Be prepared to log roll the patient if they vomit.

Impaled objects in the cheek may be removed if causing airway problems, or you are having trouble controlling bleeding.

Reassess vitals and neurologic status frequently.

Consider eye shield for any significant eye trauma. If the globe is avulsed, do not put it back into socket; cover with moist saline dressing and avoid any pressure over it, cover with cup if available.

Advanced Care Guidelines

Consider intubation if GCS is less than 8 or airway cannot be maintained.

If patient is intubated or has an advanced airway, continually monitor EtCO₂ level and maintain at 35-40.

Trauma - continued

Extremity Injuries:

Care Guidelines

Assess extent of injury including documentation of neurovascular exam and any evidence of compartment syndrome.

Establish and maintain manual stabilization of injured extremity by supporting above and below the injury.

Remove or cut away clothing and jewelry.

Cover open wounds with a sterile dressing.

Do not intentionally replace any protruding bones.

Apply cold pack to area of pain or swelling.

If severe deformity or the distal extremity is cyanotic or lacks pulses, align with gentle traction before splinting, and transport immediately.

Obvious knee and ankle dislocations may be reduced with gentle, steady inline traction if provider has been instructed in technique; splint extremity after reduction and repeat neurovascular exam with documentation.

Special Considerations:

Elderly patients with significant mechanism of injury often have more severe injuries than are initially apparent. The elderly less able to compensate for hemodynamic instability, and are also more susceptible to morbidity/mortality resulting from traumatic injuries due to their underlying medical conditions, medications, etc...

Pediatric patients compensate for hemorrhage primarily by tachycardia, and will not manifest hypotension until late stages of shock.

Pregnant patients: Optimal care of the unborn fetus always requires optimal care of the mother. For trauma patients in late term pregnancy, displace of the uterus to the patient's left to optimize venous blood return. Aggressively treat hypoxia and significant hypotension.

Thoracic Injuries

REVISED March 2017

Flail Chest: When adjoining ribs or the sternum (or both) are fractured in more than one place, a segment of the chest wall will lose integrity. It may collapse during inspiration and expand during expiration (paradoxical movement) thus limiting the amount of air that is exchanged in the lungs, resulting in insufficient ventilation and oxygenation.

Pneumothorax: Presence of air in the pleural space (may cause partial or complete lung collapse)

Hemothorax: Presence of blood in the pleural space.

Tension

Pneumothorax: Pressure buildup from air leaking into the pleural space (through an injury in the lung or chest wall) that cannot escape. Increasing pressure within the pleural space causes a shift of the mediastinum away from the injured side, inhibited venous return to the right side of the heart, and shock.

Patients experiencing tension pneumothorax will present with:

- Severe respiratory distress
- Diminished or absent lung sounds on the affected side; hyper-resonance to percussion on affected side
- Hypotension/shock

Other signs that MAY accompany tension pneumothorax include:

- Subcutaneous emphysema
- Respiratory asymmetry (unequal chest rise)
- Jugular vein distention (JVD)
- Narrowed pulse pressure (SBP/DBP closer together than normal)
- Tracheal deviation (rare)

Sucking

Chest Wound: This occurs when air is drawn into the pleural space from an open chest wound by negative pressure during inhalation
(Open Pneumo)

Myocardial

Contusion: Bruising of the myocardium that may produce dysrhythmias

Cardiac

Tamponade: Accumulation of blood or fluid in the pericardial sac, produced by blunt or penetrating trauma. May be sufficient to impede cardiac filling and cause poor cardiac output leading to shock.

Signs of Cardiac Tamponade include:

- Muffled heart sounds
- Narrowed pulse pressure (SBP/DBP closer together than normal)
- Jugular vein distention (JVD) may also result

Thoracic Injuries - continued

**Aortic Rupture
or Laceration:**

The aorta is susceptible to injury as a result of a deceleration impact or severe compression of the chest, leading to dissection or rupture. Penetrating trauma to the aorta and uncontained rupture are nearly always fatal in the field.

**Tracheobronchial
Disruption:**

Often associated with subcutaneous emphysema, and respiratory distress. Endotracheal intubation relatively contraindicated if this condition known or suspected

**Pulmonary
Contusion:**

Bruising of the lung from blunt chest wall trauma, causing accumulation of blood and fluid in the lung tissue, often associated with hypoxia, respiratory distress, decreased lung sounds, and dullness to percussion on the affected side.

**Diaphragmatic
Rupture:**

Typically due to severe blunt abdominal trauma; with herniation of bowel or stomach through the diaphragm, limiting lung expansion, and causing respiratory distress / hypoxia. (Less likely symptomatic on the right side, due to protection from the liver)

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Mat Su Borough EMS

Operational and Logistical Guidelines

REVISED March 2017



Ambulance Staffing Requirements

REVISED March 2017

Mat Su Borough EMS is certified with the State of Alaska as an emergency medical service providing advanced life-support in accordance with 7 AAC 26.230.

To provide ALS Transports: MSB EMS must have an EMT-2 EMT-3 or MICP, and at least one other person trained to the EMT-1 level or higher when using a surface transportation vehicle (ambulance) and be available to respond to emergency calls 24 hours per day.

To provide BLS Transports: MSB EMS must have at least one EMT-1 and one other person to act as driver when using a surface transportation vehicle (ambulance) and be available to respond to emergency call 24 hours per day.

In some circumstances there may be times when a patient requires ALS Transport, but only BLS providers are available for initial response. In such cases, the BLS providers are expected to initiate BLS care, commence transport, and call for ALS intercept en route. The EMS Shift Supervisor should be called for assistance in such cases.

In rare circumstances there may be an appropriate ALS care provider available for the patient in the form of an EMT-2, EMT-3 or MICP, but the only other person available to drive the ambulance is an ETT or CPR-certified emergency vehicle driver. In such a circumstance, the providers are expected to initiate transport, provide appropriate ALS care en route and call for the additional EMT-1 or more advanced level provider to intercept en route and complete the requirement for a legal ALS transport crew. The EMS Shift Supervisor should be called for assistance in such cases.

In the event that a legal ALS crew cannot be assembled prior to completing the transport and transferring the patient to the receiving facility, the ambulance crew needs to ensure that the EMS Shift Supervisor is aware of the circumstances, and the EMS Chief must be provided with written documentation of the event as soon as possible.

Dispatch Priority

REVISED March 2017

Response Level	Who	Assigned Response Mode
Standby or Stage	BLS	All units – YELLOW
A (Alpha)	BLS ¹	All Units - YELLOW
B (Bravo)	BLS ¹	Closest BLS Unit – RED All Other Units – YELLOW
C (Charlie)	ACLS ^{1,2}	Closest BLS Unit – RED Closest ALS Unit – RED All Other Units – YELLOW
D (Delta)	ACLS ^{1,2}	All Units – RED
E (Echo)	ACLS ^{1,2,3}	All Units – RED

1. Automatic Rescue response to all traffic accidents. (A-E).
2. Response levels Charlie, Delta, and Echo require ACLS. If ACLS is not immediately available from the assigned ambulance service, ACLS will be automatically requested from the closest service area at time of dispatch.
3. Automatic Rescue response to all Echo calls for service.

Apparent Death

REVISED March 2017

Follow Initial Patient Care Protocol.

Apparent death indications are as follows:

- Signs of trauma which are conclusively incompatible with life.
- Physical decomposition of the body.
- Rigor mortis and/or dependent lividity.

If apparent death is confirmed, do not start resuscitation.

Use caution in the hypothermic patient.

Care Guidelines

Contact Medical Control for pronouncement of death.

In the extremely unusual situation where Medical Control cannot be contacted within a reasonable time, AS 18.08.089 authorizes an active EMT member of an EMS service to pronounce death as follows:

- Based on observed signs of apparent death listed above –OR–
- Failure of a normothermic patient to exhibit ROSC at any time during 30 minutes of properly performed resuscitation at the level to which the provider is authorized.

Note time of death, contact supervisor when able and document thoroughly in ePCR.

Law enforcement shall be contacted.

At least one EMS provider should remain at the scene until the appropriate authority is present.

Provide psychological support for grieving survivors.

Document the reason(s) no resuscitation was initiated.

Preserve the crime scene if present.

In all other circumstances (except where DNR/Comfort One protocol applies) full resuscitation must be initiated.

DNR Protocol

REVISED March 2017

Purpose:

This protocol is intended to avoid unwanted resuscitation by emergency care providers in the out-of-hospital setting for a qualified patient. There must be a valid order signed by the patient's attending physician or the presence of a DNR/Comfort One identifier indicating the existence of a valid DNR order.

DNR:

Means withholding any medical intervention that utilizes mechanical or artificial means to sustain, restore, or supplant a spontaneous vital function, including CPR, defibrillation, advanced airway. Individual patients may or may not wish to have other treatment depending on their specific advanced directives.

Patient criteria:

The following criteria are used to identify DNR patients:

- DNR/Comfort One order issued by a physician, seen at the time of arrest or known by EMS provider to exist and still be in effect.
- DNR/Comfort One ID: including wallet card, necklace, bracelet.
- Verbal verification by patient's physician.
- Verbal verification by EMS dispatch.
- If bystanders state patient has a DNR order, but no verification is present, begin resuscitation and contact medical control. If a valid DNR is subsequently produced, resuscitation may be discontinued.

Revocation:

A DNR order may be revoked under the following circumstances:

- The patient may revoke their own DNR at any time.
- The patient's physician or legal guardian may revoke a DNR if the patient is unable to communicate or lacks decision making capacity.
- The parent of a minor child may revoke a DNR.
- If a credible person says the patient stated a desire to revoke the DNR before EMS arrival, providers should provide full resuscitation.
- If any doubt exists about the presence or validity of a DNR, begin resuscitation.
- If a woman has a potentially viable fetus >22 weeks gestation, begin resuscitation.

Termination of Resuscitation

REVISED March 2017

Care Guidelines

Resuscitation may be stopped under the following circumstances:

- A valid DNR/Comfort One is produced or discovered.
- Traumatic arrest with blunt trauma after clinically excluding or treating for tension pneumothorax and pericardial effusion.
- Traumatic arrest with penetrating trauma after clinically excluding or treating for tension pneumothorax and pericardial effusion and loss of vital signs > 15 minutes from ER arrival.
- Cardiac arrest in a normothermic patient with asystole, PEA or persistent VF with 30 minutes of resuscitation and no return of spontaneous circulation (ROSC).

Patients with ROSC typically have a change in clinical status with a sudden increase in EtCO₂, spontaneous movement or breathing, a change in cardiac rhythm or a pulse.

Contact medical control for pronouncement of death.

Leave all lines, tubes, etc. in place and contact supervisor, law enforcement or Medical Examiner as appropriate.

Special Patient Equipment

REVISED March 2017

These guidelines should be used when an EMS provider, responding to a call, is confronted with a patient using specialized medical equipment that the EMS provider has not been trained to use, and the operation of that equipment is outside of the EMS provider's scope of practice and/or protocols. The EMS provider may treat and transport the patient, as long as the EMS provider doesn't monitor or operate the equipment in any way while providing care.

When providing care to patients with special needs, EMS personnel should provide the level of care necessary, within their level of training and certification. When possible, the EMS provider should consider utilizing a family member or caregiver who has been using this equipment to help with monitoring and operating the special medical equipment if necessary during transport.

If life threatening emergency exists, provider may attempt to provide reasonable care while contacting medical control for direction.

Some examples of special medical devices:

- PCA (patient controlled analgesic)
- Chest Tube
- Peritoneal Dialysis
- PICC line or Indwelling Catheter
- Portable Ventilator

Patient Refusal

REVISED March 2017

EMS providers must assume they have been called to transport patient(s) to the hospital.

Significant medico-legal risk is incurred whenever providers allow patients to refuse transport.

