# Dane County EMS System



# Field Operator's Guide 2020-2022

Basic EMT / A-EMT / Paramedic Approved January, 2020

### **Madison and Dane County Community Resources**

Call 2-1-1 any time for information about almost anything related to health and human services. You can also visit <u>http://www.211wisconsin.org</u> or <u>https://www.danecountyhumanservices.org</u>

Aging and Disability Resource Center (http://www.daneadrc.org/)	
Free information and assistance for adults aged 60+ and people with disabilities	
Drug Abuse and Addiction Resources	
Parent Addiction Network of Dane County (http://www.parentaddictionnetwork.org)	
Resources for family and friends of people battling drug addiction	
Dane County Behavioral Health Specialist	608-242-6461
(latking (Free)	
Community Action Coalition (http://www.caccou.org/clothing.contor.php)	609 246 4720 ovt 216
Community Action Coantion ( <u>http://www.cacscw.org/ciotning-center.pnp</u> )	
Dane County Human Services (http://www.danecountyhumanservices.org/default.aspx)	
Provides protection of children and adults at risk mental health and substance abuse services servic disabilities; and financial assistance	es and transportation for older adults and people w
Domestic Abuse Intervention Services (http://abuseintervention.org/)	608-251-4445
Assistance for individuals in abusive relationships	
ALV. AL	
Economic Assistance	
Dane County Job Center (http://www.danejobs.com/)	888-794-5556 and/or 608-242-4900
Food Pantries and Meal Locations	2.1.1
	2-1-1
Health Care Coverage	
Dane County Job Center-Income Maintenance Agency (http://access.wisconsin.gov/)	
Application assistance for BadgerCare / Medicaid and food stamps	
Covering Wisconsin (http://coveringwi.org/)	
Application assistance for Affordable Care Act ("Obamacare") health care plans	62
Home Health Hospice Care, Medical Fourinment and Supplies	2-1-1
If you have insurance, contact your provider and/or insurance company	6 10 6 6 1 1 2
Aging and Disability Resource Center (http://www.daneadrc.org/)	
	SI DE D
Homeless Services and Shelters	
Housing Crisis Hotline (Community Action Coalition)	
Porchlight, Inc. ( <u>http://porchlightinc.org</u> )	608-257-2534
YWCA ( <u>http://www.ywcamadison.org</u> )	
Salvation Army ( <u>http://www.salvationarmydanecounty.org/</u> )	
The Road Home (ramily support) ( <u>http://trnome.org/</u> )	
Dental Care	
DANE Cares (http://danecares.org/)	608-957-5802
Public Health Madison and Dane County Dental Line	
Housing (Public and Subsidized)	
Madison Housing Authority (https://www.cityofmadison.com/dpced/housing/)	
Dane County Housing Authority (http://www.dcha.net/)	
Mantal Haalth Caminas If you have baalth incurance, contact your provider and (or incurance company	
Receivery Dane	609 337 1661
lourney Mental Health Center (http://www.journeymbc.org/)	608-237-1001 608-280-2700
Mental Health Crisis Line (24 hours ner dav)	608-280-2700 608-280-2600
Parental Stress Line (8am – 10nm daily)	£08-241-221
Emergency and Crisis Child Care (24 hours per day)	
Transportation	
Dane County Transportation Services (http://danecountyhumanservices.org/Transportation/key_phone	<u>608-242-6486</u>
Madison Metro Transit and Paratransit (https://cityofmadison.com/metro/; https://www.cityofmadiso	n.com/metro/paratransit/)

#### 

### Medical Emergency : Call 9-1-1

Preliminary Information	
Introduction	8
Guidelines	9
Dedication	10

Medical Transport Destination	11
Request for Helicopter EMS (HEMS)	
Helicopter EMS (HEMS) Landing Zones	
Do Not Resuscitate (DNR)	14
Criteria for Death / Withholding Resuscitation	
Termination of Resuscitation	
Child / Elder Abuse Recognition and Reporting	
Documentation of Patient Care	
Documentation of Vital Signs	19
Domestic Violence (Spousal and/or Partner Abuse Recognition and Reporting)	20
Emergent Interhospital Transfers	
Lights and Siren During Patient Transport	
Non-Paramedic Transport of Patients	23
Paramedic Intercept Guidelines	
Patient Care During Transport	25
Patient Without a Protocol	
Physician Bystander on Scene	27
Poison Control	
Patients in Police Custody	
Radio Report Format	30
Transfer of Care at Hospital	
Persons with EMS Care Plans	32
Adult Medical Protocols	

General Approach		
Airway / Breathing	1000	
Airway Management		
Rapid Sequence Airway		
Post Advanced Airway Sedation		
Failed Airway		
COPD / Asthma		
CHF / Pulmonary Edema		
Circulation		
Cardiac Arrest		
ECPR		
Post-Resuscitation		
Chest Pain / Suspected Acute Core	onary Syndrome	
ST-Elevation Myocardial Infarction	n (STEMI)	
Tachycardia With a Pulse		
Bradycardia With a Pulse		
Abdominal Pain / GI Bleeding		
Allergic Reaction		
Altered Mental Status		
Behavioral / Excited Delirium		
Diabetic Emergencies		
Hypertension		
IV Access		

Obstetrics and Gynecology	
OB General	
OB / Vaginal Bleeding	
Labor / Imminent Delivery	58
Newly Born	
Toxicology	
Cholinergic / Organophosphate Overdose	60
Beta Blocker Overdose	61
Calcium Channel Blocker Overdose	62
Carbon Monoxide Poisoning	
Cyanide Poisoning	
Antipsychotic Overdose / Acute Dystonic Reaction	
Opioid Overdose	
Cocaine and Sympathomimetic Overdose	
Tricyclic	68
Pain Management	
Refusals	
Refusal Protocol	
Refusal After EMS Treatment Protocol	71
Neurology	
Seizure	
Suspected Stroke	
Sepsis Screening	
Hypotension / Shock (Non-Trauma)	
Thrombolytic Screening	

General Approach	
Destination Determination	
Bites and Envenomations	
Burns	
Traumatic Cardiac Arrest	
Chemical / Electrical Burn	
Chest Injury	
Prolonged Crush Injury	84
Near-Drowning / Submersion Injury	
Environmental – Hyperthermia	86
Environmental – Hypothermia	
Extremity Injury	
Eye Pain	
Hazmat, General	
Head Injury	91
Hemorrhage Control	92
Lightning Strike	
Electronic Control Device (a.k.a. TASER)	94
Long Board Selective Spinal Immobilization	
Sexual Assault / Intimate Partner Violence	
Hypotension / Shock (Trauma)	97
WMD / Nerve Agent Exposure	
Special Operations	
Public Safety Personnel Rehab	

Peds Medical Protocols	
Quick Reference	
Destination Determination	101
General Approach	102
Airway / Breathing	
Airway Management	103
Invasive Airway	104
Post Airway Sedation	105
Failed Airway	106
Wheezing / Asthma	107
Circulation	
Neonatal Resuscitation	108
Cardiac Arrest, General	
Post Resuscitation Care	111
Tachycardia With A Pulse	112
Bradycardia With A Pulse	
Allergic Reaction	114
Altered Mental Status	115
Brief Resolved Unexplained Event (BRUE – formerly "ALTE")	116
Diabetic Emergencies	117
IV Access	118
Toxicology	
Overdose and Poisoning, General	119
Pain Management	120
Refusal Protocol	121
Seizure	122
Hypotension / Shock (Non-Trauma)	123
Sickle Cell Crisis	124
A A A A A A A A A A A A A A A A A A A	
Peds Trauma Protocols	

Quick Reference	
Destination Determination	
General Approach	
Traumatic Cardiac Arrest	
Bites and Envenomations	
Burns	
Chest Injury	
Prolonged Crush Injury	
Near-Drowning / Submersion Injury	
Environmental – Hyperthermia	
Environmental – Hypothermia	
Extremity Injury	
Eye Pain	
Head Injury	
Hemorrhage Control	
Sexual Assault / Intimate Partner Violence	
Spinal Immobilization	

#### Procedures

Cardiac Monitoring	
12-Lead ECG	140
Right Sided ECG	
Posterior ECG	
Airway	
Airway Obstruction	
Rapid Sequence Airway	
Pulse Oximetry	145
Intubation	146
Pediatric Intubation	148
King LTS-D Laryngeal Tube Airway	150
LMA	152
i-gel Airway	154
Suctioning (Basic)	
Stoma Care (Basic)	156
Suctioning ET Tube	
Tracheostomy Care	
Continuous Positive Airway Pressure (CPAP)	
Bougie	
Capnography	
Cricothyrotomy	
Cricothyrotomy (Open) Surgical	
Control Cric	
Needle Jet Insufflation	
Blood Glucose	167
Carbon Monoxide Measurement	
Cardiac	1
Cardioversion	
Cardiopulmonary Resuscitation (CPR)	
High-Performance CPR	
Defibrillation	
Double Sequential Defibrillation	
External Cardiac Pacing	174
Mechanical CPR Device (LUCAS)	175
Mechanical CPR Device (2001)	177
Chest Decompression	179
BE-EAST Stroke Screen	180
FAST-FD Stroke Screen	181
Intranasal	182
Orogastric Tube Insertion	183
Restraints	184
Spinal Immobilization	185
Spinal Immobilization of Athletes with Helmets	186
Splinting	187
Palvic Rindar	188
Tourniquet (CAT - Combat Application Tourniquet)	180
SOF Tactical Tourniquet – Wide	
Venous Access	
Accessing Parinharally Inserted Central Cathotor (PICC)	101
Accessing Peripherally inserted Central Califeter (PICC)	
Extremity venous Access	
Intradosseous venous Access	
External Jugular Venous Access	
Wound Dacking	
Voortricular Assist Davica (VAD)	

Procedures (continued)	
Nitrous Oxide	197
SALT Triage	198
Base Hospital	199
Care For Law Enforcement Working Canine	201

#### Pharmaceuticals

cetaminophen			
denosine			
buterol			
miodarone			
spirin			
tropine			
alcium			
extrose			
azepam			
ltiazem			
phenhydramine			
uoDote Kit			16
pinephrine			
omidate			
amotidine			
entanvl			
lucagon			
lucose (Oral)			
aloperidol			
vdroxocobalamin.			
uprofen		82	
ratropium		10561 CA	
etamine		11291121	
etorolac	1 /27		
docaine	- @ ///		
brazenam			
lagnesium	20 5 7/1		
ark 1 Kit			
lethylprednisolone			
lidazolam			
alovone			
itroglycerin			
itrous Ovide			
oreninenhrine			
ndansatron			
adium Picarbonato			
uccinvleholino			
recurry Icholinie			
dilexamic Aciu (TXA)			
ved Abbreviations		244	

#### Authorization:

In accordance with Wisconsin Statute 256 and Chapter 110 of the Wisconsin Administrative Code, effective February 1<sup>st</sup>, 2020 the following medical protocols are authorized by the Dane County EMS Medical Director for use in the County. Changes to these protocols can be made only with the authorization of the Medical Director.

Michael Lohmeier, MD, FACEP, FAEMS Immediate Past Dane Cty Medical Director

Carrie Meier EMS Coordinator



Kacey Kronenfeld, MD Dane Cty Medical Director

#### Introduction:

The Dane County EMS Protocols contained within this document are intended to provide and ensure uniform treatment for all patients who receive care from EMS Agencies and Providers participating in the Dane County EMS System. These protocols apply exclusively to agencies responding via the 9-1-1 System within the County. Any other use must receive prior approval from the Medical Director of Dane County EMS.

These protocols are the direct result of countless hours reviewing evidence-based guidelines, historically proven treatments and the best practices of EMS Systems recognized as leaders in the nation. We sincerely hope that this document will be viewed as an invaluable tool for learning, teaching and reference so that the Dane County EMS System may continue to provide the highest quality of out-of-hospital care. Although we have attempted to address all patient care scenarios, it is possible that unforeseen circumstances and patient care needs will arise. In these situations, the EMS Provider should rely on their education, experience and clinical judgment combined with the principle of patient centered care to achieve optimal results. As always, On-Line Medical Control is available for consultation and assistance with patients, scenarios or presentations that do not fall within the scope of this document.

#### Acknowledgements:

The protocols contained within this document have been extensively reviewed not only by the Dane County EMS Office, but by the Dane County Medical Advisory Subcommittee and representatives from all aspects of the local medical community. They are intended to create a seamless and consistent treatment plan across provider levels, and have been evaluated for applicability as well as internal consistency. While they may not be perfect, it is our sincere hope that this document is viewed as the most complete and robust protocol set possible, and that they meet or exceed the standard set by the top EMS Services in the nation. The Office would like to specifically acknowledge the following individuals and groups for their contributions to this document.

Dane County EMS Commission Dane County Medical Advisory Subcommittee Dane County ALS Consortium Meriter Hospital St. Mary's Hospital William S. Middleton Memorial Veterans Hospital Stoughton Hospital University of Wisconsin Hospitals and Clinics University of Wisconsin Emergency Education Center **The Dane County Protocol Workgroup (ALL 64 Of You!!)** 

- Dr. Michael Mancera Dr. Ann O'Rourke Dr. Ryan Wubben Dr. Amish Raval Dr. Lee Faucher Carrie Meier Charles Tubbs, Sr. Dr. Azita Hamedani Ben Eithun
- Dr. Megan Gussick Dr. Hee Soo Jung Dr. Michael Kim Dr. Jonathan Kohler Dr. Josh Ross Courtney Wassertheurer Dr. J. Brent Myers Tom Ellison Dr. Luke Bradbury

"Our greatest weakness lies in giving up. The most certain way to succeed is always to try just one more time."

-Thomas Edison

#### **Guidelines for Use of Protocols:**

In general, the protocols are divided into Adult and Pediatric sections, with subheadings for Medical and Trauma. For pediatric patients, the appropriate pediatric-specific protocol should be used if one exists. If there is no pediatric-specific protocol for a condition, use the adult protocol but use weight-based dosing for medications. The adult dose of a medication should never be exceeded for a pediatric patient.

There have been a great many changes from previous versions of the Dane County EMS Protocols. While the core of the protocols remains the same – to provide the highest level of patient centered care possible – this protocol book may almost be viewed as a completely new document. A summary of the major formatting changes appears below this paragraph, but it is not a replacement for careful study of the protocol book itself. Please take the time to orient yourself and become familiar with the look and flow of the content.

In order to make the flowcharts easier to read, a standardized presentation has been adopted. For circumstances where an EMS Provider needs to make a decision, the question appears in a diamond-shaped box with the answers coming off in separate, usually opposite directions. For simplicity, every attempt was made to make these "yes/no" or dichotomous decisions whenever possible.

When an EMS Provider is referenced to another **PROTOCOL** within the book, the name of the Protocol appears in a rectangular box, with a lime-green shadow.

If there is a bi-directional arrow referencing another **PROTOCOL**, the intention is that the EMS Provider returns to the current Protocol after a critical assessment or treatment is completed in the referenced Protocol. For example, a bi-directional arrow referencing the Airway Management, Adult Protocol would imply that after the airway has been addressed that the Provider return to the current Protocol for further evaluation and patient management.

When an EMS Provider is referenced to a **PROCEDURE** within the book, the name of the Procedure appears in a rectangular box, with a purple shadow.



When medications are referenced in the Protocol, they are coded to the level of the EMS Provider with a key attached to the left side of the medication box. Procedures and medications that are in the scope of all providers have a **CLEAR** box attached to the left side, Advanced EMTs have a **YELLOW** box with the letter A and Paramedics have a **BLUE** box with the letter P. Any time Medical Control must be contacted for approval or authorization, the key is **RED** with the letter M. The Legend appears in the top left corner of all Protocols for reference. Rather than have multiple boxes attached to each medication, the supposition is that all providers credentialed at a level *higher than the key are authorized* to administer the medication. For example, albuterol has a clear box in the key and is authorized for the Basic, Advanced EMT *and* Paramedic.

Under the heading for each Protocol, there are two sections immediately below entitled, "Pertinent Positives and Negatives" and "Differential". These boxes are meant to be a guide to assist with the pertinent historical information as well as a reminder of the multiple potential causes for a patient presentation that should be considered by the EMS Provider. It is expected that these elements be considered in the patient evaluation and appear in the documentation for the call.

Finally, the "Pearls" section at the bottom of the page provides further guidance as well as some tips to keep in mind when assessing patients and scenes. It is impossible to condense all of Emergency Medicine into a single page flow chart, but the pearls section allows for expanded medical advice, dosages and descriptions of special situations. Please study these sections along with the rest of the flowcharts – there is likely to be something new to learn on every page!

These protocols are the basis of the care we provide. Combined with your experience and education, this document should help you provide patient care that rivals the best in the world.

#### **Dedication**:

These protocols are dedicated to **you**, the EMS Providers of Dane County. It is your tireless dedication, commitment to continuous improvement and solemn promise to care for the sick and injured that makes Dane County, Wisconsin the special community that it is. While missed time with family and friends comes too often and the 'thank yous' come far too infrequently, please know that your time and efforts are sincerely appreciated.

Some people spend a lifetime wondering if they made a difference in the world; you don't have that problem.

#### EMS, Fire and Law Enforcement Honor Guards:

Lastly, we would like to acknowledge all of the EMS, Fire and Law Enforcement Honor Guards within Dane County, who ensure that fallen members of the EMS profession are given the honor, respect and dignity they deserve for the vital service in public safety they so willingly provided to their communities. Thank you for honoring those who have dedicated their lives to others.

#### "For me, I am driven by two main philosophies: know more today about the world than I knew yesterday and lessen the suffering of others. You'd be surprised how far that gets you."

-Neil deGrasse Tyson



	Legend
	EMT
А	A-EMT
Р	Paramedic
М	Medical Control

# **Medical Transport Destination**

#### Purpose:

To provide guidelines for the transport of patients with Time Critical Diagnoses (TCDs) to the most appropriate facility that can provide definitive level care.

#### Policy:

When feasible, patients AND/OR their healthcare power of attorney should be permitted to make autonomous decisions regarding their destination hospital, and given the opportunity to choose. Occasionally, patients may need to be directed away from their preferred institution in favor of a specialty resource center, which can provide advanced levels of care not available at every hospital. In those instances, the EMS Provider's decision should be calmly and respectfully communicated to the patient and their family. By keeping a patient-centered focus and always working to do what is right for the patient, transport to the most appropriate level of care will hopefully be an obvious decision. At the time of publication, the following centers have achieved the appropriate level of credentialing for each of the Time Critical Diagnoses (TCDs) and Specialty Resource Center listed:



Any patient who is judged to be too unstable for transfer to definitive care may be transported to the closest Emergency Department for immediate stabilization

# **Request for Helicopter EMS (HEMS)**

#### Purpose:

To provide general guidelines for the appropriate utilization of Helicopter EMS (HEMS) during routine daily operations.

#### Policy:

Helicopter EMS activation should be considered in Time Critical Diagnoses (TCDs) when the transport time to definitive care is prolonged, as well as situations when advanced resources and skills may help improve the patient's chances of survival. Depending on the situation and resources present, it may be prudent to begin transport by ground ambulance and arrange for a rendezvous at an existing airfield or helipad rather than establish a scene Landing Zone (LZ) and wait for HEMS. Please see the next page for a listing of local airfields and hospital-based helipads that would not require establishment of an LZ by Fire or Law Enforcement.

A helicopter may be considered for request under the following circumstances but not limited to:

- Patient meets Level I Trauma Center criteria under the Destination Determination Protocol AND ground transport time is estimated to be greater than 30 minutes
- Patient is critically ill or injured AND entrapped with extrication expected to last greater than 20 minutes
- Patient has unstable Vital Signs (VS) and ALS intercept would further delay arrival at definitive care
- Patient has field diagnosed ST-Segment Elevation MI and is not expected to make the goal first medical contact-to-balloon time of <90 minutes without HEMS assistance</p>
- Patient requires specialized medical attention in the field that is beyond the scope of the EMS Providers present on scene or available at the time of the emergency (i.e. field amputation)
- Mass Casualty Incident with multiple critically ill or injured patients, when activation would not put the responding HEMS unit at increased risk (i.e. active shooter without neutralized threat)

#### Procedure:

- U When considering air transport, the following terminology should be referenced when speaking with HEMS Dispatch:
  - "Status Inquiry" or "Inquiry" contact asking whether HEMS is available to fly or not based on current weather conditions, aircraft availability and crew status. An aircraft will NOT be reserved based on an "Inquiry", and if another flight "Request" is received before final decision is made the second "Request" WILL be accepted by HEMS.
  - **"Stand-by"** aircraft will be pulled out and prepared for flight with blades turning and ready to lift. If the aircraft has not been "Requested" or stood down by that point, HEMS will "launch and stage" in the air approximately 5 nautical miles from the scene. Anyone in Public Safety may put a helicopter on "Stand-by". If another flight "Request" is received before final decision is made, the second "Request" will NOT be accepted by HEMS.
  - "Request" final decision has been made by the EMS Provider(s) on scene to transport the patient by air, and the helicopter will launch (or proceed if already airborne) to the scene or rendezvous point as soon as possible.
- □ The highest credentialed EMS Provider on scene will determine if a HEMS unit is appropriate for the patient.
- That EMS Provider will request the Dane County 9-1-1 Center to contact Helicopter EMS and "Request" dispatch of the closest, most appropriate HEMS unit.
- A safe landing zone (LZ) must be established per protocol prior to HEMS arrival.
  - If using a landing zone (LZ) in Dane County such as a grass airstrip at night, it should be marked by flares, strobes, vehicle lights or other suitable ground based lighting.
- The highest quality patient care should be continued per Dane County Protocols until HEMS arrival, at which time care may be transitioned to the HEMS medical crew.
- Patients coming from a Hazardous Materials (HazMat) scene need to be fully decontaminated prior to HEMS transport. This includes contamination with various fuels as well as ingestions of volatile substances which may cause off-gassing.
- **Under NO circumstances should patient transport be delayed to use a helicopter.**

There are multiple Helicopter Landing Zones (LZs) in and around Dane County that do NOT require Fire or Law Enforcement establishment. If appropriate for the situation, weather and patient condition, these locations may be considered for rendezvous with the HEMS unit and transfer of patient care. This will take clear communication from the EMS Providers on scene and coordination through the Dane County 9-1-1 Center and the HEMS Dispatcher.

Please see the following page for a map and list of airfields and helipads in the greater Dane County area that may be considered.

### <u>Policies</u>

Legend EMT A A-EMT Paramedic M Medical Control

# Helicopter EMS (HEMS) Landing Zones



- Sauk Prairie Airport
- St. Mary's Sun Prairie Helipad
- Sugar Ridge Airport
- Elert Airport
- Middleton Airport Morey Field
- Verona Airport
- Mathaire Field
- Blackhawk Airfield

- Sauk Prairie Hospital Helipad
- UW at The American Center Helipad
- Waunakee Airport
- Jana Airport
- Stoughton Hospital Helipad
- Stoughton Airport (Matson)
- Lodi Lakeland Airport
- Edgerton Hospital Helipad
- Syvrud Airport

Legend			
	EMT		
А	A-EMT		
Р	Paramedic		
М	Medical Control		

# Do Not Resuscitate (DNR)

#### Purpose:

To clarify the State of Wisconsin Do Not Resuscitate (DNR) laws, and to provide guidance for several exceptions to the rule.

#### Policy:

As defined in Wisconsin Statute 154.17(2), a valid Do Not Resuscitate (DNR) order directs EMS Providers not to attempt cardiopulmonary resuscitation on the person for whom the order is issued if that person suffers cardiac or respiratory arrest. As further defined in 154.17(5), "Resuscitation" means cardiopulmonary resuscitation or any component of cardiopulmonary resuscitation, including cardiac compression, endotracheal intubation and other advanced airway management, artificial ventilation, defibrillation, administration of cardiac resuscitation medications and related procedures. "Resuscitation" does not include the Heimlich maneuver or similar procedure used to expel an obstruction from the throat or upper airway.

There are two types of DNR bracelets available to identify a person with a valid DNR order. One is a plastic ID bracelet, which looks like a hospital ID band. The other is a metal bracelet, which is currently available from StickyJ<sup>®</sup> Medical ID. Per Wisconsin Statute 154, StickyJ<sup>®</sup> is the *current* State of Wisconsin authorized vendor of the metal bracelets; however, the previous MedicAlert<sup>®</sup> bracelets *will continue to be recognized*.







DNR patients should still receive appropriate treatment from EMS Personnel under the Dane County Protocols, to include but not limited to: clearing the airway, administering supplemental O<sub>2</sub>, positioning for comfort, splinting extremities, hemorrhage control, providing pain medications, providing emotional support and transporting to an Emergency Department for evaluation.

DNR orders shall be followed by EMS Providers, except in the following situations:

- □ The Do-Not-Resuscitate bracelet appears to have been tampered with or removed
- The emergency medical technician, first responder or member of the emergency health care facility knows that the patient is pregnant
- The Do-Not-Resuscitate order is revoked. Methods for revocation may occur at any time by the following (154.21):
  - The patient expresses to an emergency medical technician, first responder or to a person who serves as a member of an emergency health care facility's personnel the desire to be resuscitated. The emergency medical technician, first responder or the member of the emergency health care facility shall promptly remove the do-not-resuscitate bracelet.
  - The patient defaces, burns, cuts or otherwise destroys the do-not-resuscitate bracelet.
  - The patient removed the do-not-resuscitate bracelet or another person, at the patient's request, removed the do-not-resuscitate bracelet
- The Guardian or Health Care Agent of an incapacitated qualified patient may direct an emergency medical technician, first responder or a person who serves as a member of an emergency health care facility's personnel to resuscitate the patient. The emergency medical technician, first responder or the member of the emergency health care facility shall promptly remove the do-not-resuscitate bracelet. (154.225)

Under Wisconsin Statute 154.23, no physician, emergency medical technician, first responder, health care professional or emergency health care facility may be held criminally or civilly liable, or charged with unprofessional conduct, for any of the following:

- Under the directive of a do-not-resuscitate order, withholding or withdrawing, or causing to be withheld or withdrawn, resuscitation from a patient
- Failing to act upon the revocation of a do-not-resuscitate order unless the person or facility had actual knowledge of the revocation
- Failing to comply with a do-not-resuscitate order if the person or facility did not have actual knowledge of the do-not-resuscitate order or if the person or facility in good faith believed that the order had been revoked.

Legend				
	EMT			
А	A-EMT			
Р	Paramedic			
М	Medical Control			

# Criteria for Death / Withholding Resuscitation

#### Purpose:

To provide guidelines for situations when initiation of resuscitative efforts by EMS Personnel is not appropriate. For patients with a valid Do-Not-Resuscitate (DNR) order, please refer to the Do Not Resuscitate Policy.

#### Policy:

Resuscitative efforts should not be undertaken for an adult patient ≥18 years of age who is pulseless and apneic IF one or more of the following criteria are met:

- Decapitation
- Incineration
- Decomposition of Body Tissue
- □ Rigor Mortis and/or Dependent Lividity
- □ Massively Deforming Head or Chest Injury
- **Grader Streezing to the point of Rigor Mortis**

Do not initiate resuscitative measures for patients meeting the above criteria. Confirmation of asystole with a 4-lead cardiac monitor is acceptable if appropriate for the situation.

If resuscitative efforts are in progress, consider discontinuation of efforts (EMT-P only), or contact Medical Control for consultation. If the arrest is traumatic in nature, go to the Traumatic Arrest Protocol.

If the patient is believed to have severe hypothermia (core temperature <82°F or <28°C), go to the Environmental, Hypothermia – Adult, Trauma Protocol.

If the circumstances are unknown or unclear, or if there is question about the validity of a DNR order, initiate resuscitation while simultaneously contacting On-Line Medical Control for further advice.

Notify Law Enforcement of the patient's death and involve the Dane County Medical Examiner. If the patient is in a medical facility (nursing home, physician's office, rehab facility) and under the supervision of medically trained personnel (physician or RN), you may contact the patient's primary physician directly and involve the Dane County Medical Examiner

All EMS Providers will handle the deceased subjects in a uniform, professional and timely manner. Once the determination has been made that resuscitative efforts will not be initiated, respect for the patient and family with protection of the dignity of the deceased is critically important.

As with every EMS call, situational awareness should be a high priority. Maintain vigilance and be aware that these patient calls may be investigated as a crime scene; do your best to avoid disturbing the scene or any potential evidence.