Patients must have decision making capacity to refuse transport, meaning:

- They must be over 18 years old or an emancipated minor.
- They must not have a legal guardian.
- They cannot be gravely psychologically disabled or suicidal.
- They must not be delirious or demented.
- They should be able, after a discussion, to articulate the risks, benefits and reasoning for their decision to refuse transport.

Risks of patient refusal must be discussed extensively with patients and present family or friends, if necessary. Use simple terms to discuss potential for undiagnosed serious cause for even minor or resolved symptoms, which could be early presentations of life threatening or disabling disease processes.

Benefits of transport to the hospital for further diagnosis and/or treatment must also be discussed extensively with patients.

If patient decides to refuse transport, encourage them to go to the ER on their own for further evaluation and tell them to call 911 if they worsen or change their mind.

Have the patient sign the refusal of care form.

If available, have a witness (other than the ambulance crew) sign the refusal (i.e. family member, caregiver, law enforcement officer, shift supervisor, etc...)

Risk/benefit discussions and evaluation of patient decision-making capacity must be extensively documented in the ePCR by all attending providers.

If the patient is a minor and their guardian refuses transport but the provider believes potential for patient harm exists, call medical control and/or law enforcement.

Physician on Scene

REVISED March 2017

Your offer of assistance is appreciated. However, this EMS service under State law and in accordance with nationally recognized standards of care in Emergency Medicine, operates under the direct authority of a physician Medical Director. Our Medical Director and physician designees have already established a physician-patient relationship with this patient. To ensure the best possible patient care, and to prevent inadvertent patient abandonment or interference with an established physician-patient relationship, please comply with our established protocols.

Please review the following if you wish to assume responsibility for this patient:

- You must be recognized or identify yourself as a qualified physician.
- You must be able to provide proof of licensure and identify your specialty.
- If requested, you must speak directly with the on-line medical control physician to verify transfer of responsibility for the patient from that physician to you.
- EMS personnel, in accordance with state law, can only follow orders that are consistent with the approved protocols.
- You must accompany this patient to the hospital, unless the on-line medical control physician agrees to re-assume responsibility for this patient prior to transport.

Hospital Destination

REVISED March 2017

Mat-Su Regional Medical Center (MSRMC) is considered the primary receiving facility for patients transported by Mat-Su Borough EMS except:

- When following a MSB EMS protocol advising transport to an alternate facility.
- When MSRMC medical control orders diversion to an alternate facility.
- When a patient is transferred to an aeromedical transport service.

If a stable patient with decision making capacity requests transport to a facility other than MSRMC, contact medical control with specific information about the situation. Follow medical control's recommendation of destination facility.

Patient Status Criteria

REVISED March 2017

Status 1: Patients that are currently unstable and require immediate interventions to prevent the imminent loss of life or limb.

Status 2: Patients that are currently stable but have a reasonable likelihood of developing threats to life or limb or will likely require a multi-disciplinary response from the receiving hospital.

Status 3: Patients that are currently stable and it is anticipated that there is no immediate threat to life or limb.

Notes: Contact receiving hospital as early as possible for unstable or potentially unstable patients that may require the mobilization or activation of additional resources.

Follow the receiving hospitals guidelines regarding alert criteria, i.e. Trauma, STEMI, Stroke, Sepsis, and see appropriate Protocols/Checklists.

Flight Guidelines

REVISED March 2017

These guidelines have been developed to assist with the decision making for use of air medical transport by the emergency medical services community. The goal is to match the patient's needs to the timely availability of resources in order to improve the care and outcome of the patient from injury or illness.

General Considerations

Advanced level of care need (skills or medications) exists that could be made available more promptly with an air medical tier versus tiering with ground ALS service, -AND- further delay would potentially jeopardize the outcome of the patient.

Transport time to definitive care hospital can be significantly reduced for a critically ill or injured patient; consider if ground transport > 30 minutes from receiving facility.

Multiple critically ill or injured patients at the scene where the needs exceed available resources.

Difficult access situations due to wilderness location, road closure, etc.

If ordered by transferring physician or medical control.

Specific Considerations

Major Trauma: > 30 minutes from MSRMC –AND- one or more of the following:

GCS < 13

SBP < 90 and evidence of shock

RR <10 or >29 with evidence of shock or respiratory compromise

Refractory airway compromise

Major penetrating trauma

Major chest injury with respiratory compromise

Major neurologic injury with paralysis or open/depressed skull fracture

Unstable pelvic fracture or native hip dislocation

Major extremity injury including 2 or more long bone fractures, amputation above wrist or ankle, pulseless extremity, compartment syndrome, major de-gloving injury, open long bone fracture, major burn or crush injury.

Flight Guidelines - continued

Specific Considerations - continued

Acute Coronary Syndrome: >30 minutes from MSRMC –AND–

STEMI (including ROSC with STEMI)

Refractory Instability

BLS providers with no ground ALS available within 30 minutes

Stroke: > 30 minutes from MSRMC –AND–

Acute neurologic deficit with onset < 4.5 hours

No known absolute contradictions to fibrinolytic therapy such as brain cancer or metastasis, history of intracranial hemorrhage, etc.

Trauma Activation Criteria

REVISED March 2017

Trauma One Activation Criteria: (Unstable patient with significant threat to life or limb)

- GCS less than 8 or a 2-point decline in GCS
- Hypotension (Adult SBP < 90, Pediatric age 1-10 SBP < 80, Infant less than age 1 SBP < 70)
- Patients with respiratory compromise or obstruction unrelieved by intubation
- Transferred from outside facility receiving blood products to maintain blood pressure
- Significant penetrating injury, including GSW to neck, chest or abdomen
- Significant penetrating injuries to the head, chest, abdomen, back or proximal extremities
- Amputation or de-gloving injury proximal to the ankle or wrist
- Flail chest
- Subcutaneous emphysema
- 2nd and/or 3rd degree burns > 10% TBSA and/or inhalation injury
- Discretion of the ED physician

Trauma Two Activation Criteria: (Currently stable patient with potential threat to life or limb)

- GCS greater than 8 and less than 12
- Patient age less than 5 or greater than 65
- Pregnancy greater than 20 weeks

Anatomic:

- Two or more long bone fractures
- Significant maxillofacial trauma without evidence of airway compromise
- Crush injury proximal to ankle or wrist
- Blunt abdominal trauma with firm or distended abdomen or seatbelt sign
- Suspected pelvic fracture
- Major laceration of torso involving fascia
- Significant burns not meeting Trauma 1 criteria
- Open or depressed skull fracture
- Suspected spinal cord injury with paralysis
- Hanging, drowning or hypothermia
- Fall from any height, if anticoagulated older adult
- ATV/snowmachine/motorcycle rollover or ejection
- Discretion of the ED physician

Mechanism of Injury:

- Falls: Adult – greater than 20 feet, Child – greater than 10 feet or 3x their height
- Auto vs pedestrian/cyclist thrown, run over or with significant (>20 mph) impact
- MVC with rollover/ejection or intrusion greater than 18 inches
- Extrication time greater than 20 minutes
- Death in the same passenger compartment

Transition of Care

REVISED March 2017

Transitions of patient care occur whenever initial provider(s) of patient care allow other provider(s) to assume care.

- Transitions of care usually involve arrival of advanced level providers such as paramedics, supervisors, flight crews or arrival at destination facilities.
- Any transition of patient care between providers is considered a critical event with significant potential for error.
- A cognitive pause should be taken immediately before the transition of care by both teams in order to ensure clear, concise, thorough two-way communication of information, ideas and questions.
- At minimum, information exchanged between both team leaders or their designees should include the following:
 - Patient identifiers;
 - Patient course including procedures and medications administered;
 - Results of diagnostic testing including point of care lab testing and EKGs;
 - History of present illness;
 - Allergies, Medications, and Past medical history.

Mat Su Borough EMS

Patient Assessment Scales and Tools

REVISED March 2017



Tuberculosis Risk Assessment

REVISED March 2017

Tuberculosis is a bacterial infection that most commonly attacks the lungs. The means of transmission is most often through the sputum of an infected person, frequently through droplets carried in the air. N95 masks, if well fitted, will provide some protection against these droplets. Such masks should be worn if a patient is believed likely to have tuberculosis. Consider the patient to be a high risk if there is clinical suspicion or the answer is “yes” to any of the following questions:

Does the Patient Have:

History of active TB, latent TB, or a positive TB test without at least three weeks of adequate treatment –OR–

History of recent cough (productive or nonproductive) with or without blood in the sputum, -PLUS- any combination of the following:

- History of night sweats
- History of hoarseness (not explained by other factors)
- History of recent weight loss (not explained by other factors)
- History of HIV (AIDS) or other condition that may cause immunosuppression
- Residence or employment at one of the following
 - Homeless shelter
 - Correctional facility
 - Substance abuse shelter
 - Long-term health care facility (nursing home, rehabilitation center, etc.)

Assessment Scales

REVISED March 2017

APGAR Neonatal Assessment

Element	0	1	2	Score
Appearance (Skin Color)	Body/Extremities Blue or Pale	Body Pink Extremities blue	Completely Pink	
Pulse Rate	Absent	Less than 100/min	100/min or more	
Grimace (Irritability)	No Response	Grimace	Cough/Sneeze/Cry	
Activity (Tone/Movement)	Limp	Some Flexion of Extremities	Active Motion	
Respiratory Effort	Absent	Slow and Irregular	Strong Cry	
Traditionally APGAR scores are obtained at 1 and 5 minutes post birth, but they should not delay needed interventions.			Total Score:	

Glasgow Coma Scale

	<u>ADULT/CHILD</u>	<u>INFANT</u>	<u>SCORE</u>
EYE OPENING	4 – Spontaneous	4 – Spontaneous	
	3 – To Speech	3 – To Speech	
	2 – To Pain	2 – To Pain	
	1 – No Response	1 – No Response	
VERBAL RESPONSE	5 – Oriented	5 – Coos and Babbles	
	4 – Confused Conversation	4 – Irritable Cry	
	3 – Inappropriate Words	3 – Cries in Pain	
	2 – Incoherent Sounds	2 – Moans in Pain	
	1 – No Response	1 – No Response	
MOTOR RESPONSE	6 – Obeys Commands	6 – Spontaneous Movement	
	5 – Localizes Pain	5 – Withdraws to Touch	
	4 – Withdraws from Pain	4 – Withdraws from Pain	
	3 – Flexion response to Pain	3 – Flexion response to Pain	
	2 – Extension response to Pain	2 – Extension response to Pain	
	1 – No Response	1 – No Response	
<u>TOTAL SCORE</u>			

Cincinnati Pre-Hospital Stroke Scale

REVISED March 2017

Facial Droop

How to test: Have patient show their teeth or smile.

Normal: Both sides of the face move equally.

Abnormal: One side of the face does not move as well as the other.

Arm Drift

How to test: Instruct patient to close his or her eyes and extend both arms straight out with palms turned up, for 10 seconds.

Normal: Both arms move the same, or both do not move at all.

Abnormal: Either one arm does not move, or one-arm drifts downward compared to the other.

Speech

How to test: Have the patient repeat “*Time is of the essence.*”

Normal: The patient says correct words with no slurring of words.