~ This Space Intentionally Left Blank ~



# **Termination of Resuscitation**

#### Purpose:

To provide guidelines for discontinuation of resuscitative efforts in the out-of-hospital environment, when attempts have not resulted in Return Of Spontaneous Circulation (ROSC).

#### Policy:

The successful resuscitation of an out-of-hospital cardiac arrest requires a very well coordinated team effort, aggressive management of malignant dysrhythmias and thoughtful consideration of the reversible causes of cardiac arrest (the proverbial H's and T's). Unfortunately, there are a significant number of patients that – despite appropriate and aggressive medical management – are not able to achieve ROSC in the field. This policy is evidence driven and based on best practice, and it is intended to provide guidance for arrests when it is more prudent to stop resuscitation efforts than to risk provider and public safety with a patient transport.

This policy may ONLY be considered by EMT-Paramedics without Medical Control contact if ALL of the criteria below are met:

- □ 1. The patient is an ADULT (≥18 years of age) and the arrest is presumed to be of a primary cardiac origin
- **2**. The initial rhythm on patient contact is asystole, and is confirmed in at least two leads on a printed strip
- **3**. The American Heart Association ACLS algorithm for cardiac arrest has been followed for a minimum of 20 minutes
- **4**. A minimum of 4 doses of epinephrine have been administered, as per the ACLS and Dane County Cardiac Arrest algorithms
- 5. The airway has been secured with either an Endotracheal Tube (ETT) OR Blindly Inserted Airway Device (BIAD), and confirmed by digital capnography
- **G**. The quantitative End-tidal CO2 (EtCO2) is <10mmHg despite effective compressions and after 20 minutes of ACLS
- **D** 7. The final rhythm is asystole, and is again confirmed in at least two leads on a printed strip

If ALL 7 criteria above are NOT met, the ACLS algorithm must be followed for a minimum of 20 minutes and then Medical Control contacted for approval of field termination of resuscitation if the patient does not achieve ROSC.

The EMS Provider always has the discretion to continue resuscitative efforts if provider safety, scene safety, location of arrest or bystander input compels the decision.

As there currently are no reliable, evidence based criteria for field termination of resuscitation in the pediatric population, **this Policy is for use in the ADULT population ONLY** (defined as ≥18 years of age for this policy). All pediatric cardiac arrest cases should follow the PALS and Dane County Pediatric Cardiac Arrest algorithms, and transported in compliance with the Dane County Pediatric Destination Determination Protocol.

~ This Space Intentionally Left Blank ~

# **Child/Elder Abuse Recognition and Reporting**

#### Purpose:

To provide guidelines for the EMS Provider who encounters suspected and/or confirmed cases of child or elder abuse while on duty.

#### Policy:

Child Abuse is the physical and mental injury, sexual abuse, negligent treatment and/or maltreatment of a child under the age of 18 by a person who is responsible for the child's welfare. The recognition of abuse and the proper reporting is a critical step to improving the safety of children and preventing child abuse.

An elderly person is defined in the State of Wisconsin as a person >60 years of age. Elder abuse is the physical and/or mental injury, sexual abuse, negligent treatment or maltreatment of a senior citizen by another person. Abuse may be at the hand of a caregiver, spouse, neighbor or adult child of the patient. The recognition of abuse and the proper reporting is a critical step to improve the health and well-being of senior citizens.

Effective management of a case of suspected abuse or neglect is based upon the following:

- Protect the patient from harm
- Suspect that the patient may be a victim of abuse, especially if the illness/injury is not consistent with the reported history
- □ Respect the privacy of the patient and the family
- □ Collect as much information as possible, and preserve any physical evidence

Any findings of abuse or neglect OR suspicion of abuse or neglect must be reported immediately to Law Enforcement or Protective Services upon arrival to the receiving hospital. In cases of suspected abuse or neglect where a patient contact does not result in transport, Law Enforcement or Protective Services must be notified prior to clearing the scene. Cases happening outside of Dane County should be reported to the authorities for the County in which the incident occurred.

There are many subtle signs of abuse that may be missed without a high index of suspicion. ALL patients evaluated by EMS should be screened for these cues. Some include:

**Psychological cues** – excessively passive behavior, fearful behavior, excessive aggression, violent tendencies, excessive or inappropriate crying, substance abuse, medical noncompliance or repeat EMS requests for seemingly minor problems.

**Physical cues** – injuries inconsistent with the reported mechanism, defensive injuries (i.e. forearms), injuries during pregnancy are suggestive of abuse. Multiple bruises and injuries in various stages of healing may also suggest repeated violence against the victim.

Signs of neglect – inappropriate level of clothing for weather, poor hygiene, absence of and/or inattentive caregivers, poor living conditions and physical signs of malnutrition.

### EMS Providers in the State of Wisconsin are required by law to report suspected cases of child abuse and neglect as well as those situations in which they have reason to believe that a child / elder has been treated with abuse or neglect or that abuse or neglect will occur.

#### For Suspected Elder Abuse or Neglect -

- Cases in Dane County NOT in a State-licensed facility, contact the Dane County Department of Human Services Elder Abuse/Neglect Helpline at (608) 261-9933.
- Cases in Dane County that ARE in a State-licensed nursing home, contact the State Division of Quality Assurance at (608) 266-7474.
- Cases in Dane County that ARE in a State-licensed program such as assisted living, community based residential facility (CBRF), adult family home (AFH), contact the Wisconsin State Bureau of Assisted Living at (608) 264-9888.
- Cases outside of Dane County, call the Elder Care Locator at **(800) 677-1116**.

See the Wisconsin Department of Health Services internet listing of County elder abuse agencies as necessary. http://www.dhs.wisconsin.gov/aps/Contacts/eaaragencies.htm

#### For Suspected Child Abuse or Neglect -

□ Contact the Dane County Department of Human Services Protective services :

Mon-Fri, 7:45AM-4:30PM - (608) 261-KIDS (5437)

After hours and on weekends - (608) 255-6067

- If caregivers are refusing the evaluation or treatment of a child that you suspect may be the victim of abuse or neglect, do not hesitate to contact Medical Control for advice. If necessary, Law Enforcement may be consulted to help settle disagreements on scene, while maintaining the effective management principles above.
- In the instance that a child has a life or limb threatening illness or injury AND the caregivers are refusing evaluation, the child should be transported to the closest appropriate facility, with simultaneous contact of Law Enforcement and On-Line Medical Control. If your Service Medical Director is unavailable, the Dane County Medical Director should be contacted to assist as needed.
- When abuse or suspected abuse is reported to Law Enforcement, it is required that name and badge number of the officer receiving the report be captured in your documentation.

See the Dane County Department of Human Services Protective Services website for additional information as necessary : <a href="http://www.danecountyhumanservices.org/ProtectiveServices/Child/">http://www.danecountyhumanservices.org/ProtectiveServices/Child/</a>

0

### **Documentation of Patient Care**

#### Purpose:

To provide guidelines and to set best practice for documentation of patient encounters in the electronic Patient Care Report (ePCR).

#### Policy:

As EMS Providers and out-of-hospital care becomes increasingly more important to the healthcare community, it has brought a focus on the documentation of patient encounters and a need to have a more robust set of standards for the Patient Care Reports generated. The hospitals are sending a clear message to the EMS Providers nationally – what you **document** is almost as important as **what you see and the interventions you make** to help your sick and injured patients. To that end, these criteria should help set the standards for documentation and maximize your productivity as members of the healthcare delivery team. At a minimum, every electronic Patient Care Report (ePCR) should include:

- □ A clear history of the present illness with chief complaint, onset time, associated complaints, pertinent positives and negatives, mechanism of injury, etc. This should be included in the subjective portion of the PCR. The section should be sufficient to refresh the clinical situation after it has faded from memory.
  - Consider the P-SOAP-delta format for the narrative
    - o P prearrival information, including delays to scene or factors inhibiting patient access or treatment
    - **S** subjective information (what the patient tells the EMS Provider)
    - **O** objective information (VS, physical exam findings, etc.)
    - o A assessment (EMS Provider Impression of patient illness as well as differential diagnosis)
    - P plan of treatment (EMS Provider interventions planned to administer)
      - Delta change in patient condition due to EMS Provider interventions
- An appropriate physical assessment that includes all relevant portions of a head-to-toe physical exam. When appropriate, this information should be included in the procedures section of the PCR.
- At least two complete sets of vital signs for transported patients and one complete set for non- transported patients (pulse, respirations, auscultated blood pressure, pulse oximetry at minimum). These vital signs should be repeated and documented after drug administration, prior to patient transfer, and as needed during transport. For Children age < 3, blood pressure measurement is not required for all patients, but should be measured if possible, especially in critically ill patients in whom blood pressure measurement may guide treatment decisions.</p>
- □ Only approved medical abbreviations may be used see Appendix.
- □ The CAD to PCR interface embedded within the PCR system should be used to populate all PCR data fields it supplies. When 9-1-1 center times are improperly recorded, these may be edited as necessary.
- Medications administered, dosages, route, administration time, treatments delivered and patient response shall be documented.
- **D** Extremity neurovascular status after splinting affected limb, or all limbs after spinal immobilization shall be documented.
- **D** For IV administration, the catheter size, site, number of attempts, type of fluid, and flow rate.
- **Q** Requested Medical Control orders, whether approved or denied, should be documented clearly.
- Any waste of controlled medications should include the quantity wasted, where wasted, and name of the person who witnessed the waste. Hospital personnel should be utilized (if available) to witness.
- □ ALL crew members are responsible for, and should review, the content of the PCR for accuracy.
- After the ePCR is closed, patient care information may not be modified for any reason. Corrections or additions should be in the form of an addendum to the ePCR, with note for the reason of the addendum.
- □ When possible, all ePCRs should be completed and the report closed prior to leaving the hospital. If the ePCR cannot be completed and a copy left with a receiving caregiver before departing the hospital, a draft version of the narrative, medications administered and vital signs shall all be given to the receiving team prior to departing.
- Paper copies of the ECG, DNR paperwork, Skilled Nursing Facility documentation and when applicable documentation of refusal to accept an appropriate assessment, treatment, or hospital destination shall be provided to the receiving hospital.
- □ If patient transported from the scene with red lights and siren, be sure to document the reason for doing so.

#### Remember – if you didn't document it, it never happened!

### **Documentation of Vital Signs**

#### Purpose:

To provide guidelines and to set best practice for documentation of vital signs (VS) in the electronic Patient Care Report (ePCR).

#### Policy:

Vital Signs (VS) play a critical role in patient assessment and evaluations, and must be documented in the ePCR for any patient.

- □ An initial complete set of VS includes
  - Pulse Rate, Systolic AND Diastolic Blood Pressure (may substitute cap refill for children <3 years), Respiratory Rate, SpO2, Pain and GCS for trauma patients.
- □ If no interventions are made during EMS Provider evaluation and management (**including** IV Fluids, dextrose and naloxone), palpated Blood Pressures are acceptable for REPEAT VS.
- Based on the patient condition, complaint and/or treatment protocol used, VS may also include
  - Temperature, EtCO2, Level of Awareness

If the patient refuses EMS evaluation, an assessment of capacity must be completed AND documented in the ePCR. Detailed documentation should be captured regarding the patient's clinical presentation, reason for refusing (if known) and the refusal process in the ePRC narrative. Be sure to *capture the names of family members, Law Enforcement personnel or other EMS personnel who are present* for this conversation and evaluation.

For children, the need for Blood Pressure measurement should be determined on a case-by-case basis, considering the clinical condition of the child and the EMS Provider's rapport with the patient. Every effort should be made to document Blood Pressure, particularly in critically ill patients, or cases where treatment decisions are guided by VS and/or changes in VS.

Any abnormal VS should be followed closely, and repeated as indicated by change in patient subjective status or clinical condition.

Remember – if you didn't document it, it never happened!

~ This Space Intentionally Left Blank ~

# Domestic Violence (Spousal and/or Partner Abuse) Recognition and Reporting

#### Purpose:

To provide guidelines and resources for the EMS Provider who encounters suspected and/or confirmed cases of domestic violence while on duty.

#### Policy:

Domestic Violence is physical, sexual or psychological abuse and/or intimidation which attempts to control another person in a current or former family, dating or household relationship. The recognition, appropriate reporting and referral of abuse is an essential step to improving patient safety, providing quality care and preventing further abuse.

Effective management of a case of suspected abuse or neglect is based upon the following:

- Protect the patient from harm
- Suspect that the patient may be a victim of abuse, especially if the illness/injury is not consistent with the reported history
- □ Respect the privacy of the patient and the family
- □ Collect as much information as possible, and preserve physical evidence

Any findings of abuse or neglect OR suspicion of abuse or neglect must be handled with sensitivity and delicacy by the EMS Provider. Provision of emotional support is key, without passing judgment on the victim or alleged perpetrator of domestic violence. Discretion should be a high priority, and when possible questions regarding abuse and safety should be done in private. Offering the resources below to the patient may feel awkward at the time, but are excellent resources and may be used at any time in the future. Have a low threshold to transport patients of suspected or confirmed domestic violence, as they may not have other means of escaping their assailant and accessing resources that may be available at the hospital.

There are many subtle signs of abuse that may be missed without a high index of suspicion. Some include: Psychological cues – excessively passive in nature, fearful behavior, excessive aggression, violent tendencies, excessive or inappropriate crying, substance abuse, medical noncompliance or repeat EMS requests for seemingly minor problems. Physical cues – injuries inconsistent with the reported mechanism, defensive injuries (i.e. forearms), injuries during pregnancy are suggestive of abuse. Multiple bruises and injuries in various stages of healing may also suggest repeated violence against the victim. Signs of neglect – inappropriate level of clothing for weather, poor hygiene, absence of and/or inattentive caregivers, poor living conditions and physical signs of malnutrition.

For Suspected Domestic Violence -

- EMS Providers should attempt in private to provide the victim with the Dane County Domestic Abuse Intervention Services (DAIS) helpline, (608) 251-4445 or (800) 747-4045. Both numbers are available 24 hours per day.
- □ EMS Providers may also provide the National Hotline (800) 799-SAFE (7233)
- Depending on the situation, transport should be considered regardless of the illness or injury, so that the victim may receive the expert consultation and additional services that are available in the Emergency Department

See the Dane County Domestic Abuse Intervention Services (DAIS) website for additional information as necessary: <a href="http://www.abuseintervention.org">http://www.abuseintervention.org</a>

~ This Space Intentionally Left Blank ~

# **Emergency Interhospital Transfers**

#### Purpose:

To provide guidelines for EMS Provider expectations and medical care of patients during emergent transfer between Hospitals. This Policy does not supersede or replace existing EMTALA regulations.

This Policy **IS NOT** intended to authorize services or care that are not part of an EMS Services' operational plan with the State of Wisconsin. Rather, it is intended to provide guidance for the rare but foreseeable circumstances when a critically ill or injured patient may need to be rapidly moved to a higher level of care, and time is of the essence.

#### Policy:

In general, Dane County EMS Providers should only perform Emergent Interhospital Transfers for Time Critical Diagnoses (TCDs), usually involving patients requiring management at a specialty care facility (Trauma, STEMI, Stroke, Pediatrics, OB) when an authorized service is not available within a reasonable amount of time. Dane County EMS Providers may also be called upon to assist with Emergent Interhospital Movement of patients during large-scale or Mass Casualty Incidents (MCIs), or during a situation necessitating the implementation of Crisis Standards of Care – in these cases, there is likely to be heavy involvement of the Dane County Medical Director as well as each of the EMS Service Medical Directors (or their designees) to help provide real-time guidance on how to proceed.

If a Dane County EMS Provider is contacted for the Emergent Interhospital Transfer of a non-TCD patient, contact your Service EMS Supervisor for consultation prior to responding and transporting the patient.

*Emergent Interhospital Transport decisions should be made based on the needs of the patient(s),* any expected changes in their clinical condition and the familiarity / comfort level of the responding EMS Providers with the clinical situation as well as any medications or devices being used.

If a patient has unstable vital signs prior to departure from the sending facility, the EMS Provider responding is not knowledgeable of the medications being administered and/or the medications infusing are not in the Wisconsin Scope **OR** on an IV pump with inadequate reserve to last the anticipated duration of the transfer, it is the responsibility of the referring hospital to supply an additional provider. The additional provider shall be appropriately credentialed, familiar with the medications and devices to accompany the patient AND present for the entire transfer to the receiving facility. If there is any difficulty with this provision, the Service EMS Supervisor should be contacted immediately for guidance on how to proceed.

Communication and coordination between hospitals and EMS Providers is essential before an Emergent Interhospital Transfer is initiated to ensure patient safety and the appropriate medical management en route between the hospitals. A clear plan for responsibility of patient care while moving between facilities should be in place prior to departing the transferring hospital. In general, if the patient unexpectedly deteriorates while en route, the transferring facility should be notified, but the *receiving facility* should be contacted for additional Medical Control orders. The standing Dane County Protocols in this book may be followed as situation appropriate until Medical Control can provide further direction.

Unless there are extenuating circumstances (i.e. Mass Casualty Incident, Crisis Standards of Care), any Dane County EMS Service performing an Emergent Interhospital Transfer should only deliver patients to the Emergency Department of the receiving facility, where additional interventions and coordination of care may take place.

As with any Protocol, contact On-Line Medical Control with any questions or concerns.

~ This Space Intentionally Left Blank ~

Legend				
	EMT			
А	A-EMT			
Р	Paramedic			
М	Medical Control			

# **Lights and Sirens During Patient Transport**

#### Purpose:

To provide guidelines for the appropriate use of red lights and siren when transporting a patient from the scene of an emergency to the hospital. This Policy intends to help identify patients for whom safe use of red lights and siren can potentially reduce morbidity and mortality, and eliminate the unnecessary use of emergency lights and siren during transport to improve patient comfort, reduce anxiety and enhance safety for the patient, the EMS team and the Dane County community.

#### Policy:

- At the discretion of the ambulance crew, driving with lights and siren may be considered if the following clinical conditions or circumstances exist:
  - Difficulty in sustaining the ABCs (airway, breathing, circulation) including (but not limited to):
    - □ Inability to establish an adequate airway or ventilation.
    - □ Severe respiratory distress or respiratory injury not responsive to available field treatment.
    - Acute coronary syndrome with one or more of the following: ST elevation in two or more contiguous leads, acute congestive heart failure (CHF), hypotension, bradycardia, wide complex tachycardia, or other signs of impending deterioration.
    - Cardiac dysrhythmia accompanied by signs of potential or actual instability (hypotension, acute CHF, altered level of consciousness, syncope, angina, resuscitated cardiac arrest), which is unresponsive to available field treatment.
    - □ Severe uncontrolled hemorrhage.
    - □ Shock, unresponsive to available treatment.
  - Severe trauma including (but not limited to):
    - Penetrating wounds to head, neck, and torso.
    - □ Two or more proximal long bone fractures.
    - □ Major amputations (proximal to wrist or ankle).
    - □ Neurovascular compromise of an extremity.
    - Multi-system trauma.
  - Severe neurological conditions including (but not limited to):
    - □ Status epilepticus.
    - □ Substantial or rapidly deteriorating level of consciousness.
    - □ For a suspected stroke where a significant reduction of time to receive thrombolytic therapy can be achieved and the patient meets treatment inclusion criteria.
  - Obstetrical emergencies including (but not limited to):
    - Iabor complications that threaten survival of the mother or fetus, such as: prolapsed cord, breech presentation, arrested delivery, or suspected ruptured ectopic pregnancy.
- For any transport where reducing time to definitive care is clinically indicated, consider options other than emergent driving. In these cases, an alternative mode of transportation or higher level of care (such as ALS intercept or air-medical) should be considered if it is available and appropriate.
- Critical-care level emergent interhospital transport patient transports should not automatically be handled as lights and siren events. Clinical judgement and the patient criteria listed above should be applied on transfers to determine the level of urgency and transport mode.
- When a physician or nurse attempts to order lights and siren transport for a patient when it is believed by the crew to be contraindicated, attempt to resolve the issue with the ordering physician/nurse. If necessary, contact Medical Control to assist in resolving the issue.
- □ For any lights and siren transport, specifically document in the narrative the patient's condition, case circumstances and the rationale for choosing emergent transport.



## **Non-Paramedic Transport of Patients**

#### Purpose:

To provide guidelines for interactions of EMS Providers while on scene, and to help guide determination of the most appropriate level of service to transport patients to the Emergency Department.

This policy is intended to clarify expectations of providers on scene during situations when multiple levels of provider with transport capability arrive concurrently. It is **NOT** intended to be used as justification for refusal of transfer to a Paramedic level of service when a lower level is requesting it.

#### Policy:

For the purposes of this Policy, "Paramedic" refers to a Dane County EMS System credentialed Paramedic with no current restrictions on their clinical practice.

The provider with the highest level of Dane County EMS System credentialing on scene will conduct a detailed interview and physical assessment of the patient to determine the chief complaint and level of distress. If the provider determines that the patient is stable and ALL patient care needs can be managed by an EMS Provider at a lower level than Paramedic, then patient care may be transferred and transport initiated AND/OR completed by the lower level provider. All personnel are encouraged to participate in patient care while on-scene, regardless of who "attends" with the patient while en route to the hospital.

The determination of who attends should be based on the patient's immediate treatment needs and any reasonably anticipated treatment needs while en route to the hospital. The highest credentialed provider on scene retains the right to make the decision to personally attend to any patient transported based on his or her impression of the patient's clinical conditions, current needs or anticipated needs based on the EMS Provider's evaluation and experience.

The highest credentialed EMS Provider who performs the assessment and determines the appropriate level of care for transport must document the findings of their assessment. Additional documentation shall be completed by the transporting provider. As with all documentation, both providers are responsible for the content of the report.

Patients who meet the criteria below shall be attended by Paramedics (per their operational plan) in the patient care compartment, unless mass casualty incident, natural disaster or previously approved by policy or the On-Line Medical Control. The care of the following patients cannot be transferred to a lower level of credentialing:

- Any patient who requires or might reasonably require additional or ongoing medications, procedures AND/OR monitoring beyond the scope of practice of the lower credentialed provider. This includes any critically ill or unstable patient as advanced airway management may be required in any decompensating patient. EMT-Basic and EMT-Advanced providers may be credentialed to perform some but not all airway management, and medications associated with airway management are limited to the Paramedic scope of practice by the Wisconsin State Medical Board.
- Any patient for whom ALL EMS providers on scene do not agree can be safely transported without a Paramedic in attendance in the patient care compartment. As a general rule, if providers are questioning who should attend the patient, the highest credentialed level of care should attend.
- □ Post-ictal patients with high probability of recurrent seizure.
- Patients who have been medicated on the scene cannot be transferred to a provider of a lower credentialing level UNLESS the provided medication is included in the receiving EMS Provider's scope

~ This Space Intentionally Left Blank ~

# **Paramedic Intercept Guidelines**

#### Purpose:

To outline circumstances in which an Advanced Life Support (ALS) Service should be requested for intercept with a non-ALS level Service.

#### Policy:

The situations listed below are not all-inclusive, but are intended to serve as examples of when a higher level of care would be appropriate for advanced interventions and patient safety. In addition to advanced skills and additional medication options, Paramedics also bring an experience with critically ill and injured patients, and can assist with the safe evaluation and destination determination process.

While the care of the patient should be the top priority of all providers in the Dane County System, many factors go into the decision to request an ALS intercept. Time of day, traffic conditions, weather and proximity to appropriate medical care all may be considered when making the decision. When possible, arrangements may be made to rendezvous with an ALS service while en route to the hospital, so that the delay to advanced skills and medications may be minimized.

Some examples of patients that may benefit from ALS level evaluation and management include but are not limited to;

- Sepsis
- Cardiopulmonary Arrest
- Altered Mental Status not explained by simple hypoglycemia or opiate overdose
- Severe Respiratory Distress AND/OR Impending Airway Compromise
- Multi-System Trauma
- Unstable or Deteriorating Vital Signs
- Chest Pain with Hemodynamically Compromising Dysrhythmia
- ST-Segment Elevation MI with Hypotension, Altered Mental Status or Impending Cardiac Arrest
- Complex Seizures (First Seizure without History, Seizure After Head Injury, Recurrent Seizure without Return to Baseline)
- Allergic Reaction assessed to be 'Severe' or 'Impending Cardiac Arrest'
- Asthma Exacerbation not improving after Albuterol OR Requiring Multiple Nebs
- Complications of Childbirth
- Mass Casualty Incident
- Any Situation that the Dane County EMS Provider OR Medical Control feels warrants ALS Evaluation and Management

We are all working together to get the right patient to the right level of care at the right time!

~ This Space Intentionally Left Blank ~

## **Patient Care During Transport**

#### Purpose:

To provide general guidelines and to set best practice when caring for patients both on the scene of an emergency as well as in the ambulance during transport to the receiving facility.

#### Policy:

All sick or injured persons requesting transport shall be transported without delay to the most appropriate Emergency Department, with high consideration given to patient preference. Exceptions to this policy are as follows:

- An "appropriate local Emergency Department" includes all Dane County Emergency Departments as well as hospitals in contiguous counties as designated in this Procedures and Protocols Handbook. The ability of a patient to pay or the insurance status (if known) should not play a part in this decision. If EMS Unit availability will be a concern due to requested destination, contact your Service EMS Supervisor prior to initiating transport.
- All sick or injured persons requesting transport who *do not express a preference* or who rely on the knowledge of the EMS Provider should be transported to the closest, most appropriate local Emergency Department.
- Patients who are suffering from a Time Critical Diagnosis (TCD) or a condition covered under the Destination Determination Protocols should be transported in accordance with the specialty resource required by the treatment flowchart. All other patients should be transported per the policy statement above.
- Transport destination decisions should take into consideration the preexisting healthcare relationships that a patient may have. In general, a patient should be taken to the hospital at which they typically receive care and/or where their primary care physician has affiliation, unless the patient expressly requests otherwise. Providers should discuss risks and benefits of transport to a facility that has not previously cared for the patient, and document the discussion clearing in the electronic Patient Care Report (ePCR).

The following situations shall require more than one EMS Provider in the passenger compartment of the transporting vehicle, to provide adequate medical care. The additional provider(s) is/are present not only to serve as additional "hands", but to expand the critical thinking of the team and to help optimize patient outcomes. For these circumstances, students with the current training permit may assist with patient care, but may NOT count as one of the additional EMS Providers.

- Cardiac Arrest of Medical OR Traumatic etiology
- Dest Resuscitation Return of Spontaneous Circulation (ROSC) patients, even if Vital Signs are stable
- Active Airway Management, regardless of modality chosen (Endotracheal Tube, Blindly Inserted Airway Device (BIAD) or Bag-Valve Mask (BVM)
- □ Impending Arrest or "Peri-Code" Situation
- Imminent Delvery
- D Newly Born Patients (Mother and Newborn count as two patients, and require an attendant for each)
- □ At the Attending EMS Provider's Judgement, for cases not covered above

If a second EMS Provider is not available and transport would be delayed, initiation may be started under these two circumstances:

- An Advanced Care Intercept (Ground ALS or HEMS) has been contacted and arrangements made for rendezvous en route OR
- □ The case has been reviewed with On-Line Medical Control (OLMC) AND approval granted

~ This Space Intentionally Left Blank ~

Legend				
	EMT			
А	A-EMT			
Р	Paramedic			
М	Medical Control			

### **Patient Without A Protocol**

#### Purpose:

To ensure the provision of appropriate medical care for every patient, regardless of presenting problem or medical condition.

#### Policy:

Any person requesting EMS service shall receive a professional evaluation, treatment and transportation as necessary in a systematic, orderly fashion regardless of the chief complaint, medical condition or ability to pay.

Medical evaluation and management for all patient encounters that can be triaged into a Dane County EMS Protocol shall be initiated and conducted as per the standing protocols.

When confronted with an emergency situation or patient condition that does not fit into an existing Dane County EMS Protocol, evaluation and management of the patient should be started under the General Approach – Adult, Medical OR General Approach – Peds, Medical Protocols, as appropriate. On-Line Medical Control should be contacted for consultation as soon as possible for further direction and instructions on patient management within your scope of practice.

 $\sim$  This Space Intentionally Left Blank  $\sim$ 

### **Physician Bystander On Scene**

#### Purpose:

To define the responsibilities of EMS Providers responding to an emergency scene, to identify the chain of command and to prevent potential conflicts regarding patient care that may arise during EMS evaluation and management when a licensed physician is on scene. No other healthcare professionals are permitted to provide medical direction under this policy.