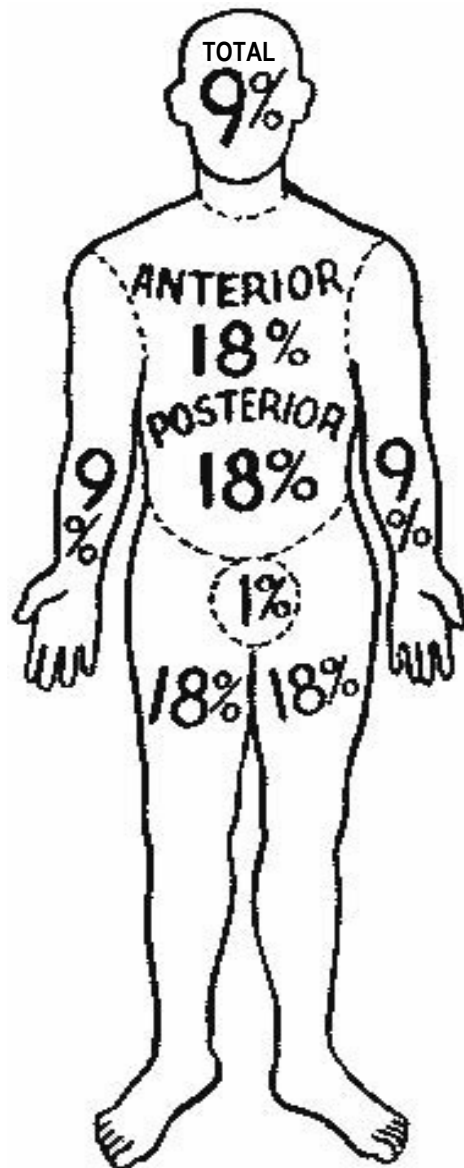
Abnormal: The patient slurs words, says the wrong words, or is unable to speak.

Any abnormality indicates a high likelihood of stroke

Rule of Nines - Adult

REVISED March 2017

Use the following diagram to estimate the TBSA (total body surface area) affected for an adult patient who has suffered significant burn injury. When estimating burn size, include only burns that are 2nd degree or greater.



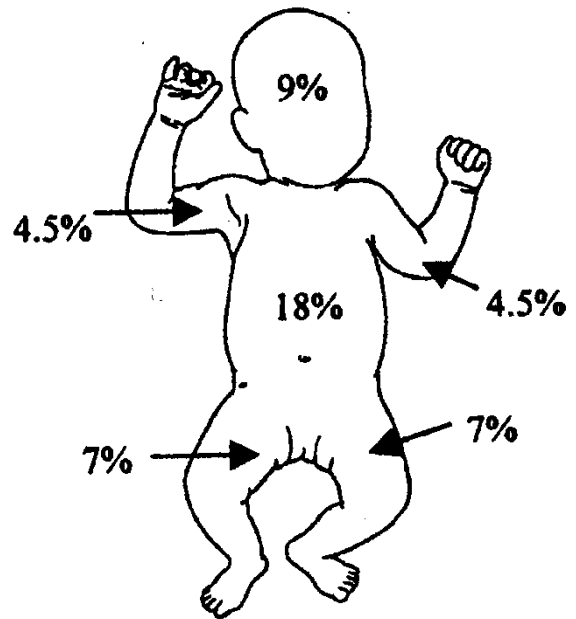
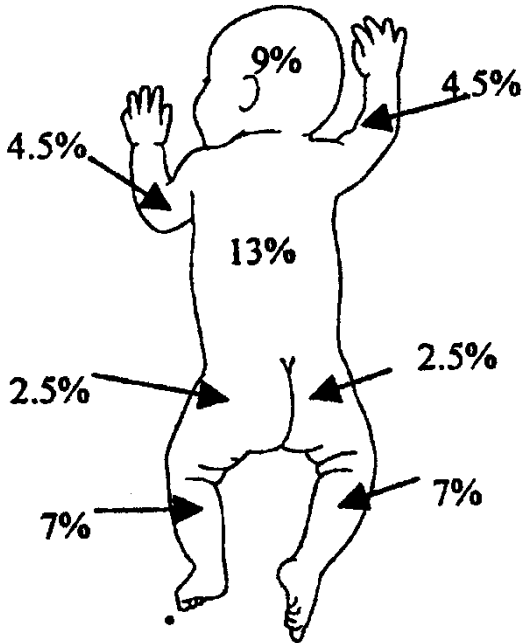
Entire Head (front & back)	= 9% TBSA
Entire Arm	= 9% TBSA
Entire Front Torso	= 18% TBSA
Entire Back Torso	= 18% TBSA
Entire Leg	= 18% TBSA
Genitals	= 1% TBSA
Palm of Hand (excluding fingers)	= 1% TBSA

Rule of Palms: The palmar surface (excluding fingers) of the patient's hand represents approximately 1% of the patient's TBSA.

Rule of Nines - Pediatric

REVISED March 2017

Use the following method to estimate the TBSA (total body surface area) affected by burn injury to the pediatric patient. When estimating burn size, include only burns that are 2nd degree or greater.



Entire Head = 18% TBSA

Entire Arm = 9% TBSA

Entire Leg = 14% TBSA

Entire Front Torso = 18% TBSA

Entire Back Torso = 18% TBSA
(Including buttocks)

Palm of Hand = 1% TBSA
(Patient's hand, excluding fingers)

Mat Su Borough EMS

Medical Procedures and Devices

REVISED March 2017



Procedural Sedation

REVISED March 2017

Procedural sedation is used for painful procedures including cardioversion and post-intubation management. However, in emergency situations, adequate sedation may not be achievable before a necessary procedure is performed.

Pain control is always the primary goal; therefore fentanyl, ketamine or a combination of the two medications is generally used before midazolam, which has no analgesic properties.

As medications are combined and doses are increased, synergistic adverse effects on heart rate, blood pressure, airway protection and respiratory drive tend to occur. Always use the least number of medications in the smallest doses necessary for reasonable patient comfort.

All patients should be assessed for difficult airway, current respiratory and hemodynamic status, with anticipatory decision-making for potential decompensation. High flow nasal O₂, EtCO₂, SpO₂, cardiac monitoring, and frequent blood pressure assessment are required.

Choose medication(s) based upon clinical situation and known medication effects.

- Patients at the extremes of age are more likely to experience adverse effects from sedatives and analgesics; therefore use lower doses.
- Ketamine acts within seconds if given IV, tends to preserve respiratory drive, maintain or elevate blood pressure and heart rate, may cause laryngospasm, increased muscle tone, salivation and vomiting.
- Fentanyl acts within minutes, decreases respiratory drive and decreases sympathetic drive, potentially causing hypoxia, hypotension and decreased heart rate.
- Midazolam acts within minutes, significantly decreases respiratory drive, tends to cause dose-dependent hypotension, has good amnestic but no analgesic properties.

Procedure:

- IV/IO access.
- Cardiac monitor; frequent blood pressures; continuous pulse oximetry and EtCO₂ monitoring
- High flow nasal oxygen.
- Assess for difficult airway, respiratory status and hemodynamics, modify plan accordingly. Anticipate and prepare for patient decompensation. Use 1 of the following medications, adding a second medication and/or reducing doses if required by clinical situation.
 - Ketamine 0.5- 1 mg/kg IV/IO
 - Fentanyl 0.5- 1.5 micrograms/kg IV/IO
 - Midazolam 0.025- 0.05 mg/kg IV/IO

Airway: Continuous Positive Airway Pressure (CPAP)

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Description:

CPAP provides a noninvasive method of ventilatory support for patients with spontaneous respirations which has revolutionized prehospital care for respiratory distress caused by diverse disease processes including asthma, COPD, congestive heart failure, pneumonia and pulmonary emboli. Early application of CPAP often prevents the need for endotracheal intubation in patients with serious respiratory symptoms.

Patients must be:

- Awake –AND–
- Able to protect their airway –AND–
- Able to tolerate the mask.

Indications:

Moderate to severe dyspnea from known indication for CPAP such as COPD or CHF
–OR–

Not responding to other therapy such as oxygen, nebulizer treatments, pain control, etc.

Contraindications:

- Inability to protect airway
- Respiratory failure requiring assisted ventilations
- Upper airway obstruction
- Known or suspected pneumothorax
- Known or suspected elevated intracranial pressure, significant head trauma
- Inability to obtain mask seal due to trauma, deformity, etc.

Procedure:

- Explain procedure, coach patient as needed
- Use high flow oxygen for mask
- Start at 7.5 cmH₂O and titrate to 10cmH₂O as needed
- Monitor vitals, SpO₂, airway protection, respiratory drive, and mental status frequently
- Discontinue CPAP, manage airway and ventilate patient if needed for deterioration
- CPAP can be achieved for infants, using 8-12 lpm O₂ via nasal cannula, and 15 lpm for children too small for the size “S” CPAP mask.

Airway: King LTSD

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Indications:

For use when airway intervention beyond basic adjuncts (2-person BVM with OPA/NPA) is required. In this situation, placement of a King Airway is often the fastest, simplest, and safest airway intervention, with the best risk/benefit ratio for the patient.

–OR–

Rescue device when endotracheal intubation is unsuccessful.

Contraindications:

Gag reflex

Insertion Procedure:

- Hold King Airway at the connector with dominant hand.
- With non-dominant hand, hold patient's mouth open and apply chin lift.
- Using a lateral approach, introduce tip of airway into the mouth.
- Advance the tip behind the base of the tongue, rotating the tube back to the midline as the tip reaches the posterior wall of the pharynx.
- Without exerting excessive force, advance tube until base of connector is aligned with the teeth or gums.
- Inflate the King Airway with the enclosed syringe and inflate cuff to minimum volume needed to seal the airway.
- Perform 5-point auscultation to verify correct placement and effectiveness.
- Attach the colorimetric CO₂ detector and BVM.
- While ventilating the patient, assess ventilations and gently withdraw the airway until ventilation is easy and oxygen is free-flowing.
- Readjust cuff inflation as necessary to maintain an adequate seal.
- Always use continuous capnography (EtCO₂) if available.
- NG/OG tube can be inserted, following manufacturer instructions, to decompress the stomach, if needed

Sizing:

Follow manufacturer recommendations printed on packaging

Airway: Endotracheal Intubation

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Indications:

Unconscious patient with:

- Inability to protect own airway from vomitus, secretions, blood, etc.
- Impending airway compromise due to swelling, inflammation, etc.
- Need for prolonged positive pressure ventilatory assistance.

Cautions:

Endotracheal intubation is a highly invasive procedure with potential for patient harm due to: vomiting and aspiration, airway trauma, soft tissue injury, dental trauma, vagal stimulation and bradycardia (especially in children), misplaced tubes leading to hypoventilation and hypoxia, hypoxia due to prolonged attempts.

Judgment should be exercised as to when the benefits of a secured airway outweigh the risks of intubation. Consider effectiveness of bag-mask ventilation, likelihood of aspiration, ETA to ER etc.

Consider placing King Airway as primary advanced airway device due to ease of insertion and low complication rate.

Required Equipment:

- Nasal cannula with high flow oxygen for apneic oxygenation
- Suction device / suction catheters
- BVM and airway adjuncts
- Laryngoscope handle and blades appropriate to patient size
- Selection of ET tubes
- King airway (alternative primary device or rescue device in the event of failed airway)
- Stylets (malleable or rigid) and/or gum bougie
- 10ml syringe, securing device or tape, lubricant gel
- End-tidal CO₂ detector
- Cardiac monitor, stethoscope and pulse oximeter

Tube Selection:

- For adult patients 8.0 tube is ideal, 7.5 is typical
- Adjust based on patient size.
- Consult the Broselow tape for pediatric patients.
- Have tubes one-half to one size smaller immediately available.

Endotracheal Intubation - continued

Important:

FAILED AIRWAY = 3 total attempts to intubate, when a definitive airway is required, with at least one performed by the most experienced provider present. An attempt = any time a laryngoscope blade is introduced into the patient's mouth. Place King airway or return to BVM ventilation in this situation.

Any “**Can't Intubate / Can't Ventilate**” situation (i.e. unable to ventilate via BVM, place King Airway or perform successful ET intubation) constitutes a dire failed airway emergency, and requires immediate cricothyrotomy.