This policy is not intended to apply to Service Medical Directors.

#### Policy:

The medical evaluation and management of patients at the scene of an emergency is the responsibility of the person most appropriately trained in emergency medical care. As an agent of the EMS Service Medical Director and operating under the Dane County EMS Protocols, the EMS Provider routinely fills this role. Occasions may arise when a physician on scene may wish to deliver care to a sick or injured patient, or to direct EMS personnel in medical management. In order for a physician to assume care of a patient, they **MUST**:

- Provide photo identification verifying his/her current credentialing as a physician (MD/DO) AND a current copy of his/her license to practice medicine in the State of Wisconsin AND
- Assume care of the patient AND allow documentation of of his/her assumption of care on the electronic Patient Care Report (ePCR), as verified by his/her signature, **AND**
- □ Agree to accompany the patient during transport to the receiving hospital AND
- □ Not appear to be impaired or under the influence of drugs, alcohol or medical conditions AND
- □ Explicitly express willingness to accept liability for the care provided to the patient under their personal medical license

Contact with Medical Control must be established as soon as possible, and the Medical Control Physician must agree to relinquish responsibility for patient care to the Physician On Scene.

Once care has been transferred from the On-Line Medical Control to the Physician On Scene, the EMS Provider may provide care under the license and authority of the Physician On Scene. Direction provided by the Physician On Scene assuming care of the patient should be followed by the EMS Provider, granted that the interventions are not believed by the EMS Provider to endanger the well-being of the patient.

Orders received from an authorized (as determined by this Policy) Physician On Scene may be followed, even if they conflict with existing local protocols, provided the orders encompass skills AND/OR medications approved by both the Dane County Medical Advisory Subcommittee and the Wisconsin State Medical Board for a provider's level of credentialing. **Under no circumstances** shall EMS Providers perform procedures or give medications that are outside of their scope of practice AND/OR credentialing.

#### Conflict with Physician On Scene:

If the Physician On Scene is judged by the EMS Provider on scene to be potentially harmful or dangerous to the patient, the EMS Provider should politely voice their objection, and immediately contact On-Line Medical Control for further assistance. On-Line Medical Control should be briefed by the EMS Provider, and the Physician On Scene allowed to communicate directly with the On-Line Medical Control. When at all possible, these conversations should be held on a recorded line.

If the Physician Bystander On Scene and On-Line Medical Control are in conflict, it is the responsibility of the EMS Provider to: Follow the directions of On-Line Medical Control

**D** Enlist the aid of Law Enforcement as necessary to regain control of the emergency scene and resume authority of the scene

#### Documentation:

All interactions with Physicians On Scene must be thoroughly documented in the electronic Patient Care Report (ePCR), including the full name and medical license number of the Physician On Scene, as well as the interventions performed at their direction.

### **Poison Control**

#### Purpose:

To provide guidelines for involving Poison Control with out-of-hospital management of patients with potential or actual poisonings.

#### Policy:

Patients who have sustained significant poisonings, envenomations, and environmental/biochemical terrorism exposures in the outof-hospital setting require timely and appropriate level of care, including the decisions regarding scene treatment and transport destination. By integrating the State Poison Center into the out-of-hospital response plan for HazMat and biochemical terrorism incidents, this policy aims to empower the out-of-hospital care provider and enhance the ability to deliver the most appropriate care to the patient possible.

If the patient is assessed by the EMS Provider and no immediate life threat or indication for immediate transport is identified, the EMS Provider may conference call with the Poison Center at the Wisconsin State Poison Center at **1 (800) 222-1222.** 

The Poison Center will help evaluate the exposure and make recommendations regarding the need for on-site treatment and hospital transport in a timely manner. If EMS transport to the hospital is determined to be necessary, the Poison Center will contact the receiving hospital and provide information regarding the poisoning, including treatment recommendations. EMS may also contact On-Line Medical Control for further instructions or for treatment options.

If EMS transport is determined to *not be* necessary, the contact phone number for the patient will be provided to the Poison Center. The Poison Center will make a minimum of one follow-up phone call to determine the status of the patient. Additionally, <u>the EMS</u> <u>Provider must contact On-Line Medical Control</u> to review the case and discuss the recommendations of the Poison Center and what is believed to be in the best interest of the patient.

As detailed elsewhere in this document, exposures and/or poisonings that are the result of suicide attempts or gestures, or children who sustain an exposure and/or poisoning due to child abuse or neglect *SHOULD NOT be allowed to refuse transport*. These are both vulnerable populations who are at an increased risk of death or permanent disability if not cared for appropriately. As always, good Provider judgment and patient advocacy will be the cornerstones of making sound, defensible patient treatment decisions.

In any cases of poisoning, whether accidental, intentional or the consequence of a bioterrorism event, the safety of the First Responders should be of the highest priority. At a minimum, the following information should be gathered so that the Poison Center can make the best recommendations for the current situation

- □ Age of the patient
- □ Substance(s) involved with the exposure (if known)
- Time and Duration of exposure (if known)
- □ Signs and Symptoms
- □ Any Treatments provided and the response to the intervention

As with many of the EMS Protocols, a significant amount of information is collected by the EMS Providers on scene and can be extremely valuable for downstream providers. Be sure to notice and document HazMat placards in cases of transportation incidents, any MSDS sheets available in the industrial / manufacturing setting, or the contents and volumes of products / substances present in the cases of household ingestion.

~ This Space Intentionally Left Blank ~

# **Patients in Police Custody**

#### Purpose:

To provide guidelines for the evaluation and management of patients requiring EMS assessment while in the custody of Law Enforcement. As with every patient interaction, it is important that the EMS Provider serve as a patient advocate and use their best medical judgment to assist Law Enforcement in making safe, appropriate decisions regarding medical aid and disposition decisions.

#### Policy:

As a general rule, when evaluating a patient who is in the custody of Law Enforcement, the EMS Provider should approach the patient with the same respect and consideration as patients who are not being detained. While EMS is not equipped or authorized to provide "Medical Clearance" before transport to jail, it is the responsibility of the EMS Provider to provide an unbiased assessment and to make recommendations based on Dane County Protocols as well as EMS Provider experience and judgment.

These patient encounters have a higher than average incidence of scrutiny on review; as such, take steps to ensure that your documentation is clear, descriptive and complete. Law Enforcement Agent names and badge numbers are essential in the EMS Provider documentation.

- □ If a patient in custody of Law Enforcement is evaluated by EMS and felt to need transport to the Emergency Department and *the patient is refusing transport*:
  - Evaluate the capacity of the patient to make informed decisions as outlined in the Dane County Protocols
  - Advise the Law Enforcement Agent of the decision of the patient, and consider potential risks or hazards to Law Enforcement if the patient were to refuse (i.e. lacerations that may pose a biohazard to officers or other detainees)
    - If Law Enforcement requests transport, document their request and coordinate safe transport to the closest, most appropriate Emergency Department. In these instances, the Law Enforcement Agent must take the patient into Protective Custody and effectively making decisions as the healthcare power of attorney for the patient.
    - Document that Law Enforcement has taken Protective Custody of the patient.
    - □ In this instance, the Law Enforcement Agent must accompany the patient to the Emergency Department.
  - If the patient is evaluated to have capacity and does not pose an undue risk to Law Enforcement, execute a Patient Refusal as outlined in the Dane County Protocols
- □ If a patient in custody of Law Enforcement is evaluated by EMS and felt to need transport to the Emergency Department and the Law Enforcement Agent is refusing transport:
  - Advise the Law Enforcement Agent that transport is indicated by Dane County Protocols, and that medical clearance is not authorized by EMS Personnel in the field.
  - Contact On-Line Medical Control for consultation and assistance as needed.
    - If Law Enforcement continues to decline transport for medical evaluation and management, allow the patient to remain in the custody of the Law Enforcement Agent, and advise them that EMS may be re-contacted at any time to provide medical assistance as needed
    - □ The Law Enforcement Agent in these situations is taking the patient into Protective Custody and effectively making decisions as the healthcare power of attorney for the patient.
    - Document that Law Enforcement has taken Protective Custody of the patient.
  - Document the Law Enforcement Agency as well as the name and badge number of the responsible officer along with specifics of the discussion in your electronic Patient Care Report (ePCR).
- □ If a patient in custody of Law Enforcement requires transport to the Emergency Department and is *requiring physical restraint* by the Law Enforcement Agent for behavior modification:
  - Advise the Law Enforcement Agent that Dane County EMS Policy requires their accompaniment in the patient compartment of the ambulance during transport to the Emergency Department.
    - □ With active restraints in place, it is an issue of patient safety as well as provider safety
  - Consider the Behavioral Emergencies Protocol in the Dane County Protocol book, OR contact On-Line Medical Control for advice regarding medication management as appropriate to assist with safe and expeditious transport

### **Radio Report Format**

#### Purpose:

To provide guidelines for clear communication between EMS Providers and receiving facilities prior to delivery of the patient.

#### Policy:

For all patients being transported to the hospital by EMS, every effort should be made to contact the receiving facility *as early as possible* once the destination facility has been chosen and transport initiated. By making proactive contact with the receiving facility, it provides the opportunity to collect personnel, resources and equipment that may be needed to care for critically ill or injured patients, and thereby improve patient survival and realization of the EMS mission.

#### Procedure:

Begin each transmission with the agency name and unit number, and wait for acknowledgement from the receiving facility.

After the receiving facility acknowledges contact with your unit, give a clear, concise report which includes the following:

Triage category and triage color

Triage	Triage	D. C. West	
Category	Color	Definition	Common Examples (NOT All-Inclusive List)
Medical -	Red	High acuity of illness, unstable VS or critically ill	Hypotension, Extreme Tachycardia, Multiple Medications (other than Albuterol), Airway Management, Altered Mental Status, Failure to Respond to EMS Therapy
	Yellow	Serious medical illness with potential to decompensate, but VS currently stable	COPD improving with nebs, Chest Pain with Cardiac History, Abdominal Pain in Pregnancy, Fever without hypotension or tachycardia (not believed to be sepsis)
	Green	Low acuity medical illness, VS stable	Hypoglycemia resolved with Dextrose, Intoxication without airway compromise or indication of trauma
	Peds	≤12 years of age OR absence of sigs of puberty / secondary sex characteristics	
Trauma	Red	Severe mechanism of injury, life or limb threatening injury, unstable VS or critically ill	Traumatic injury with hypotension, tachycardia, uncontrolled/poorly controlled hemorrhage, Altered Mental Status, pain not improving with EMS Intervention
	Yellow	Serious mechanism of injury, potential for decompensation but VS currently stable	Head Injury with anticoagulant use, deformed extremities after trauma, significant pain improved after EMS intervention
	Green	Minor mechanism of injury, no outward signs of trauma, VS stable	Head Injury without LOC or Altered Mental Status, Traumatic Extremity pain with intact CMS and without deformity
	Peds	<18 years of age	
STEMI ALERT	Red	STEMI Interpretation of Field ECG (EMS or Monitor) **Call with early notification**	Goal time for first EMS Contact to balloon time <90 minutes
STROKE ALERT	Red	Focal Neurologic Deficit with Last Known Normal ≤12 Hours	Include collateral information, bring witnesses to corroborate history when/if appropriate
SEPSIS ALERT	Red	Systemic Inflammatory Response Syndrome (SIRS) Criteria met and history/complaint suggestive of infection	Include collateral information, bring witnesses to corroborate history when/if appropriate

- Estimated time of arrival (ETA)
- Age and Chief Complaint of the patient
- □ Very brief background of events including:
  - Mechanism of injury and description of injuries found (if traumatic)
  - Provider Primary Impression and nature of patient complaint (if medical)
  - Treatments provided and/or underway as well as patient response
  - Current Vital Signs including GCS
  - Any anticipated delay in transport (i.e. extrication)
- **Contacting Medical Control**
- Medical Control may be contacted for any additional orders, to consult as needed for patients refusing transport and for any questions regarding patient management on scene or en route to the receiving facility. Any orders given should be repeated back for clarification and patient safety.
- Make sure your request of Medical Control is clearly communicated, and be prepared to answer follow up questions regarding the protocol you are following as well as your assessment of the situation.
- Several protocols have suggested medications and dosages outlined in the protocol, to help facilitate the conversation with Medical Control
- Remember: you are the one who has the patient in front of you your assessment and impression matter!
  - Policies

# **Transfer of Care at Hospital**

#### Purpose:

To provide guidelines for in-person communication with receiving facilities, and to clarify expectations of EMS Provider documentation.

#### Policy:

When delivering a patient to the receiving facility, it is imperative that a clear, concise communication happen between the EMS Provider and the emergency medical staff assuming care. In order to prevent miscommunication, a full verbal report should be communicated in a face-to-face fashion, preferably with the entire medical team assembled at the patient bedside. On the occasion that the complete team is not available, verbal report should be given to a receiving caregiver credentialed at the RN level or higher.

All treatments and interventions initiated under the Dane County Protocols may be continued after arrival in the receiving facility up until the appropriate personnel and equipment are assembled to assume care of the patient. At that time, responsibility for all medical care and continued treatment is transferred to the facility, and the Dane County EMS Protocols are no longer authorized for patient management. On-Line Medical Control should not be contacted for additional orders once this handoff has occurred. In the rare circumstance that the EMS Provider is requested/invited to participate, direction will be at the authorization and the discretion of the supervising on-scene physician. It is important that the involvement, orders received and name of the responsible physician be captured in the electronic Patient Care Report (ePCR) as part of the medical care provided by EMS.

#### Verbal Report

Verbal report at the time of handoff shall include all pertinent known information about the patient, the history of present illness or mechanism of injury, treatments administered by EMS Providers as well as the patient's responses to treatment. In addition, all prehospital ECGs and provided paper medical records should be turned over to the treatment team assuming care.

#### Written Report

Wisconsin DHS Administrative Rule 110.34(7) specifically addresses EMS responsibility for written patient report at the time of handoff at the receiving facility. The rule states:

An emergency medical service provider shall, "...submit a written report to the receiving hospital upon delivering a patient, and a complete patient care report within 24 hours of patient delivery. A written report may be a complete patient care report or other documentation approved by the department and accepted by the receiving hospital."