Procedure:

- Take BSI precautions, including eye protection.
- Test suction, ensure it is working and ready.
- Whenever possible, thoroughly oxygenate patient before intubation, but avoid hyperventilation.
- Provide apneic oxygenation via nasal cannula at 15 lpm for adult/child (8 lpm for infant)
- Check tube cuff, laryngoscope light.
- Insert stylet and bend tube to proper shape, ensure stylet does not protrude beyond end of tube.
- Lubricate tip of ET tube.
- If spinal injury is ruled out, place patient in sniffing position. If spinal injury is suspected, have assistant perform manual, in-line stabilization of head and neck, with c-collar open in front.
- Avoid hypoxemia at all times.
 - Limit intubation attempts to 30 seconds, and ensure patient is reoxygenated after each attempt.
 - Maintain pulse oximetry >90% if at all possible. Desaturation during intubation attempts of a patient that could be oxygenated and ventilated with a BVM is detrimental.
- Insert McGrath blade midline in patient's mouth.
- Lift tongue and lower jaw, without exerting any pressure on the upper teeth
- Advance blade, until vocal cords are seen. If not visualized, pull blade back slowly.
- Insert tube from right side of mouth, rotate to vertical, and place through vocal cords.
 - Visualize the ET tube passing through the vocal cords.
 - If the vocal cords cannot be visualized, withdraw ET tube and resume BVM ventilation.
- Stabilize tube while withdrawing stylet.
- Inflate cuff until pilot balloon is firm but not hard.
- Attach EtCO₂ detector and bag-valve device to ET tube.
- Give several breaths, observing for good chest rise, while auscultating for loud breath sounds over the bilateral anterior chest and absent breath sounds over the epigastrium.
- If breath sounds and/or capnography/EtCO₂ detector suggest misplaced tube, remove tube immediately, then ventilate and re-oxygenate (SpO₂ normalized) before re-attempting intubation.
- After six or more breaths, note color of EtCO₂ detector for further confirmation of tube placement (See – Advanced Airway Confirmation Adjuncts)
- Ensure patient is reoxygenated following intubation. Have assistants monitor heart rate and oxygen saturation throughout procedure.
- Observe and document depth of ET tube at teeth – typically 3x size of tube in cm (adult 24cm)
- When tube placement is confirmed, secure tube with commercial device or tape. Consider immobilizing patient's head as for suspected spinal injury; head movement, especially in pediatric patients, may dislodge tube. Re-evaluate tube position each time patient is moved.
- Always use continuous capnography (EtCO₂) if available

Airway: Cricothyrotomy

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Indication:

Any “**Can’t Intubate / Can’t Ventilate**” situation (i.e. unable to ventilate via BVM, place King Airway or perform successful ET intubation) constitutes a dire failed airway emergency, and requires immediate cricothyrotomy.

Patient < 8-10 years old, depending on developmental stage, body habitus and ease of landmark identification: Needle Cricothyrotomy.

Patient > 8-10 years old: Bougie Assisted Surgical Cricothyrotomy.

Needle Cricothyrotomy Technique:

- Attach 3ml syringe to 10 gauge 3 inch angiocath.
- Extend patient’s neck, palpating to find mid trachea, approximately 4 of the patient’s finger widths above the sternal notch.
- Stabilize trachea with non-dominant hand.
- Enter the skin at a 45 degree angle at this level directing the needle along the midline of the trachea toward the sternal notch, aspirating until a loss of resistance is felt, and air is aspirated.
- Advance angiocath, maintain stabilization of catheter, remove needle, secure catheter.
- Remove plunger from syringe and firmly place adapter from 7.5 mm endotracheal tube in barrel of syringe.
- Reattach syringe to catheter and stabilize.
- Attach pediatric ambu bag to adapter and gently ventilate with high flow oxygen, continually stabilizing syringe and catheter.

Note: Needle cricothyrotomy cannot adequately ventilate a patient and, at best, can help maintain oxygenation for a brief period of time, likely less than 30 minutes. The patient will need an emergent surgical tracheostomy to survive for any extended period.

Cricothyrotomy - continued

Bougie-assisted Surgical Cricothyrotomy Technique:

- Extend patient's neck, locate cricothyroid membrane, approximately 4 of the patient's finger widths above sternal notch.
- Stabilize trachea with non-dominant hand.
- If cricothyroid membrane is easily identified, make a transverse, approximately 2cm long incision through skin and cricothyroid membrane, starting in the midline, incising to cartilage laterally in one direction, rotating scalpel 180 degrees and incising to cartilage laterally in the other direction.
- If cricothyroid membrane is not easily identified, first make a vertical incision through the skin and tissue to the cricothyroid membrane. Then make transverse incision through membrane as above.
- Leaving scalpel in place in the trachea, place bougie distal to scalpel through incision into trachea.
- Remove scalpel.
- Gently pass bougie distally in trachea about 12cm, feeling vibratory clicks from tracheal rings and possible resistance at the carina, which indicates the bougie is deep enough.
- Maintain control of bougie while placing a 6-0 endotracheal tube over the bougie.
- As the endotracheal tube is passed beneath the skin, some rotation and gentle pressure may be required; take care not to damage balloon.
- Stop advancing endotracheal tube as soon as the balloon passes beneath the skin, into the trachea.
- Inflate balloon.
- Remove bougie from endotracheal tube, stabilizing tube.
- Ventilate patient and confirm EtCO₂.
- Secure tube and maintain stabilization.

Airway: Confirmation Adjuncts

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With placement of an advanced airway (endotracheal tube or King Airway) a confirmation adjunct should be used to assess for proper placement. The colorimetric CO₂ detector can be used with an ET tube or King Airway.

Procedure:

Immediately following advanced airway placement, attach airway confirmation device:

- Adult Colorimetric CO₂ detector: Patient weight >15 kg
- Pediatric Colorimetric CO₂ detector: Patient weight 1-15 kg

Confirm chest rise, absence of epigastric sounds, and positive/equal lung sounds.

Ventilate patient with 100% oxygen.

- If CORRECT placement is confirmed: secure ET tube and ventilate patient.

Note: It is possible for colorimetric CO₂ detector to show false positive color change with an esophageal intubation. This can occur for a limited time (usually 5 to 6 ventilations) then color change indicating incorrect placement will occur.

- If the colorimetric CO₂ detector indicates INCORRECT tube placement: immediate direct_laryngoscopic observation of tube placement is indicated.

Note: Once a patient has stopped cellular respiration (death) and CO₂ production has ceased, correct placement color change will not occur, even with a properly placed advanced airway. Further, a correct-placement color change may not occur with low blood flow through the lungs, such as pulseless arrest (Asystole, VF, PEA) or massive pulmonary emboli.

If ET tube is incorrectly placed or observation is unclear:

- Remove tube IMMEDIATELY
- Re-oxygenate patient
- Re-attempt intubation

Recheck tube placement OFTEN:

- Immediately after insertion,
- After securing tube,
- During transport, and
- EVERY time patient is moved.

Always use continuous waveform capnography, if available, when the patient has an advanced airway.

Document use of qualitative and quantitative EtCO₂ findings in ePCR.

Airway: Nasogastric Tube Insertion

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Indication:

Gastric distension that impairs ventilation for an apneic patient with ET tube in place.

Contraindications:

- The airway is not already protected with an ET tube.
- The patient is suspected to have facial fractures.
- The patient is believed to have ingested a caustic substance.
- The patient has a penetrating neck wound.
- The patient is believed to have epiglottitis or croup.

Cautions:

Any patient with potential C-spine injury should be immobilized prior to attempted insertion.

Suction should be immediately available for any insertion attempt.

Procedure:

- Select appropriate size NG tube
- Measure from nare, around patient's ear, to xyphoid process, and mark
- Lubricate tube, and introduce into patient's most patent nare
- Advance tube to measurement, withdrawing and re-attempting if resistance is met.
- Aspirate for stomach contents. If no return, inject air through tube and auscultate for epigastric sounds.

Notes:

It may happen with certain apneic patients that neither an ET tube nor a King Airway can be inserted. If, in such patients, gastric distension and vomiting are persistent problems, consider placing an NG tube despite the lack of airway protection. Be prepared to deal with increased vomiting, and protect patient's airway throughout.

Insertion of an NG tube in a conscious patient is a difficult procedure that is highly unpleasant for both the patient and the medic. Gagging and vomiting occur frequently and should be anticipated. This procedure is to be attempted only by Medical Control direction.

An NG tube may be placed down the lumen of a King LTSD. Insert the NG through the posterior lumen and into the stomach if needed to decompress the stomach.

Breathing: Needle Chest Decompression

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Indications:

Tension pneumothorax with respiratory or hemodynamic compromise

Simple pneumothorax with decompensation of respiratory or hemodynamic status

Considerations:

- Pneumothorax can be difficult to diagnose in the prehospital setting.
- Consider predisposing conditions: COPD, severe asthma, tall/thin stature, positive pressure ventilation.
- Consider effects of chronic disease on exam findings: surgically absent lung, other thoracic surgery, COPD, restrictive lung disease etc.
- Consider differential diagnosis in trauma with effects on exam findings, such as:
 - Flail chest with asymmetric chest rise and splinting;
 - Hemothorax with dullness to percussion and decreased breath sounds;
 - Large simple pneumothorax with decreased breath sounds;
 - Tension pneumo w/decreased breath sounds and hyper-resonance to percussion;
- Injury to tracheobronchial tree or esophagus with subcutaneous emphysema.

Important:

A normal lung can appear hyper-resonant when compared with an abnormal lung which has dullness to percussion! In trauma, evaluate which side of the chest has the most significant trauma before deciding to needle the chest.

Procedure:

- Consider pre-procedure pain control if time and hemodynamic status permit.
- Identify proper side of patient with pneumothorax
- Identify insertion site: 4th intercostal space, anterior axillary line (preferred) or 2nd intercostal space, mid-clavicular line.
- Prep skin with alcohol pad.
- Insert 10 gauge, 3 inch angiocath perpendicular to the skin, at the lower/caudal end of the selected intercostal space so that it grazes the top of the rib, avoiding the neurovascular bundle running underneath the rib above.
- Remove needle when air is heard/felt escaping and advance catheter to skin
- Secure catheter.
- A 2nd catheter may need to be placed on either side if patient decompensates.

Circulation: External Jugular Cannulation

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Indication:

Critically ill patient requiring vascular access for fluid or medication administration without suitable peripheral access site, and IO access not readily obtainable.

Contraindications:

EJ vein is not visible.

Vascular access is not essential.

Precautions:

Inadvertent puncture of apex of lung, airway, or damage to nearby vessels

Procedure:

- Place the patient supine or head down, to distend the vein and to prevent air embolism.
 - If C-spine injury is not suspected, turn the patient's head to the opposite side of access.
 - If C-spine precautions are necessary, manually stabilize patient's head in a neutral position.
- Cleanse the site utilizing aseptic technique.
- Occlude venous return by placing a finger on the external jugular just above the clavicle.
- Point catheter at the medial third of the clavicle and insert it, bevel up, at a 10-30 degree angle.
- Enter the external jugular while continuing venous occlusion to prevent an air embolism.
- Attach the IV tubing and check patency.
- Secure by looping IV tubing over patient's ear (avoid using circumferential dressings/taping). Consider immobilizing the patient's neck to prevent dislodgement of the IV.

Circulation: Intraosseous (IO) Access

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Indications:

IV access required but difficult or impossible to obtain in a timely manner.

If IV access will require > 30 seconds in a critically ill patient, move directly to IO access

Place 2 IO's any time 2 IV's would normally be placed.

Blood, IV fluid, and medication approved for IV use can be given IO.