The expectation is that there will be written documentation left at the receiving facility, and conveyed either in printed or electronic format *prior to your departure* and returning available to service. It is not required that the documentation left at the facility be the completed, finalized electronic Patient Care Report (ePCR). **HOWEVER**, all EMS Providers in Dane County are integral members of the <u>healthcare team</u>, and may hold key pieces of information not available to any of the downstream providers and which are at significant risk of being lost, overlooked or miscommunicated if not documented in a prompt manner.

Given the nature of EMS and out-of-hospital care, it should be the goal of every Dane County EMS Service at minimum to have a draft narrative, list of the EMS interventions, medications given and vital signs documented *prior to leaving the facility* and returning to duty.

~ This Space Intentionally Left Blank ~

### **Persons with EMS Care Plans**

#### Purpose:

To establish a uniform approach for the evaluation and management of persons having an established Care Plan, developed by the EMS Service and approved by the Medical Director.

#### Policy:

All sick or injured persons requesting transport shall be transported without delay to an appropriate local Emergency Department of the patient's preference. The only exceptions to this rule are found below:

- Patients who are suffering from a Time Critical Diagnosis (TCD) or whose condition is covered under the Destination Determination Protocols shall be transported in accordance with those specialty algorithms to the appropriate receiving facility. The presence of a Care Plan **DOES NOT** supersede the Destination Determination Protocol.
- Patients known to have been discharged from an Emergency Department within the last 48 hours should generally be transported back to the same ED, unless they meet specialty center destination criteria, as outlined in the Destination Determination Protocol.
- Patients who have been identified as frequent users of the EMS System may have a designated Care Plan, which has been developed with the patient and/or their healthcare providers, the EMS Service and one or more of the Dane County hospitals. If a patient has a formal Care Plan approved by the EMS Service Medical Director, the patient should be evaluated, treated and transported in accordance with the Plan, **unless** the patient meets criteria for transport to a specialty receiving center, as outlined above. Regardless of the existence of a Care Plan, all patients should be treated with respect and dignity, and fully evaluated as per the standards set forth in this Protocol Book.

There may be exceptions to this guideline, and if there are questions while evaluating a patient with a Care Plan, do not hesitate to contact the Officer In Charge (OIC) or the Medical Director or Medical Director's designee for clarification.

~ This Space Intentionally Left Blank ~

Legend EMT A A-EMT P Paramedic M Medical Control

### General Approach – Adult, Medical



#### Pearls

#### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- 12-Lead ECG should be done early for any non-traumatic pain complaint between the ear lobes and the umbilicus (belly button).
- Include Blood Glucose reading for any patient with complaints of weakness, altered mental status, seizure, loss of consciousness, known history of diabetes OR Cardiac Arrest
- Measure and document SpO2, EtCO2 for ANY patient with complaint of weakness, altered mental status, respiratory distress, respiratory failure or EMS managed airway
- If hypotensive (Systolic BP<100mmHg) and/or clinical evidence of dehydration, consider IV Access Protocol and Shock (Non-Trauma) Adult Medical Protocol
- Any patient contact which does not result in an EMS transport must have a completed refusal form
- Never hesitate to consult medical control for assistance with patient refusals that car't meet all required fields, clarification of protocols or for patients that make you uncomfortable.

### Medical Protocols - Adult



#### Pearls

#### REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service **MUST** be completed
- Goal EtCO<sub>2</sub> = 35-45mmHg
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 >93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Always assume that patient reports of dyspnea and shortness of breath are physiologic, NOT psychogenic! Treatment for dyspnea is O2, not a paper bag!
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an Intubation Attempt is defined as: passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth

### Medical Protocols - Adult

### **Rapid Sequence Airway - Adult**



#### Pearls

#### REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose, Lung Exam, Posterior Pharynx

- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Advanced Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allows
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an Intubation Attempt is defined as passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth
- Recent history of Upper Respiratory Infection, Missing / Loose Teeth or Dentures all will increase complexity of airway management
- **REMEMBER** Bag-Valve-Mask devices ONLY provide supplemental O<sub>2</sub> when you squeeze the bag; otherwise the patient does not receive oxygen!

### Medical Protocols - Adult

35

# **Post Advanced Airway Sedation - Adult**

A-EMT D Paramedic Medical Control

Α

Legend EMT



#### Pearls

#### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- Paralytics block movement of skeletal muscle but do NOT change awareness. Remember that without sedation, patients may be awake but paralyzed
- Monitor Vital Signs closely when managing airways and sedation. Changes that indicate pain, anxiety as well as tube dislodgment may be subtle (at first)!! Document Vital Signs before and after administration of every medication to prove effectiveness
- ANY change in patient condition, reassess from the beginning. Use the mnemonic DOPE (Dislodgment, Obstruction, Pneumothorax, Equipment) to troubleshoot problems with the ET Tube
- Ketamine may be considered for sedation AFTER standard regimen; use of Ketamine as induction agent for intubation does NOT obligate Ketamine for sedation
  - Continuous End Tidal CO<sub>2</sub> is mandatory for all intubated patients color change is NOT sufficient proof of ET Tube in the trachea

### **Medical Protocols - Adult**


REQUIRED EXAM: VS, GCS, Lung Sounds, RR, Skin, Neuro

- A patient with a "failed airway" is near death or dying, not stable or improving. Inability to pass an ET Tube or low SpO2 alone are not indications for surgical airway.
- Continuous digital capnography is the standard of care and is to be used with ALL methods of advanced airway management and endotracheal intubation. If a
  service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service MUST be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, an Intubation Attempt is defined as passing the tip of the laryngoscope blade or Invasive Airway Device past the teeth



## **COPD / Asthma - Adult**



### Pearls

REQUIRED EXAM: VS, 12 Lead, GCS, RR, Lung Sounds, Accessory muscle use, nasal flaring

Do not delay inhaled meds to get extended history

- Supplemental O2 for all cases of hypoxia, tachypnea, subjective air hunger
- Keep patient in position of comfort if partial obstruction
- If COPD, monitor mental status
- Severe Asthma may restrict airway to have no wheezing
- \* Albuterol max 3 doses total, Ipratropium max 2 doses total



#### REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

• If CHF / Cardiogenic Shock is from inferior MI (II, III, aVF), consider RIGHT sided ECG

- If ST Elevation in V3, V4 OR Inferior Leads (II, III, aVF), Nitroglycerin may cause severe hypotension requiring IV Fluid boluses
- NTG goal is 20% reduction in SBP or symptom relief. If patient reports no relief with home Nitroglycerin, consider potency of medication (is the medicine expired? Would EMS supply be useful?)
- Consider Midazolam 1mg IV to assist with CPAP compliance. BE CAUTIOUS Benzodiazepines may worsen respiratory depression, altered mental status, agitation
  especially if recent EtOH or illicit drug use. This med should be considered with EXTREME caution. All efforts should be made to verbally coach compliance PRIOR
  to BZD use in respiratory distress



## **Cardiac Arrest - Adult**

#### **CPR Quality**

- Push Hard (at least 2 inches) and fast (100-120/min) and allow complete chest recoil
- Minimize interruptions in compressions
- Avoid excessive ventilation
- Rotate compressors every 2 minutes, sooner if fatigued
- If no advanced airway, 30:2 compression: ventilation ratio
- Quantitative waveform capnography
- If EtCO2 <10mmHg, attempt to improve CPR quality</li>
- Consider Mechanical CPR device by 6 minutes of resuscitation; may consider sooner if resources allow
- Consider advanced airway placement by 6 mnutes of resuscitation; may consider sooner if resources allow

#### Drug Therapy

Epinephrine IV/IO dose: 1mg every 3-5 minutes Consider Max 5 doses epi IF not responding to resuscitation efforts Amiodarone IV/IO dose: First dose 300mg bolus. Second dose 150mg bolus.

### CONSIDER CORRECTABLE CAUSES OF ARREST:

Hypoxia – Secure airway and ventilate
Hypoglycemia – Dextrose 12.5-25g or D10W 100ml IV/IO
Hyperkalemia – Sodium Bicarbonate 50mEq IV/IO AND
<ul> <li>Calcium Chloride 1g IV/IO</li> </ul>
Hypothermia – Active Rewarming
Hypomagnesemia / Torsades – Magnesium 2g IV/IO over 2 min
Hypovolemia – 500mL NS Bolus IV/IO
Hydrogen Ion (acidosis) – secure airway and ventilate
Tension Pneumothorax – Chest Decompression Procedure
Tamponade, Cardiac
Toxins:
Calcium Channel and B-Blocker OD – Glucagon 5mg IV/IO bolus
Calcium Channel Blocker OD – Calcium Chloride 1g IV/IO bolus
(contraindicated if pt. also on Digoxin/Lanoxin)
Tricyclic Antidepressant OD – Sodium Bicarb 1mEq/kg IV/IO
Narcotic OD – Naloxone 2mg IV/IO/IN/IM
Thrombosis, Pulmonary
Thrombosis, Coronary

### High Performance CPR (HPCPR)

HPCPR is an emphasis on communication, efficient movement of resuscitationists, and an increased emphasis on the BASICS that improves outcomes

#### CONSIDER ALS EARLY IF AT ANY TIME

Patient has Return of Spontaneous Circulation (ROSC) Go to Post Resuscitation Protocol p41

#### **Shock Energy for Defibrillation**

- **Biphasic**: Manufacturer recommendation (i.e. initial dose of 120-200J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered
- Monophasic: 360J

#### **Double Sequential Defibrillation**

- Consider for cases of shock refractory V-fib or Pulseless Vtach that have not converted after 3 defibrillation attempts AND  $\geq 1$  dose of ACLS medication
- There is the potential to cause damage to equipment when performing this procedure. Therefore, it is recommended to be attempted using an AED and a monitor to minimize risk. Because of the potential for adverse equipment results, **it is**
- important that your Service Director and Medical Director approve this procedure BEFORE attempting

#### **Advanced Airway**

- Endotracheal Intubation or supraglottic airway
- Waveform capnography to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

#### **Return of Spontaneous Circulation (ROSC)**

- Pulse and blood pressure
- Abrupt sustained increase in ETCO2 (typically >40mmHg) Spontaneous arterial pressure waves with intra-arterial monitoring

#### Pearls

**RECOMMENDED EXAM: Mental Status, Pulse, Initial and Final Rhythm** 

- Immediately after defibrillation, resume chest compressions with a different operator compressing. Do not pause for post-shock rhythm analysis. Stop
  compressions only for signs of life (patient movement) or rhythm visible through compressions on monitor or pre-defibrillation rhythm analysis every 2 minutes
  and proceed to appropriate protocol
- Based on current literature, Ventricular Fibrillation and Pulseless Ventricular Tachycardia patients who are successfully resuscitated should be transported to a 24/7 STEMI capable facility.
- In the event a patient suffers cardiac arrest in the presence of EMS, the absolute highest priority is to apply the AED/Defibrillator and deliver a shock immediately if indicated.
- Reassess airway frequently and with every patient move. Cycle compressors frequently compression quality deteriorates before fatigue is perceived.
- Designate a "code leader" to coordinate transitions, defibrillation and pharmacological interventions. "Code Leader" ideally should have no procedural tasks.
- External Compression Devices may be considered if available and will not impede patient care.
- Consider sodium bicarb early in cases of sudden cardiac arrest in Excited Delirium



### REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Goal is estimated time of arrest to on ECMO Circuit <60 minutes
- It is important to balance High Performance CPR on scene with ECPR potential; Strongly consider candidate patient if not responding to quality CPR.
- Ideally, decision to move patient should be made and transport from scene should happen in <16 minutes
- Contact ECPR-capable receiving hospital with "ECMO Alert" early; consider contact after 2<sup>nd</sup> shock for refractory V-fib, rearrest after ROSC, EMS Discretion, etc.
   ECPR is a *highly* time-critical intervention; it is important to consider the patient circumstances and whether pt. could be a candidate. Consultation with ECMO center early is a priority
- There are many variables that go into the decision to start a patient in ECPR circuit; not every candidate patient will be able to be cannulated on arrival to the ED



**RECOMMENDED EXAM: Mental Status, Pulse, Initial and Final Rhythm** 

- The American Heart Association no longer supports routine prehospital hypothermia induction for all out of hospital cardiac arrests based on the most current literature.
- Acute myocardial infarction, cardiomyopathy, and primary arrhythmia are the most common causes for cardiac arrest.
- Based on current literature, Ventricular Fibrillation and Pulseless Ventricular Tachycardia patients who are successfully resuscitated should be transported to a 24/7 STEMI capable facility.
- In observational studies, PaCO2 in a normal range (35 to 45 mmHg) when measured at 37°C is associated with better outcomes than higher or lower PaCO2
- Antiarrhythmic drugs should be reserved for patients with recurrent or ongoing unstable arrhythmias.
- No data support the routine or prophylactic use of antiarrhythmic drugs after the return of spontaneous circulation following cardiac arrest, even if such medications were employed during the resuscitation.
- Determining and correcting the underlying cause of the arrhythmia (eg, electrolyte disturbance, acute myocardial ischemia, toxin ingestion) is the best intervention.



#### REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Avoid Nitroglycerin in any patient who has used Viagra (Sildenafil) or Levitra (Vardenafil) in the last 24 hours or Cialis (Tadalifil) in the last 36 hours
- If no IV Access, ECG MUST be obtained and reviewed by Medical Control prior to administration of Nitroglycerin (even patient supplied)
- If patient takes Aspirin immediately prior to EMS arrival, confirm the medication and expiration date. If uncertain, administer full dose aspirin
- NTG goal is 20% reduction in SBP or symptom relief. If patient reports no relief with home Nitroglycerin, consider potency of medication (is the medicine expired? Would EMS supply be useful?)
- Use Nitroglycerin and opiates / opiates with caution if Inferior, Right Ventricle or Posterior MI is suspected
- Elderly patients, diabetics and women are more likely to have atypical chest pain SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time
- If ST Elevation in V3, V4 or Inferior Leads (II, III, aVF), Nitroglycerin may cause hypotension requiring IV Fluid Boluses

Legend		
	EMT	
А	A-EMT	
Р	Paramedic	
М	Medical Control	

## **ST Elevation Myocardial Infarction - Adult**



### Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Goal is First Medical Contact (YOU!!) to arrival at the 24/7 PCI capable STEMI facility should be <60 minutes.
- Goal is to limit on-scene time with a STEMI patient to <10 minutes
- NTG goal is 20% reduction in SBP or symptom relief. If patient reports no relief with home Nitroglycerin, consider potency of medication (is the medicine expired? Would EMS supply be useful?)
- If long transport time expected due to geography, traffic, etc. consider activation of Air EMS for delivery directly to cath lab
- Transmit STEMI or \*\*Acute MI\*\* 12-Leads early and call STEMI receiving hospital with "STEMI Alert" early; inform them of full report to follow.