General contraindications:

Patient weight < 3kg

Known osteogenesis imperfecta

Site specific contraindications:

Fracture of selected bone

Fracture proximal to selected bone in same extremity

Orthopedic hardware present in selected bone

Infection at insertion site

Inability to locate landmarks/excessive tissue

Previous IO attempt/insertion in same bone within past 24 hours

Site selection:

Proximal humerus preferred in pts >5 years old and able to keep arm still:

- Abduction of the shoulder will dislodge humeral IO.
- Flow rates up to 5 liters/hour can be achieved with pressure infusion through a humeral IO versus 1-2 liters/hr through a tibial IO;
- Insertion and infusion are less painful in the humerus compared with the tibia.

Pain control:

IO infusions are painful: In conscious patients follow Pain Control protocol.

Adult patients may also be given 2ml 2% lidocaine (40mg) IO after the initial aspiration and flush of the newly placed IO.

Intraosseous (IO) Access - continued

Landmarks for Insertion:

Humeral head:

- Place patient's hand on their abdomen.
- Place your index fingertips together and tips of your thumbs together, creating a diamond shaped space between the 4 fingers.
- Set your index fingers on top of the patient's lateral shoulder and rotate your thumbs down to rest on the upper arm, encircling the humeral head.
- Palpate this area with one finger to identify the area of greatest prominence and insert IO needle perpendicular to the lateral plane of the humerus.
- Use the 45 mm needle for adults.

Proximal Tibia:

- With patient's knee extended, palpate 2 provider finger widths below tibial tuberosity, and move medially to center of flat aspect of tibia.
- Insert IO needle at this site, perpendicular to flat aspect of tibia, taking care to avoid growth plate just proximal to this site in pediatric patients.

Technique:

- Select appropriate size needle and load on EZ IO driver.
- Identify insertion site and prep skin with alcohol pad.
- Manually stabilize extremity.
- Push needle through skin and tissue to bone.
- Pull trigger on driver, pushing firmly but gently until loss of resistance is felt or needle flange touches skin. (Note: if driver fails, remove needle/stylet assembly from driver, and insert manually using back-and-forth twisting motion with steady pressure.)
- Remove stylet, and discard in sharps container.
- BEFORE attaching extension tubing: Place IO stabilizer dressing, centered over flange.
- Attach IO extension tubing.
- Aspirate through extension tubing, confirming proper placement by visualizing blood and bone marrow globules; use aspirated fluid for blood glucose, if needed.
- Flush IO forcefully with 10ml NS, if good flow, IO is ready for infusion. Repeat flush if ongoing resistance after initial flush.
- Instill 2ml 2% lidocaine for adult patient and/or follow Pain Control protocol.
- Attach IV tubing and begin infusion; put pressure bag on IV fluid bag.
- Monitor for extravasation, discontinue infusion if swelling noted at site.

Circulation: AutoPulse

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MSB EMS personnel who are compliant with MSB EMS training and quality assurance requirements for the Autopulse are authorized to use the Autopulse in the management of pulseless cardiac arrest.

Patients that meet the requirements for use of the Autopulse must meet both of the inclusion criteria, and have none of the exclusion criteria as listed below:

Indications:

The Autopulse is not recommended for routine cardiopulmonary arrest when there are sufficient personnel that can provide manual high quality CPR.

Consider using the Autopulse for cardiopulmonary arrest during transports or cases requiring prolonged CPR such as hypothermic cardiopulmonary arrest.

Contraindications:

Pulseless arrest is secondary to trauma

Patient is less than 8 years old

Patient too large for application of the Autopulse life band (estimated weight limit 300 lbs)

Patient displays signs of irreversible death such as rigor mortis, or dependent lividity

Reliable evidence exists that the patient has been pulseless in excess of 30 minutes (60 minutes for hypothermic arrest)

Available documentation that the patient has an Advance Directive prohibiting CPR

Pregnancy during 2nd and 3rd trimester

Circulation: 12-Lead EKG

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Indication:

Any pt suspected of ACS (Acute Coronary Syndrome) with any of the following:

- Chest pain, pressure or discomfort
- Radiating pain to neck or left arm, right arm, shoulder or back
- Dyspnea
- Heart failure / cardiogenic pulmonary edema
- Cardiac arrhythmias
- Syncope / unexplained falls (specifically in the elderly, pts with cardiac Hx, or those on medications that cause cardiac instability)
- Altered mental status
- Profound weakness
- Epigastric discomfort
- Sweating unusual for environment (diaphoresis)
- Nausea, vomiting
- Previous cardiac history or other cardiac factors
- To clarify a heart dysrhythmia

Procedure:

- Remove patient clothing above waist. Use a gown or sheet to preserve patient modesty.
- Apply limb leads. Print 3-lead rhythm strip.
- Apply precordial leads.
- Place patient in supine position (unless precluded by pt. condition)
- Verify that all leads are securely attached.
- Acquire 12-lead.
- Interpret 12-lead printout.

Notes:

If a 12-lead reveals ST elevation in two anatomically contiguous leads, or isolated ST elevation in aVR, inform Medical Control as soon as possible so the hospital can prepare resources for the patient.

A normal 12-Lead EKG does not rule out the possibility of ischemic cardiac disease or AMI and must not be used to screen patients.

Patients who require 12-lead EKGs should also have appropriate supplemental O₂, vascular access and continuous 4-lead cardiac monitoring

Circulation: Synchronized Cardioversion

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Indication:

Unstable tachycardia with organized rhythm

Contraindications:

Stable tachycardia

Sinus tachycardia

Multifocal atrial tachycardia

Pulseless Torsades de Pointes, Polymorphic VT, VT, VF (defibrillate these rhythms)

Caution:

Cardioversion of atrial fibrillation >24 hours duration can cause a stroke; do not cardiovert Afib if patient has adequate blood pressure, perfusion and mentation.

Preparation: (if time permits)

- IV/IO access
- Obtain 12 lead EKG, pre and post-procedure rhythm strips
- Follow Procedural Sedation protocol

Procedure:

- Apply defibrillator pads: Anterior-posterior for A-fib; sternum-apex for all other rhythms
- Turn on defibrillator, select Sync mode for each cardioversion attempt
- Select energy: pediatric 2J/kg; adult 200J
- When sync markers appear, deliver shock, keeping clear of patient

Circulation: Transcutaneous Pacing

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Indications:

Unstable bradycardias (HR <50 bpm) with signs and symptoms related to the bradycardia (hypotension, acutely altered mental status, signs of shock, ischemic chest discomfort or acute heart failure)

Be ready to pace in the setting of AMI, as follows:

- Symptomatic sinus node dysfunction (“Sick Sinus Syndrome”)
- Second degree type II or Third degree heart block

Symptomatic bradycardia with ventricular escape rhythm

Contraindications:

Severe hypothermia – Pacing in this case can convert a *physiologic* bradycardia to refractory ventricular fibrillation

Ventricular fibrillation – Pacing attempts would delay appropriate Tx

Bradycardias due to untreated respiratory insufficiency or hypoxemia

ACS with mild bradycardias and no evidence of shock

Procedure:

- Apply defibrillation pads AND 3-lead EKG electrodes.
- Set rate at 60-80 (100 for pre-pubescent patients unless otherwise ordered by Medical Control)
- Adjust energy setting to lowest level that produces electrical capture
- Confirm electrical capture by verifying each pacer spike is followed by both a QRS complex and a T-wave, then increase by 10% to maintain continuous capture.
- Confirm mechanical capture by verifying palpable pulse at radial or femoral artery.
- During pacing efforts, continually reassess for palpable pulses and continuation of electrical capture (adjust output if needed), obtain BP, and provide supportive care.

Pre-medication:

Conscious patients should ideally be pre-medicated per Pain Control and/or Procedural Sedation protocols, if the clinical situation permits.

Circulation: Pericardiocentesis

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Percutaneous withdrawal of fluid from the pericardium is a potentially lifesaving intervention in cases of pericardial tamponade. Thoracic trauma (most often penetrating, but occasionally blunt trauma) can result in pericardial tamponade. Chronic pericardial effusions can also tamponade. This should be considered in cases of acute cardiovascular collapse in patients with mediastinal malignancy, for example.

Indications:

Pulseless patient showing signs and symptoms of, or with mechanism suspicious for, pericardial tamponade.. In rare instances BLUNT trauma, but most often PENETRATING trauma to the pericardial window may result in CARDIAC ARREST.

With Medical Control Direction: Perfusing patient showing signs and symptoms of, or with history suspicious for, pericardial tamponade.

Contraindications:

Perfusing patient with adequate blood pressure.

Procedure:

- Perform clinical exam prior to procedure and assess for:
 - Likely clinical setting? – OR-
 - Penetrating trauma to the pericardial window? –OR-
 - Presence of distended neck veins?
- Identify the xiphoid process
- Place the patient in supine position, if possible
- Prep the area with alcohol or betadine.
- Using the 14ga 5 ¼ inch Jelco needle with a 20 or 60 ml syringe attached, insert the needle adjacent to the xiphoid on the patient's left side until the needle depth is below the costal margin, while drawing back on the syringe.
 - Watch cardiac monitor for ectopy (indicating contact with or puncture of myocardium) while performing procedure
 - Observe for fluid return in syringe
- Remove as much fluid from the pericardium as possible and reassess for change in patient's condition including return of cardiac function. Note: withdrawal of even a small amount of fluid may be helpful.

Disability: Selective Spinal Immobilization

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Indication:

This protocol is intended for patients who present with a traumatic mechanism of injury.

Immobilization is contraindicated for penetrating trauma patients who do not have a neurological deficit.

Assessment:

Assess for altered mental status, neurological deficits, spinal pain, tenderness, any evidence of intoxication, or other severe injuries.

While maintaining spinal alignment, examine the spine for tenderness on palpation or deformities.

Procedure:

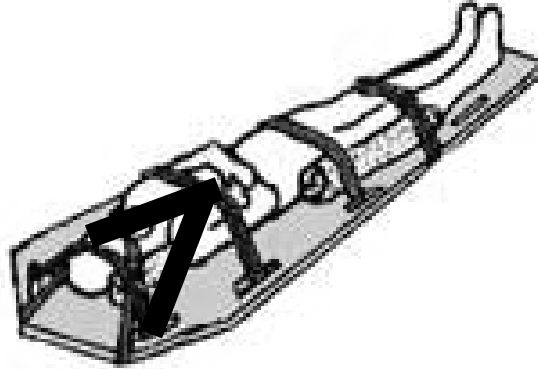
- Apply cervical collar if any of the following are present:
 - Patient complains of neck pain.
 - Cervical spine tenderness on palpation.
 - Abnormal mental status or neurological deficit.
 - Evidence of alcohol or drug intoxication.
 - Severe mechanism or painful injuries present.
 - Communication barrier that prevents accurate assessment.

- Immobilize the patient with cervical collar and a scoop stretcher or long spine board if:
 - Patient complains of midline back pain.
 - Thoracic or lumbar spine tenderness is present.
 - Any neurologic deficit exists.

Note: Patients should not routinely be transported on long boards, unless needed for extrication, multiple extremity injuries or an unstable patient where removal of a board will delay transport and/or other treatment priorities. In these rare situations, long boards should be padded to minimize secondary injury to the patient.

Disability: Rigid Spinal Immobilization

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Statement:

As a general rule, patients requiring spinal immobilization should be immobilized as shown above, with the spinal column in neutral in-line position. If in-line, neutral position is not believed to be in the patient's best interest, the patient may be immobilized in alternate position and the ePCR should contain clear documentation as to how the patient was immobilized and the rationale.

Procedure:

- Immobilize C-spine:
 - The cervical collar should contact the shoulders and securely support the chin.
 - If it is not practical or possible to place a cervical collar, immobilize the patient's head and neck with a blanket or towel roll "horse collar," extending from one shoulder, up and around the top of the head to the other shoulder.
- Pad the Board:
 - Use occipital padding to position the head in a neutral or slightly flexed position.
 - Popliteal padding (behind the knees) should provide some flexion to the knees.
 - Use additional padding between the patient's legs and/or between the patient's body and backboard straps at the legs and flanks to prevent lateral movement if the board is tipped.
- Secure Patient to the Board:
 - "Spider straps" or speed clips may be used to secure the patient to the backboard.
 - Begin attaching straps at the shoulders and chest, working toward the feet.
 - Position the chest strap high on the thorax to avoid restricting diaphragmatic movement.
 - Make straps snug enough to prevent displacement of the patient if the board is tilted.
 - Prevent lateral movement of the head via blanket or towel roll, foam blocks or commercial "head-bed" device.
 - Secure the patient's head to the board using 2" tape, only after the body has been completely secured.
 - Maintain manual C-spine stabilization during the entire immobilization process and release only after all steps listed above are completed.

Disability: Patient Restraints

REVISED March 2017

Statement:

Restraints are to be applied to patients only in limited circumstances.

Use of physical restraint on a patient is permissible if the patient poses a danger to himself or others.

Except when immediately needed for protection of the patient, EMS responders or others, restraints may only be used after receiving authorization from the Medical Control physician or an Alaska peace officer.

Chemical sedation may be administered by an EMT-3 or MICP in accordance with standing order protocols (see Behavioral Emergency Protocol)

Indications:

Patient who is a danger to self or others.

Patient lacks decision-making capacity and has a medical emergency.

If performing interfacility transfer, physician order is required if physical restraints are to be used.

The patient is being transported in the custody of the Police Department and the arresting officer is in the presence of the patient.

Precautions:

Restraints shall be used only when necessary to prevent a patient from seriously injuring him/herself or others.

Any attempt to restrain a patient involves risk to the patient and the pre-hospital provider. Efforts to restrain a patient shall be done only when there is adequate assistance present.

Patients must have a physical examination performed (if permitted) prior to applying restraints. They should be assessed for extremity injury and for any neurological, metabolic or traumatic injury resulting in decompensation.

Ensure that the patient has been searched for weapons.

In the case of a violent or threatening patient, immediately contact the local Police Department for assistance.

Patient Restraints - continued

Procedure:

- If patient with violent and/or combative behavior, consider:
 - If indicated, wait for law enforcement personnel to arrive and secure the scene.
 - Assure the safety of the patient and EMS crew. This may require waiting until there are enough personnel to assure that the patient can be restrained safely.
 - Respect the dignity of the patient, and communicate in a calm non-threatening manner.
 - Assess the patient and address any treatable causes for the combative state.

- If patient remains combative:
 - Attempt a non-threatening verbal approach to calm the patient.
 - If unsuccessful consider the use of soft restraints. Kerlix or Kling gauze bandaging may also be used. It is recommended to use one roll per extremity. Duct tape or medical tape is also useful. Use caution, and monitor restraints for development of skin irritation.
 - Rigid handcuffs are a last resort. Only law enforcement personnel are authorized to utilize this type of restraint. If a patient is received from law enforcement personnel with locked handcuff restraints in place, request assistance to replace them with soft restraints. If soft restraints are not considered a safe option, request law enforcement to accompany the ambulance and be available to remove the handcuffs, should patient condition deteriorate to the point that handcuffs hamper necessary interventions and treatment.

- If soft restraints are utilized:
 - Inspect every 15 minutes for skin condition, circulation/motor/sensory response.
 - Have a set of scissors available to cut and loosen the restraints if needed.

- Required documentation:
 - Why restraints were applied
 - All actions taken to restrain patient
 - Possible medical causes (such as hypoxia, hypoglycemia, head injury, shock, etc.) contributing to pt's combative state and therapies administered to address them.
 - When / how often restraints were re-assessed to ensure no harm occurred to the patient.

- Guidelines for removal:
 - Restraints should be relocated or loosened if they cause any decrease in the patient's circulation or sensory function.
 - If the patient's condition is improved by treatment, it is acceptable to remove some restraints, but remain alert for signs of deterioration. Generally, it is best to loosen or release one hand only, to make the patient more comfortable, while maintaining some measure of restraint.

Drugs: Intramuscular (IM) Medication Administration

REVISED March 2017

Indication:

Specific indication for IM route

Need to administer medications when IV or IO routes are unavailable,

Cases where IV or IO insertion may be hazardous to the medical provider or unnecessary

Cases where IN medication administration has been ineffective.

Procedure:

- Load syringe with desired medication and dose – Attach appropriate needle.
- Administer IM into deltoid (adult max 2 ml per site) –OR- vastus lateralis (max 5ml per site)
- Continue treating the patient per appropriate protocol
- Continuously re-assess the patient

Intranasal (IN) Medication Administration

REVISED March 2017

Indications:

Need to administer medications when IV or IO routes are unavailable –OR-

Cases where IV or IO insertion may be hazardous to the medical provider or otherwise undesirable.

MICP's and EMT-3s may consider IN administration of fentanyl or ketamine (per pain protocol) in hemodynamically stable patients when vascular access has not yet been obtained.

Procedure:

- Load syringe with desired medication and dose. Attach nasal atomizer
- Place atomizer 1.5 cm into the nostril
- Briskly compress syringe to give maximum 1 ml of atomized spray per nostril
- Continue treating the patient per appropriate protocol
- Continuously re-assess the patient

Drugs: Administration of Patient's Prescribed Medication

REVISED March 2017

Under certain circumstances it may be beneficial for an emergency responder to administer a patient's own medication. MSB EMS personnel trained to the EMT-1 level or higher are authorized to administer a limited number of such drugs under the circumstances described here.

BEFORE giving any medication the EMT must confirm the following:

- The medication is prescribed for that patient.
- The medication is not expired
- The patient has not already reached or exceeded the maximum dose.

The medication administered should accompany the patient to the hospital, and clear documentation of the name, dose and expiration date should be recorded in the PCR.

Epinephrine

For a patient in anaphylaxis or severe allergic reaction causing respiratory distress, an EMT on location prior to ambulance arrival may administer the patient's own epinephrine via auto-injector. If the patient possesses epinephrine in another form that the EMT has been trained to use, he or she may assist the patient according to the dosage prescribed.

If the ambulance is on location, with a responder trained to the EMT-3 level or higher, he or she should administer epinephrine from the ambulance supply.

Bronchodilator Inhalants

For a patient in respiratory distress due to asthma or other diagnosed condition for which an inhalant medication has been prescribed, an EMT may assist the patient in taking the medication via MDI.

If the ambulance is on location, with a responder trained to the EMT-2 level or higher, he or she should administer nebulized albuterol/Atrovent from the ambulance supply.

Nitroglycerin

For a patient with chest pain of suspected cardiac origin an EMT may administer the patient's own nitroglycerin tablets or nitroglycerin spray sublingually, up to 3 doses at intervals of 3 to 5 minutes.

BEFORE administering nitroglycerin to a patient the EMT must verify the following:

- The patient has NOT used phosphodiesterase inhibitors such as; Viagra, Revatio or Levitra in the past 24 hours or Cialis in the past 48 hours.
- The patient's SBP > 110, and HR is >50 and <100 beats/min. Repeat vital signs before each dose of nitroglycerin.

If the ambulance is on location, with a responder trained to the EMT-3 level or higher, use nitroglycerin from the ambulance supply.

Device: Glucometer

REVISED March 2017

Indications:

Known or suspected hypoglycemia

Altered mental status

Seizures

Cerebrovascular accidents (strokes and TIAs)

Suspected diabetic ketoacidosis (DKA)

Suspected hyperglycemic hyperosmolar nonketotic syndrome (HHNK)

<u>Required Supplies:</u>	Alcohol prep pad	2x2 gauze
	Meter	Test strip
	Sterile lancet	Band-Aid

Procedure:

- Cleanse the finger to be tested with alcohol prep pad
- Insert test strip (contact bars end first and facing up) into the test port. (Verify code number on meter matches code number on test strip vial.)
- Use sterile lancet to puncture skin. Massage fingertip gently to obtain drop of blood. (Do not squeeze excessively on the puncture site.)
- Hold edge of the test strip to the drop of blood until confirmation window is full. (Do this after the flashing drop symbol appears.)
- Apply direct pressure to the puncture site with 2x2 gauze. Apply Band-Aid as needed.
- BGL results will appear after glucometer counts down from five to one. Record BGL. (Example: 104 mg/dl)
- Discard used test strips.
- Dispose of lancet in sharps container.

Mat Su Borough EMS

Formulary

REVISED March 2017



Acetaminophen (Tylenol)

REVISED March 2017

Description:

Antipyretic

Indication:

Fever with temperature greater than 100.4° F

Contraindications:

- Allergy
- Severe liver disease
- Heat injury
- Malignant hyperthermia
- Serotonin syndrome

Dose:

15 mg/kg PO (adult dose 1000mg)

Albuterol

REVISED March 2017

Description:

Sympathomimetic causes bronchodilation by stimulating β_2 receptors in bronchial smooth muscle

Indications:

- Wheezing due to asthma, COPD or lung infections
(EMT-1) assist patient with prescribed albuterol
(EMT-2) give up to 3 doses (mixed with Atrovent) prior to Medical Control contact.
- Known or suspected hyperkalemia

Contraindications:

Allergy

Precautions:

- Patient with tachycardia
- Effects of albuterol may be lessened if patient is taking beta-blocking drugs

Side effects:

- Tachycardia
- Dysrhythmia

Dose:

- Adult: 5mg q15 minutes or continuous up to 20mg/hour
- Pediatric: Pt < age 6 months 1.25mg q15-30 minutes or continuous up to 0.5 mg/kg/hour
Pt > age 6 months 2.5 mg q15-30 minutes or continuous up to 0.5 mg/kg/hour

Routes:

- Inhaled as a mist via nebulizer
- Nebulizer in-line with NRB, BVM or CPAP.
- Nebulizer in-line with BVM to ET tube / King Airway

Amiodarone (Cordarone)

REVISED March 2017

Description:

Antidysrhythmic that acts on sodium, potassium and calcium channels, also has alpha and beta-adrenergic blocking properties

Indications:

- (EMT-3) VF / Pulseless VT refractory to defibrillation and epinephrine
- (MICP) Terminated VF/VT

Contraindications:

- 2nd or 3rd degree AV blocks in absence of functioning pacemaker
- Allergy
- Bradycardia
- Known tricyclic antidepressant or sodium channel blocker overdose
- PEA or asystolic arrest

Precautions:

- Cardiogenic shock
- Prolonged Q-T
- Heart failure
- Must be administered slowly in patients with a perfusing rhythm.