Legend EMT A A-EMT P Paramedic M Medical Control

## **Tachycardia With A Pulse - Adult**

General Approach – Adult, Medical Look for and Treat Underlying Causes IV Access Protocol p55 Unstable / Synchronized Cardioversion Procedure A Ρ No NS Bolus 250mL IV/IO p171 Imminent Arrest 12-Lead ECG Procedure Consider Sedation Before Cardioversion: p142 Fentanyl 1mcg/kg IV/IO (max 100mcg) AND / OR Ρ Midazolam 2-4mg IM/IN/IV/IO (max 4mg) OR Lorazepam 0.04mg/kg IV/IO (max 2mg) **QRS** Duration ≥0.12sec <0.12sec Regular Regular Yes No Yes No Probable A-fib, possible A-flutter Ρ Vagal Maneuvers IF Ventricular Tachycardia IF A-fib with aberrency or Multifocal Atrial Tachycardia Amiodarone 150mg IV/IO Adenosine 6mg IV/IO Probable A-fib, possible A-flutter Ρ Ρ Consider expert consultation Rapid Push **Over 10 minutes** or Multifocal Atrial Tachycardia Consider Synchronized No Change Ρ **Cardioversion Procedure** Consider expert consultation p171 Adenosine 12mg IV/IO Diltiazem 0.25mg/kg IV/IO Diltiazem 0.25mg/kg IV/IO P Rapid Push; May repeat x1 (Max 20mg) (Max 20mg) IF Pre-excited A-fib (A-fib +WPW) Convert to Sinus IF SVT with aberrancy or Consider expert consultation uncertain monomorphic rhythm Avoid AV Nodal Blockers Yes No Ρ Vagal Maneuvers (adenosine, diltiazem, verapamil) Consider Amiodarone Probable Re-entry SVT Probable A-fib, possible A-flutter Adenosine 6mg IV/IO Ρ 150mg IV/IO Observe for Recurrence or Multifocal Atrial Tachycardia Rapid Push Over 10 minutes Observe for Recurrence Consider expert consultation Diltiazem 0.25mg/kg IV/IO IF Torsades de Pointes (Max 20mg) Mag Sulfate 2g IV/IO Ρ Infuse over 1-2min IF Recurrent, seek expert consultation Notify Receiving Facility, **Contact Medical Control As** Necessary

## Tachycardia With A Pulse - Adult

#### **Uncontrolled A-Fib**

Patients with a history of Atrial Fibrillation may have Rapid Ventricular Response ("A-fib with RVR" or "Uncontrolled A-fib") as their response to hemorrhage, hypovolemia, sepsis or medication noncompliance.

Keep in Mind; this may be their version of Sinus Tachycardia!

#### **During Evaluation**

Secure, verify airway and vascular access Consider expert consultation Prepare for cardioversion

#### CONSIDER ALS EARLY IF AT ANY TIME

Patient has Return of Spontaneous Circulation (ROSC) Go to Post Resuscitation Protocol p41

#### **Torsades de Pointes**

Prolonged QT may result in R-on-T phenomenon and Torsades. Congenital and Acquired etiologies include: Amiodarone, Methadone, Lithium, Amphetamines, Procainamide, Sotalol Hypokalemia, Hypomagnesemia, Heart Failure, Hypothermia, Subarachnoid

Hemorrhage

#### **Advanced Airway**

- Endotracheal Intubation or supraglottic airway
- Waveform capnography to confirm and monitor ET tube placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths/min) with continuous chest compressions

	Hypoxia – Secure airway and ventilate			
	Hypoglycemia – Dextrose 12.5-25g or D10W 100ml IV/IO			
	Hyperkalemia – Sodium Bicarbonate 50mEg IV/IO AND			
	- Calcium Chloride 1g IV/IO			
	Hypothermia – Active Rewarming			
	Hypomagnesemia / Torsades – Magnesium 2g IV/IO over 2 min			
	Hypovolemia – 500mL NS Bolus IV/IO			
	Hydrogen Ion (acidosis) – secure airway and ventilate			
Р	Tension Pneumothorax – Chest Decompression Procedure			
	Tamponade, Cardiac			
	Toxins:			
	Calcium Channel and B-Blocker OD – Glucagon 5mg IV/IO infusion			
	Calcium Channel Blocker OD – Calcium Chloride 1g IV/IO infusion			
	(contraindicated if pt. also on Digoxin/Lanoxin)			
	Tricyclic Antidepressant OD – Sodium Bicarb 1mEg/kg IV/IO			
	Narcotic OD – Naloxone 2mg IV/IO/IN/IM			
	Thrombosis, Pulmonary			
	Thrombosis, Coronary			

#### Pearls

#### REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Not all cases of tachycardia need to be rate controlled; sepsis, hypovolemia, and acute hemorrhage will do worse if their ability to compensate is taken away
- Temporary transvenous overdrive pacing (atrial or ventricular) at 100 beats per minute generally is reserved for patients with long QT-related TdP who do not respond to intravenous magnesium
- Continually monitor for signs of decompensation and be prepared to defibrillate if the patient condition changes. Place the pads while reaching for the meds
- Adenosine has a very short half life (5sec or less) so it must be infused rapidly in a patent IV site that is preferably in the AC fossa or more proximal
- Elderly patients, diabetics and women are more likely to have atypical chest pain SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time. Transmit them and seek MD Consult at any time

Legend EMT A A-EMT Paramedic M Medical Control

## **Bradycardia With A Pulse - Adult**



### Pearls

REQUIRED EXAM: VS, GCS, RR, Lung Sounds, Cardiac Exam, JVD

- Not all cases of bradycardia need to be treated with medicine or pacing; use good clinical judgement and follow symptoms
- Continually monitor for signs of decompensation and be prepared to move to external cardiac pacing if the patient condition changes. Place the pads while reaching for the meds
- Titrate Norepinephrine OR Epinephrine infusions to HR >60 AND SBP <180
- Atropine is unlikely to work in cases of complete heart block. Atropine is contraindicated in patients with narrow angle glaucoma
- Elderly patients, diabetics and women are more likely to have atypical chest pain SOB, fatigue, weakness, back pain, jaw pain
- Have a low threshold to get a 12-Lead ECG. They are minimally invasive, painless and can evolve with time

Legend EMT A A-EMT P Paramedic M Medical Control

## Abdominal Pain / GI Bleeding - Adult



### Pearls

- REQUIRED EXAM: VS, GCS, Focal Tenderness, Rebound Tenderness, Distal Pulses, Abdominal Masses
- Nothing by mouth (NPO) Status for all patients with abdominal pain
- If pain is above the umbilicus, perform a 12-Lead ECG. Go to Chest Pain Protocol as indicated
- Abdominal pain in women of child bearing age should be treated as an ectopic pregnancy until proven otherwise
- The diagnosis of AAA should be considered in patients >50 years old. Assess the abdomen for a midline pulsatile mass and feel for pulses in feet / legs
   Rebound tenderness is pain that is *increased* when releasing pressure from palpation
- Appendicitis may present with vague, peri-umbilical pain that slowly migrates to the Right Lower Quadrant (RLQ) over time
- Blood loss from the GI Tract has a very distinct smell; use all of your senses when evaluating your patients. GI Bleed patients have a high risk of serious hemorrhage
- Abdominal Pain and known pregnancy, go to OB Protocol



#### REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- Prior to administering epinephrine in patients who have a history of CAD or if HR is >150, epi may cause acute MI. These patients should receive a 12-Lead ECG prior to med administration, if practical given the clinical situation
- Epinephrine at ½ dose (0.15mg OR EpiPen Jr.) for patients with known CAD or if HR >150
- Epinephrine Infusion: Mix 1mg (1:1,000) in 250mL NS. If worsening/refractory anaphylaxis, contact Med Control as soon as practical. Start at 2mcg/min, titrate up.
- Famotidine dilution no longer required. Infuse over 2 minutes
- In general, the shorter the time from allergen contact to start of symptoms, the more severe the reaction
- Consider the Airway Management Protocol early in patients with Severe Allergic Reaction or subjective throat closing



Pay special attention to head and neck exam for bruising or signs of injury

Altered Mental Status may be the presenting sign of environmental hazards / toxins. Protect yourself and other providers / community if concern. Involve Hazards early

Safer to assume hypoglycemia if doubt exists. Recheck blood sugar after dextrose/glutose administration and reassess

Do not let EtOH fool you!! Alcoholics frequently develop hypoglycemia, Alcoholic Ketoacidosis (AKA) and often hide traumatic injuries!



### REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

• Safety First – For Providers, Police and Patients! Never restrain any patients in the prone (face down) position

- All patients who require chemical restraint MUST be continuously monitored by ALS Personnel
- Patients who are actively fighting physical restraints are at high risk for Excited Delirium and In-Custody Death; Have a low threshold to activate ALS for chemical
  restraint
- Transport of patients requiring handcuffs or Law Enforcement (LE) restraint require LE to ride in the ambulance to the hospital they have the keys!
- Avoid Haloperidol in patients with known history of MAOI Antidepressant use (Phenelzine, Tranylcypromine) OR history of Parkinson's Disease
- If a patient with Excited Delirium suddenly becomes cooperative/quiet, reassess them quickly! Sudden Cardiac Death is common in this population

Legend EMT A A-EMT P Paramedic

M Medical Control

## **Diabetic Emergencies - Adult**



### Pearls

### REQUIRED EXAM: VS, SpO2, Blood Glucose, Skin, Respiratory Rate and Effort, Neuro Exam

- Do NOT administer oral glucose to patients that can't swallow or adequately protect their airway
- It is important to have good IV access, particularly when administering D50. Dextrose is known to cause sclerosis and can be very hard on the veins.
- Simple Hypoglycemia for these protocols is defined as: hypoglycemia caused by insulin ONLY and not suspected to be due to occult infection or trauma
- Prolonged hypoglycemia may not respond to Glucagon; be prepared to start an IV and administer IV Dextrose
- Alcoholics and patients with advanced liver disease may not respond to Glucagon due to poor liver glycogen stores
- Patients on oral diabetes medications are at a very high risk of recurrent hypoglycemia and should be transported. Contact Medical Control for advice/patient counseling if patient is refusing. See Refusal after Hypoglycemia Treatment Protocol for additional information as necessary.
- · Always consider intentional insulin overdose, and ask patients / family / friends / witnesses about suicidal ideation or gestures



REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Hypertension based on two elevated readings taken >5 minutes apart. Never treat BP based on one set of vital signs
- Hypertensive Emergency is based on evidence of end-organ failure: STEMI/ACS, Hypertensive Encephalopathy, Renal Failure, Vision Change, Acute Stroke
- Patients with symptomatic hypertension should be transported with the head of the stretcher elevated 30 degrees
- Ensure Blood Pressure is checked with appropriate sized blood pressure cuff for patient size
- \*Patients with long standing high blood pressure may have changed their "normal" set point; do not decrease their Systolic Blood Pressure >40 points



- In the setting of CARDIAC ARREST ONLY, any preexisting dialysis shunt or central line may be used by Paramedics
- For patients who are hemodynamically unstable or in extremis, Medical Control MUST be contacted prior to accessing any preexisting catheters
- Upper Extremity sites are preferred over Lower Extremity sites. Lower Extremity IVs are discouraged in patients with peripheral vascular disease or diabetes
- In post-mastectomy patients and patients with forearm dialysis fistulas, avoid IV attempts, blood draws, injections or blood pressures in the upper extremity on the affected side
- Saline Locks are acceptable in cases where access may be necessary but the patient is not volume depleted; having an IV does not mandate IV Fluid infusion
   The preferred order of IV Access is: Peripheral IV, External Jugular IV, Intraosseous IV UNLESS medical acuity or situation dictate otherwise.

# **OB General - Adult**

Paramedic Medical Control

Α

D

Legend EMT

A-EMT



### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

Magnesium is the priority for pregnant seizures (eclampsia), but if seizing on EMS arrival give IM/IN Midazolam until IV Access achieved

- If after Magnesium 4gm IV/IO administered, continued seizure x 5 minutes OR recurrent seizure, contact Medical Control for authorization of additional
- Magnesium 2gm. Continuous monitoring is required, as magnesium may cause hypotension and decreased respiratory drive
- Hypertension, Severe headache, vision changes, RUQ pain, diffuse edema may indicate preeclampsia. This may progress to seizures (eclampsia).
- Any pregnant patient involved in an MVC or other trauma should be evaluated by MD for evaluation and fetal monitoring



Notify Receiving Facility, Contact Medical Control As Necessary

### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Always suspect pregnancy as a cause of vaginal bleeding in reproductive age women; patient report regarding menstrual history and sexual activity may not be
  accurate
- Ectopic pregnancy is a surgical emergency! Patients with vaginal bleeding, unstable vital signs and suspected ectopic pregnancy should be transferred to an OB receiving facility for emergent evaluation and management when possible
- Always have a high suspicion for domestic violence and /or sexual assault when evaluating a female with a reproductive or GU related complaint

# Labor / Imminent Delivery - Adult



### Pearls

Legend EMT

A-EMT

Paramedic Medical Control

Α

D

Μ

- REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular
- If Delivery is Completed, go to Newly Born Protocol for evaluation and management of the infant
- Remember that you have TWO patients during Pregnancy, Labor and Delivery; be sure to monitor and protect both throughout your management
- After Delivery, massage the uterus through the anterior abdomen and wait for the placenta; NEVER pull on the umbilical cord to expedite the afterbirth
- Record the APGAR Scores for the infant at 1minute and 5minutes after delivery; if either in the Moderately Depressed range, continue to record and document every 5 minutes while supporting the infant per the Newly Born Protocol



## **Newly Born - Peds**



### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Most Newborns requiring resuscitation will respond to supplemental O2, BVMs, airway clearing maneuvers. If not, go to Neonatal Resuscitation Protocol
- Consider birth trauma during evaluation of non-vigorous Newborn; pneumothorax, hypovolemia, hypoglycemia
- Term gestation, strong cry / adequate respirations with good tone will generally need no resuscitation
- Expected Pulse Ox Readings: Birth 1min = 60-65%, 1-2min = 65-70%, 3-4min = 70-75%, 4-5min = 75-80%, 5-10min = 80-85%, >10min = >90%
- APGAR scores at 1min and 5 min. Appearance, Pulse, Grimace, Activity, Respirations. Each score gets 0, 1 or 2 points (Total 10). If either in the moderately depressed range, continue to record and document every 5 minutes.