Side effects:

- Hypotension/bradycardia
- Heart conduction abnormalities
- Dysrhythmias
- Nausea/vomiting

Dose:

- Pulseless VT/VF – 300 mg IV/IO push (repeat 150 mg after 3-5 minutes if needed)
- Persistent VT with pulse (>30 seconds) – 150 mg IV/IO over 10 min –THEN- 1mg/min drip

Pediatric dose:

- Pulseless VF/VT – 5 mg/kg IV/IO to max 300mg (repeat q3-5 minutes x2 if needed)
- Persistent VT with pulse (>30 seconds) – 5mg/kg IV/IO over 30 min to max 150 mg (repeat one time if needed)

Amiodarone Drip Preparation: (MICP only)

- Mix **100mg amiodarone** (2mL of 50mg/ml) in **100mL bag NS** for approximately 1mg/ml concentration
- Label bag, indicating contents and concentration

Aspirin

REVISED March 2017

Description:

Anti-inflammatory that inhibits platelet aggregation

Indications:

History, symptoms, and/or EKG suspicious of acute coronary syndrome

Contraindications:

- Allergy
- Suspected intracranial hemorrhage
- Suspected aortic dissection
- Patient with acute neurologic deficit
- Current active bleeding

Dose:

324 mg (supplied in 81 mg tablets)

Route:

PO chewed and swallowed – make sure patient is alert enough for oral intake

Atropine

REVISED March 2017

Description:

Parasympatholytic (anticholinergic) blocks acetylcholine receptors

Indications:

- Symptomatic bradycardia
- Bradycardia secondary to neurogenic shock
- Cholinergic poisonings: Chemical weapons, pesticides, herbicides

Precautions:

- Use with caution in the presence of myocardial ischemia
- Avoid in hypothermia
- Not effective for 2° type II and 3° heart blocks

Side effects:

- Tachycardia
- Pupillary dilation which may exacerbate glaucoma
- Dry mouth

Dose:

Bradycardia: 0.5 mg IV/IO push at 3-5 min intervals (maximum 3 mg)

Organophosphate poisoning: Requires large doses – may exceed 3 mg in these cases

Route:

IV/IO

Pediatric dose:

0.02 mg/kg IV push (minimum dose: 0.1mg, max dose 0.5mg) may repeat once after 5 minutes, if needed

Calcium Chloride

REVISED March 2017

Description:

Essential electrolyte for cardiovascular function.

Indications:

Cardiac instability or arrest from:

- Hyperkalemia
- Calcium channel blocker toxicity
- Hypermagnesemia
- Hypocalcemia

Contraindication:

Digoxin toxicity

Precautions:

- Cannot be used in the same IV tubing as sodium bicarbonate
- Avoid administering calcium through small peripheral veins

Dose:

20mg/kg IV/IO (1g adult) may repeat twice if cardiac instability continues:

- Perfusing patient – give over 5 minutes
- Pulseless patient – IV/IO push

Dextrose (D₅₀, D₁₀)

REVISED March 2017

Description:

Carbohydrate used to raise blood glucose level in cases of hypoglycemia. (D₁₀ preferred)

Indications:

BGL <60 and any of the following:

- Symptoms of hypoglycemia including: anxiety, diaphoresis, nausea
- Altered mental status
- Coma or seizure
- Neurologic symptoms or deficit
- Newborn infant with signs of hypoglycemia (BGL <40)

Contraindication:

Do not give IV/IO D₅₀ to infants and young children

Precautions:

Avoid administration of D₅₀ through small peripheral veins

Dose:

All patients: D₁₀ 2ml/kg IV/IO drip over 5-20 minutes –OR– (adult only) D₅₀ 12-25 g slow IV/IO push

Diphenhydramine (Benadryl)

REVISED March 2017

Description:

Antihistamine

Indication:

Dystonic reaction

Mild to moderate urticaria

Contraindications:

- Allergy
- Pediatric patient less than 6 yo

Precautions:

- Known prolonged Q-T interval
- Decreased level of consciousness

Dose:

1mg/kg IV/IO/IM (max 50 mg)

Epinephrine 1:10,000

REVISED March 2017

Description:

Sympathomimetic that stimulates alpha (α) and beta (β₁ and β₂) receptors

Indications:

(EMT-3)

- Cardiac arrest
- Pediatric bradycardia / cardiac arrest
- Newborn resuscitation

(MICP – IV epinephrine drip)

- Severe anaphylaxis with shock refractory to IM epinephrine
- Bradycardia refractory to atropine and pacing
- Severe hypotension not due to hypovolemia

Precautions:

- May cause hypertension and tachydysrhythmias
- Patients with cardiac history

Adult Dose:

Cardiac Arrest: – 1 mg IV push

Shock: – IV drip (adult: Start 2-10 mcg/min, titrate to good perfusion, max 20mcg/minute)

Pediatric Dose:

Pediatric Cardiac Arrest: – 0.01 mg/kg (0.1 ml/kg) IV/IO push

Newborn Resuscitation: – 0.01 to 0.03 mg/kg (0.1-0.3 ml/kg) IV/IO push

Pediatric epinephrine drip: – 0.1 mcg/kg/min titrated to 0.5 mcg/kg/min (max 20mcg/min)

Epinephrine drip preparation: (MICP only)

- Mix **1 mg epinephrine 1:10,000** (1 preload) in **1000 ml NS** for approx 1 mcg/ml concentration.
- Clearly label the IV bag with contents and concentration

Epinephrine 1:1000

REVISED March 2017

Description:

Sympathomimetic that stimulates alpha (α) and beta (β₁ and β₂) receptors

Indication:

Intramuscular:

- Severe allergic reaction / anaphylaxis / angioedema
- Severe asthma attack / COPD

Nebulizer:

- Upper airway swelling/obstruction due to croup, epiglottitis, angioedema, anaphylaxis, etc...
- Suspected bronchiolitis/bronchospasm refractory to albuterol/Atrovent

Precautions:

May cause hypertension and tachydysrhythmias

Adult Dose:

Intramuscular: 0.5 mg (0.5 ml) – repeat same dose x2 q5 minutes (total: three doses)

Nebulized: 5mg (5ml)

Pediatric Dose:

Intramuscular: 0.01 mg/kg (0.01 ml/kg) IM – max 0.5 mg (0.5 ml). May repeat x2 q5 min (total 3 doses)

Nebulized: Patient ≥ 1 yo: 5 mg

Patient < 1 yo: 2.5 mg (mixed with 2.5 ml NS). May repeat q15-30 min x2 if needed

Fentanyl

REVISED March 2017

Description:

Powerful synthetic opioid analgesic; (100 times as strong as morphine,) binds to opioid receptors, reducing pain

Indications:

- Severe, acute pain
- Premedication for transcutaneous pacing or synchronized cardioversion

Contraindication:

- Allergy
- Pt < age 2

Precautions:

- Shock
- Decreased level of consciousness
- Respiratory compromise
- Chest wall rigidity may occur with large doses given rapidly (may be overcome by BVM ventilation or reversed with Narcan if unable to ventilate).
- In combination with other CNS depressants, fentanyl may potentiate respiratory/CNS depression and hypotensive effects

Dose:

0.5–1.5 mcg/kg (adult 100mcg)

Route:

Slow IV/IO or IN

IMPORTANT:

Fentanyl/carfentanil are now being found in illegal street drugs, disguised as other legal drugs, or being used to cut unrelated drugs such as cocaine or methamphetamine, which may result in a clinical presentation consistent with a mixed pharmacology overdose.

Carfentanil is 100 times as strong as fentanyl. Tiny amounts can cause severe respiratory depression and cardiovascular collapse, requiring prolonged ventilation, CPR, large doses of naloxone (up to 10-16mg total), fluid boluses, vasopressors, and intubation.

Tiny amount of absorbed/ingested/inhaled carfentanil may be harmful/fatal to first responders.

Glucagon

REVISED March 2017

Description:

Pancreatic hormone increases BGL in hypoglycemia when IV access is not available.

Indication:

Suspected hypoglycemia in patient without vascular access

Contraindication:

Allergy

Precaution:

Mix with sterile water - do not mix with saline

Side effects:

Nausea/vomiting

Dose:

0.025mg/kg IM (adult 1 mg) If hypoglycemia persists following glucagon, give IV/IO dextrose ASAP.

Ipratropium Bromide (Atrovent)

REVISED March 2017

Description:

Anticholinergic bronchodilator chemically related to atropine

Indication:

Wheezing due to asthma, COPD, lung infection, etc...

Contraindication:

Allergy

Precaution:

Allergy to soy or peanuts

Dose:

Patient \geq 30 kg: 0.5 mg q20 minutes PRN (total 3 doses)

Patient $<$ 30 kg: 0.25mg q20 minutes PRN (total 3 doses)

Route:

Nebulizer

Ketamine

REVISED March 2017

Description:

Medication with multiple clinical properties, depending on dosage, ranging from analgesia, to dissociation, to general anesthesia with increasing doses.

Indications:

- Pain control
- Procedural sedation
- Excited Delirium / Chemical Restraint

Contraindication:

- Allergy
- Pt age < 2

Precautions:

- Emergence reaction – calm environment with verbal reassurance helps
- Pregnancy
- Provide continuous monitoring, when possible (EKG, SpO₂, EtCO₂)
- Have resuscitation equipment readily available
- Reassess patient every 5 minutes
- Hypertension SBP >180
- Known penetrating eye injury

Side Effects:

- Allergic reactions
- Nausea/Vomiting
- Hypertension
- Tachycardia
- Laryngospasm

Dose:

Pain Control: 0.1-0.3mg/kg IV/IO –OR- 1mg/kg IN

Sedation: 0.5-1 mg/kg IV/IO

Excited Delirium / Chemical Restraint: 1-1.5 mg/kg IV/IO –OR- 4mg/kg IM

Lidocaine 2%

REVISED March 2017

Description:

Sodium channel blocker and local anesthetic

Indications:

- Antidysrhythmic alternative when precautions or contraindications to amiodarone exist
- Premedication before IO infusion

Contraindications:

- Allergy
- 2nd or 3rd degree AV blocks
- Bradycardia

Precaution:

Discontinue infusion immediately if signs of toxicity develop

Signs of Toxicity:

Neurological effects: Widely ranging from slurred speech to AMS or seizure

Cardiac effects: Hypotension, bradycardia, widened QRS

Adult Dose:

Pulseless pt: 1-1.5 mg/kg IV/IO – repeat q5-10 minutes PRN at 0.5-0.75 mg/kg (max total dose 3 mg/kg)

Persistent VT >30 sec w/pulse: 1 mg/kg IV/IO – then 4mg/min drip

Premedication before IO infusion: (Adult) 40 mg slow IO push

Pediatric Dose:

Pulseless pt: 1 mg/kg IV/IO – repeat q5-10 minutes PRN (maximum total dose 3 mg/kg)

Persistent VT >30 sec w/pulse: 1 mg/kg slow IV – repeat x2 if needed

Lidocaine Drip Preparation: (MICP only)

- Mix 100mg lidocaine (1 preload) in 100mL NS for approximately 1mg/ml concentration
- Clearly label IV bag with contents and concentration

Magnesium Sulfate

REVISED March 2017

Description:

Essential electrolyte with many metabolic functions

Indications:

- Severe asthma/COPD
- Torsades de Pointes with pulse
- Eclampsia
- Hypomagnesemia

Precautions:

- Renal insufficiency
- Bradycardia, 2nd degree type II or 3rd degree heart block
- Provide cardiac monitoring for any patient receiving magnesium

Toxicity:

Stop infusion immediately, reassess patient, and address the following as indicated:

- Hypotension – provide fluid bolus
- Heart block / bradycardia – calcium chloride
- AMS, respiratory depression, muscular weakness – support airway/breathing

Dose:

Refractory asthma: 50mg/kg IV/IO (adult 2g) over 20 minutes

Eclampsia: 4g IV/IO over 20 minutes

Torsades de Pointes w/pulse: 50 mg/kg IV/IO (adult 2g) over 20 minutes.

Midazolam (Versed)

REVISED March 2017

Action:

Benzodiazepine that provides short-term CNS depression / retrograde amnesia

Indications:

- Seizure
- Need for short acting sedation/amnesia prior to procedures (synchronized cardioversion / pacing)
- Anxiety
- Stimulant-induced CP or dysrhythmia
- Sedation after advanced airway placement

Contraindication:

Allergy

Precautions:

- Respiratory depression
- Hypotension with higher IV doses

Dose:

Sedation: 0.025 – 0.5 mg/kg IV/IO/IM/IN (typical adult dose 2.5mg)

Seizure: 0.1 mg/kg IV/IO/IM, may repeat q5 min x2 for persistent seizure (max single dose 10 mg)

Naloxone (Narcan)

REVISED March 2017

Description:

Reverses effects of opioids (heroin, morphine, etc...) by competing for receptor sites

Indication:

Opioid overdose with respiratory depression

Side effects:

Opioid withdrawal / seizure
Nausea/vomiting

Adult Dose:

0.1-0.4mg IV/IO
0.4mg IM
2mg IN

Any of the above routes: may repeat q3-5 minutes, titrate to adequate respiratory effort

Pediatric Dose:

0.1mg/kg IV/IO/IM (max 0.4mg)
0.1mg/kg IN (max 2mg)

Any of the above routes: may repeat q3-5 minutes, titrate to adequate respiratory effort

IMPORTANT: Large doses (up to 10-16mg total) may be required for patient-administered overdoses of fentanyl/carfentanyl.

Nitroglycerin

REVISED March 2017

Description:

Causes venous dilation, decreasing myocardial workload and oxygen consumption

Indications:

History, symptoms, and/or EKG suspicious for ACS

Acute pulmonary edema

Contraindications:

Hypotension (SBP <110)

Acute RV infarct

Marked bradycardia or tachycardia

Precautions:

Aortic stenosis or hypertrophic cardiomyopathy

Dehydration or volume depletion

Known inferior AMI

- For known inferior MI obtain a right-side EKG to assess for RV infarct ASAP
- Withhold NTG if RVI is suspected

Use of phosphodiesterase inhibitors for erectile dysfunction:

- Within past 24 hours for sildenafil (Viagra, Revatio) or vardenafil (Levitra)
- Within past 48 hours for tadalafil (Cialis)
- Call Medical Control for direction

In patients with ACS and marked hypertension, avoid excessive drops in blood pressure (>30mmHg drop in SBP or 25% drop in MAP).

Side effects:

Hypotension

Headache

Dose:

0.4 mg SL q3-5 minutes PRN (Stop if symptoms resolve)

Notes: Establish vascular access as soon as possible
Reassess VS and patient response to NTG after each dose

Normal Saline (0.9% NaCl)

REVISED March 2017

Description:

Isotonic electrolyte used for fluid replacement

Indications:

- IV access required in emergency situations
- Fluid replacement in hypovolemic states
- Used as a diluent for IV medications

Precaution:

Fluid overload

Dosing Range:

5-30 ml/kg depending on clinical situation

Route:

IV/IO infusion

Ondansetron (Zofran)

REVISED March 2017

Description:

Antiemetic

Indications:

Treatment of nausea and vomiting

Contraindication:

- Known hypersensitivity to the drug
- First trimester pregnancy
- Pt age < 2
- Prolonged Q-T

Adult Dose:

4mg IV/IO/IM – may repeat in 20-30 minutes

–OR–

8mg SL

Pediatric Dose:

0.15 mg/kg IV/IO/IM/SL (max 4mg)

Oral Glucose

REVISED March 2017

Description:

Carbohydrate that raises blood glucose level

Indication:

Symptomatic hypoglycemia (BGL < 60)

Precautions:

Patient must be able to swallow if glucose is given PO

Dose:

15g (unit dose – 1 tube glucose gel) – may repeat after 20-30 minutes if persistent BGL < 60

Route:

PO

Note: Buccal glucose may be considered in the absence of other available interventions such as IV dextrose or IM glucagon. A small enough amount as to not present an aspiration hazard may be placed between the patient's cheek and gum. This is a last resort measure, and may not be effective.

Oxygen

REVISED March 2017

Description:

21% of the air we breathe, often compressed/concentrated for medical purposes

Indications:

- Hypoxic patient
- Known or suspected CO poisoning
- Cardiopulmonary arrest patient

Precautions:

- Excessive oxygen administration can be detrimental.
- Target oxygen saturations are provided in applicable protocols.

Dose:

1-15 lpm

Route:

Inhaled, or delivered via the following:

- Non-rebreather mask (NRB)
- Nasal cannula
- Nebulizer
- Humidifier (aqua-pak)
- BVM
- Advanced airway
- CPAP

Sodium Bicarbonate

REVISED March 2017

Description:

Alkalotic agent that neutralizes acid in the blood – may help return pH to normal limits and decrease toxicity of certain medications

Indications:

- Severe metabolic acidosis (consult Medical Control if suspected)
- Certain OD including: tricyclic antidepressants, aspirin, cocaine, and diphenhydramine with:
 - Widened QRS
 - Cardiac arrhythmia
 - Cardiac arrest
 - Seizure
- Suspected hyperkalemia with EKG changes

Contraindication:

Respiratory acidosis

Precautions:

May react with other medications (flush IV line well before and after administering – consider establishing a second IV for Sodium Bicarbonate use)

Dose:

1 mEq/kg (adult 1 amp) may repeat in 10 minutes if needed

Route:

Pulseless rhythms: IV/IO push

Perfusing rhythms: Slow IV/IO over 5 minutes

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Mat Su Borough EMS

Medical Abbreviations and EMT Scope of Practice Matrix

REVISED March 2017



EMS Approved Abbreviations

REVISED March 2017

ABC	airway, breathing, circulation	D ₅ W	5% dextrose in water
ACLS	advanced cardiac life support	DBP	diastolic blood pressure
ACS	acute coronary syndrome	DKA	diabetic ketoacidosis
Afib	atrial fibrillation	dl	deciliter
AHA	American Heart Association	DNR	do not resuscitate
AIDS	acquired immunodeficiency syndrome	Dx	diagnoses
ALS	advanced life support	ED	emergency department
AMI	acute myocardial infarction	EKG/ECG	electrocardiogram
AMS	altered mental status	EMT	emergency medical technician
amps	ampules	ePCR	electronic patient care report
APGAR	appearance, pulse, grimace, activity, respirations	Epi	epinephrine
ASA	aspirin	ER	emergency room
ASAP	as soon as possible	EtCO ₂	end tidal carbon dioxide
ATLS	Advanced Trauma Life Support	ETOH	alcohol
ATV	all terrain vehicle	ET	endotracheal
AV	atrioventricular	ETA	estimated time of arrival
AST	Alaska State Troopers	ETT	emergency trauma technician or endotracheal tube
BGL	blood glucose level	fib	fibrillation
bicarb	sodium bicarbonate	Fx	fracture
BLS	basic life support	g	gram
BP	blood pressure	GCS	Glasgow coma score
BVM	bag valve mask	GI	gastrointestinal
CAD	coronary artery disease	GSW	gun shot wound
CC	chief complaint	H or hr	hour
CHF	congestive heart failure	Hg	mercury
cm	centimeter	HIV	human immunodeficiency virus
cmH ₂ O	centimeters of water	HR	heart rate
CNS	central nervous system	Hs & Ts	treatable causes of cardiac arrest
c/o	complains of	Hx	history
CO	carbon monoxide	ICU	intensive care unit
CO ₂	carbon dioxide	IM	intramuscular
COPD	chronic obstructive pulmonary disease	IN	intranasal
CPAP	continuous positive airway pressure	IO	intraosseous
CPR	cardiopulmonary resuscitation	IV	intravenous
CSF	cerebral spinal fluid	IVP	intravenous push
CSM	circulation, sensation, motor	J	joules
CT	computerized axial tomography	JBER	Joint Base Elmendorf Richardson
CVA	cerebral vascular accident	JVD	jugular venous distension
D/C	discontinue	kg	kilogram
		LOC	level of consciousness
		lpm	liters per minute

LVAD	left ventricular assist device	PICC	peripherally inserted central catheter
MAP	mean arterial pressure	PO	by mouth
Max	maximum	PR	per rectum
Mcg	microgram	PRN	whenever necessary, as needed
MCI	mass casualty incident	pt	patient
MD	medical doctor	PVC	premature ventricular contraction
mEq	milliequivalents	q	every
mg	milligram	R/O	rule out
MICP	mobile intensive care paramedic	RN	registered nurse
min	minute or minimum	ROSC	return of spontaneous circulation
ml	milliliter	RR	respiratory rate
mm	millimeter	RV	right ventricle
MSRMC	Mat Su Regional Medical Center	RVI	right ventricular infarct
MVC	motor vehicle collision	Rx	treatment
NC	nasal cannula	SBP	systolic blood pressure
NCO	narcotics control officer	Sec	second
NG	nasogastric	SL	sublingual
NPA	nasopharyngeal airway	SOB	shortness of breath
NPO	nothing by mouth	SpO ₂	percentage saturated hemoglobin
NRB	nonrebreather mask	STAT	immediately
NRP	neonatal resuscitation protocol	STEMI	ST elevation myocardial infarction
NS	normal saline	SVT	supraventricular tachycardia
NSR	normal sinus rhythm	SW	MSO co-author / key contributor
NTG	nitroglycerin	Sx	symptoms
O ₂	oxygen	TB	tuberculosis
OB	obstetrics	TBSA	total body surface area
OD	overdose	TIA	transient ischemic attack
OG	orogastric	TKO	to keep open
OPA	oropharyngeal airway	VF	ventricular fibrillation
OR	operating room	VS	vital signs
PAC	premature atrial contraction	VT	ventricular tachycardia
PALS	pediatric advanced life support	W/	with
PE	pulmonary embolism	WPD	Wasilla Police Department
PEA	pulseless electrical activity	x	times
PEEP	positive end expiratory pressure	yo	years old
PEPP	pediatric education for pre-hospital providers	<	less than
PERRL	pupils equal, round, reactive to light	>	greater than
pH	potential of hydrogen		

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MSB EMS Scope of Practice Matrix

REVISED March 2017

	AK Standard Skills/Procedures	AK Standard Medications	MSB ESP Medications	MSB ESP Skills/Procedures
ETT	CPR/BLS VS Assessment Physical Exam & Hx BVM Ventilation Oral Suction Bleeding Control Basic Shock Tx Spinal Immobilization Long Bone Splinting Traction Splinting* OPA/NPA*	Oxygen Administration*	None	None
EMT-1	<u>ETT skills plus:</u> AED Trauma Assessment Medical Assessment	<u>ETT medication plus:</u> Oral Glucose Aspirin Assist w/pt's meds: •Nitroglycerin •Epi-pen •MDI Bronchodilators	Aspirin IN/IM Narcan IM epinephrine IM Glucagon Nebulized Albuterol & Atrovent	Glucometry CPAP IM/IN Med Admin EKG 3-lead / 12-lead Selective Spinal Immobilization
EMT-2	<u>EMT-1 skills plus:</u> King Airway IV/IO Access IV Medication Admin	<u>EMT-1 meds plus:</u> Narcan Dextrose IV Fluids	<u>EMT-1 ESP meds plus:</u> Zofran Tylenol SL Nitroglycerin	<u>All EMT-1 ESP skills</u>
EMT-3	<u>EMT-1&2 skills plus:</u> EKG 3 & 12-lead Cardiac Arrest Tx Manual defibrillation: •VF •Pulseless VT	<u>EMT-1&2 meds plus:</u> Epinephrine 1:1000 Epinephrine 1:10,000 Nitroglycerin Atropine Lidocaine	<u>EMT-1&2 meds plus:</u> Acetaminophen Amiodarone Diphenhydramine Fentanyl Ketamine Magnesium Sulfate Midazolam Sodium Bicarbonate	<u>EMT-1&2 skills plus:</u> Transcutaneous pacing Synchronized Cardioversion Needle Chest Decompression

Important: MSB EMS providers are authorized to perform a skill, procedure or drug administration, as represented in this matrix, ONLY if they have documented training completion on record with the MSB EMS Training Department for that particular item. Such documentation includes State of AK EMT certification, MSB ESP training, and ETT curriculum verification. Of particular importance are ETT items marked with an asterisk (*), as these are optional skills for ETT training, and may not have been included in all ETT training courses attended by MSB EMS responders. The best rule of thumb to follow here is: "If you have not yet been trained, do not attempt the skill or procedure, and do not give the drug."