### Medical Protocols - Peds

## Cholinergic / Organophosphate Overdose - Adult

P ParamedicM Medical Control

A-EMT

Α

Legend EMT



### Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- \*Each DuoDote Kit contains 600mg 2-PAM and 2.1mg of Atropine. The kits in the ambulance are intended for responder use only. If/When the emergency cache has been released by the State of Wisconsin, those kits may be used for the general public.
- SLUDGEM Salivation, Lacrimation, Urination (Incontinence), Defecation (Incontinence), GI Upset, Emesis, Miosis
- For patients with major symptoms, there is no max dosing for Atropine; continue administering until salivation/secretions improved
- Follow all Hazmat procedures, strictly adhere to personal protective equipment for exposure prevention and begin decontamination early
- Patients who have been exposed to organophosphates are highly likely to off-gas; be sure to use all responder PPE and to avoid exposure to clothing or exhalations
  of victims. Helicopter EMS is generally NOT appropriate for these patients.
- A cholinergic crisis is an over-stimulation at a neuromuscular junction due to an excess of acetylcholine (ACh), as of a result of the inactivity or inhibition of the AChE enzyme, which normally breaks down acetylcholine

## **Beta Blocker Overdose - Adult**



REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Many beta blocker ingestions do not cause symptoms; exceptions are the elderly, poor cardiac/respiratory reserve, and coingestions with other cardiac
  medications
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222



## **Calcium Channel Blocker Overdose - Adult**



### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Sustained release preparations may have delayed onset of toxic symptoms (up to 12 hours)
- Overdoses with Calcium Channel Blockers have a high mortality!! Electrical conduction abnormalities, vasodilation, myocardial depression are severe
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222

Legend EMT A A-EMT P Paramedic M Medical Control

## **Carbon Monoxide Poisoning - Adult**



#### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Fetal hemoglobin has a stronger affinity for CO than adult, and will preferentially take the CO from the Mother, giving her a FALSE LOW SpCO level
- Hospital evaluation should be strongly encouraged for any pregnant or suspected to be pregnant females; all hospitals should have access to Rad-57 device
   The absence or low levels of SpCO is not a reliable predictor of firefighter/victim exposures to other toxic byproducts of combustion. Consider the Cyanide
- Poisoning Protocol
- Multiple patients presenting with vague, influenza-like symptoms simultaneously should raise your suspicion of CO exposure. Ask about home heating methods, generator use, exposure to combustible fuels



## **Cyanide Poisoning - Adult**



#### Pearls

REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Consider Cyanide when exposed to any products of combustion, mining incidents or industrial organic chemistry exposure.
- Fetal hemoglobin has a stronger affinity for CO than adult, and will preferentially take the CO from the Mother, giving her a FALSE LOW SpCO level
- Hospital evaluation should be strongly encouraged for any pregnant or suspected to be pregnant females
- The absence or low levels of SpCO is not a reliable predictor of firefighter/victim exposures to other toxic byproducts of combustion
- Multiple patients presenting with vague, influenza-like symptoms simultaneously should raise your suspicion of CO exposure. Ask about home heating methods



REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Acute dystonic reactions are extrapyramidal side effects of antipsychotic and certain other medications. 90% occur within 5 days of starting a new med
- Dystonia refers to sustained muscle contractions, frequently causing twisting, repetitive movements or postures, and may affect any part of the body
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222



REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

• Opiates may be taken orally, intravenously and inhalational (smoked/snorted). All routes are capable of causing respiratory arrest in overdose

- All opiates have effects that last longer than Naloxone. Extended Release and Long-Acting formulations will likely need repeat Naloxone dosing in overdose
- Naloxone has been connected to flash pulmonary edema after administration for opiate overdose; for this reason, all opiate OD patients must be transported
- Intranasal Naloxone should be distributed between both nares to optimize absorption
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222



## **Cocaine and Sympathomimetic Overdose - Adult**



### Pearls

#### REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- Patients on MAOIs for depression may have symptoms of a Sympathomimetic Overdose after eating certain foods such as aged cheese, beer, mushrooms
- Patients with Cocaine or Sympathomimetic Overdose are at high risk of Arrhythmias, Myocardial Infarction and Stroke
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222



#### REQUIRED EXAM: VS, GCS, Mental Status, Neuro, Abdominal Exam, Cardiovascular

- If arrhythmias occur in TCA Overdose, the first step is to give more Sodium Bicarbonate. Then move on to the Appropriate Arrhythmia Protocol
- Administer IV Sodium Bicarbonate 1mEq/kg over 5 minutes, and repeat every 5 minutes until BP improves and QRS complex begins to narrow.
- Avoid beta-blockers and amiodarone as they may worsen hypotension and conduction abnormalities
- Patients are unreliable historians in overdose situations, particularly in suicide attempts. Trust what they tell you, but verify (pill bottles, circumstances, etc.)
- Many intentional overdoses involve multiple substances, some of which can have cardiac toxicity; a 12-Lead should be obtained on all overdose patients
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222









REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. However, please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- As with all medical interventions, assess and document change in patient condition pre- and post-treatment
- Opiate naive patients and the elderly can have a dramatic response to analgesic medications; start low and titrate up as appropriate
- Allow for position of maximum comfort as situation allows
- Acetaminophen and Ibuprofen are optional for Paramedic level services
- Ketorolac is contraindicated in: Elderly (>65 y/o), pregnancy/reproductive age, anticoagulation or bleeding diatheses, anticipated surgery, NSAID use (including EMS administered ibuprofen), peptic ulcer or GI bleeding, possible intracranial hemorrhage, renal insufficiency
   \*Oral medications are contraindicated in anyone who may need an emergent surgery or procedure; "if in doubt, don't give PO"

Legend EMT A A-EMT P Paramedic M Medical Control

## **Refusal Protocol - Adult**



### <u>Pearls</u>

**REQUIRED EXAM: VS, GCS, Nature of Complaint** 

\*Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are
incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence
of incapacitation: inability to stand on ones own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to
questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.

- \*\*Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient .

Legend EMT A A-EMT P Paramedic M Medical Control

## **Refusal After EMS Treatment - Adult**



### **Pearls**

### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- \*Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are
  incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence
  of incapacitation: inability to stand on ones own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to
  questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.
- Simple Hypoglycemia for these protocols is defined as: hypoglycemia caused by insulin ONLY and not suspected to be due to occult infection or trauma
- \*\*Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient.



#### <u>Pearls</u>

#### REQUIRED EXAM: Blood Sugar, SpO2, GCS, Neuro Exam

- Midazolam is effective in terminating seizures. Do not delay IM/IN administration to obtain IV access in an actively seizing patient
- Do not hesitate to treat recurrent, prolonged (>1 minute) seizure activity
- Status epilepticus is ≥2 successive seizures without recovery or consciousness in between. This is a TRUE EMERGENCY requiring Airway Management and rapid transport
- Assess for possibility of occult trauma, substance abuse
- Active seizure in known or suspected pregnancy >20 weeks, give Magnesium 4gm IV/IO over 2-3 minutes




Α

D

### REQUIRED EXAM: VS, SpO2, Blood Glucose, Neuro Exam, BE-FAST Stroke Scale

- Thrombolytic Screening Protocol should be completed for any suspected stroke patient
- In Stroke, BE-FAST Sudden onset of Balance loss or incoordination, Eyes/vision changes, Facial Asymmetry, Arm Strength, Speech difficulty or Terrible headache
- Be very diligent observing for airway compromise in suspected acute stroke (swallowing, vomiting, aspirating)
- Hypoglycemia, Infection and Hypoxia can present with Neurologic deficit, *especially in the elderly*.
- IV Access is important, but establishment of a line should not significantly delay initiation of transport. Time lost is brain lost!
- Pre-notification to the receiving hospital is critical to ensure timely brain imaging, administration of thrombolytics and thrombectomy procedures



Hypotension / Shock (Non-Trauma) - Adult



#### Pearls

Legend EMT

A-EMT

Α

D

REQUIRED EXAM: VS, GCS, RR, Lung sounds, JVD

- Shock may present with normal VS and progress insidiously; Tachycardia may be the first and only sign of shock.
- If evidence or suspicion of trauma, move to Hemorrhage Protocol early
- Document respiratory rate, SpO2 and breath sounds with IV Fluids, and consider Pulmonary Edema Protocol as appropriate.
- Acute Adrenal Insufficiency State where the body cannot produce enough steroids. Primary adrenal disease vs. recent discontinuation of steroids (Prednisone) after long term use. \*\* IF Adrenal Insufficiency suspected, contact Medical Control and review case. Medical Control may authorize Methylprednisone 2mg/kg IV/IO (max 125mg)



Legend EMT A A-EMT Paramedic M Medical Control

# General Approach – Adult, Trauma



### <u>Pearls</u>

REQUIRED EXAM: Vital Signs, GCS, Loss of Consciousness, Location of Pain (then targeted per Appropriate Trauma Protocol)

- Assess for major trauma criteria immediately upon patient contact
  - -RR <10 or >29; SBP <90; Pulse <50 or >140; GCS <13; SpO2<93%
  - -Transport to Trauma Center, minimize scene time to goal of <10 minutes
- Disability assess for neuro deficits including paralysis, weakness, abnormal sensation
- Suspect Tension Pneumothorax when:

-Mechanism consistent with Chest Trauma; Resp Distress; Decreased Breath Sounds; JVD; Low BP; Tachycardia; Tracheal Deviation -Signs and Symptoms of Tension Pneumothorax may be present with or without positive pressure ventilations

- -Needle Decompression should be performed with a 3" 14ga needle at the 2<sup>nd</sup> intercostal space, midclavicular line
- -If repeat decompression necessary, continue to move laterally along the superior aspect of the 3<sup>rd</sup> rib

### EMT A-EMT Paramedic Destination Determination – Adult, Trauma

P ParamedicM Medical Control

Α



# **Bites and Envenomations – Adult, Trauma**

A A-EMT P Paramedic M Medical Control

Legend EMT



### Pearls

REQUIRED EXAM: VS, GCS, Evidence of Intoxication, Affected Extremity Neurovascular Exam

- Cat bites may not initially appear serious, but can progress rapidly to severe infection
- Human bites have higher rates of infection than animal bites and necessitate evaluation in the Emergency Department for antibiotics
- It is not necessary to bring the offending insects, animals or reptiles to the ED for identification; this may result in added danger to others
- Bites on the hands and lacerations over knuckles should be assumed to be "Fight Bites" until proven otherwise, and need evaluation
- Brown recluse spider bites are usually painless at the time of bite. Pain and tissue necrosis develops over hours to days
- Immunocompromised patients have higher risk of infection Think: Diabetes, Chemotherapy, Organ Transplant



#### <u>Pearls</u>

REQUIRED EXAM: VS, GCS, Lung Sounds, HEENT, Posterior Pharynx

- Burns to face and eyes, remove contact lenses prior to irrigation
- Chemical burns require removal of contaminated clothing, brush away dry powder before irrigation. Flush with copious warm water on scene and continue irrigation en route. Be sure to brush excess away and remove contaminated clothing BEFORE beginning irrigation Early intubation is strongly recommended if suspicion of inhalation injury. Suspicion is high in patients involved in an enclosed space fire, who have facial burns or show signs of airway involvement; carbonaceous sputum, facial burns or edema, hoarseness, singed nasal hairs, agitation, hypoxia or cyanosis
- Indications of possible Cyanide Poisoning Exposure to fumes from burning Nitrile (polyurethane, vinyl) Seizures, coma, cardiac arrest, headache, vertigo and/or cherry red skin color from increased venous O2 concentration

Legend EMT A A-EMT P Paramedic M Medical Control

# Traumatic Cardiac Arrest – Adult, Trauma

General Approach – Adult, Trauma Injuries Incompatible With Life? Criteria for Death/Withholding (Incineration, Decapitation, Yes Resuscitation Policy p15 Hemicorpectomy) No Criteria for Death/Withholding Rigor Mortis, Dependent Lividity or Contact Law Enforcement and/or Yes Decomposition of Body Tissue? Resuscitation Policy p15 **Medical Examiner** No Apply Continuous Cardiac Monitor Ásystole OR Pregnant >22 Blunt Trauma Do Not Attempt Resuscitation NO PEA <40bpm weeks No No **Begin Resuscitation** Continue HPCPR Procedure p173 Throughout Transport to Closest Leveled /e **Trauma Center** (Preference to Level 1 Center, if possible) Consider Airway Management Protocol p34 Full Spinal Immobilization with C-collar and Long Spine Board MANDATORY IV Access Protocol p55 Α Return of Consider Chest Decompression A NS Bolus 500mL IV/IO Pulse Procedure p181 Yes Notify Receiving Facility, Notify Receiving Facility, Go To Appropriate Trauma Protocol **Contact Medical Control As Necessary Contact Medical Control** 

#### <u>Pearls</u>

REQUIRED EXAM: Pupillary Light Reflex, Palpation of Pulses, Heart and Lung Auscultation

- Injuries incompatible with life include; decapitation, incineration, massively deforming head or chest injury, dependent lividity, rigor mortis
- As with all trauma patients, DO NOT delay transport
- Consider using medical cardiac arrest protocols if uncertainty exists regarding etiology of arrest
- Use of a long spine board will make chest compressions more effective; however, if spinal immobilization interferes with CPR use reasonable effort to limit patient and spine movement
- Be aware that these may be crime scenes: do your best to avoid disturbing forensic evidence
- If provider safety becomes a concern, transport of deceased patients to the hospital is acceptable
- Pregnancy EDC can be estimated by palpating the gravid uterus; above the level of the umbilicus is generally ≥22 weeks

# Chemical / Electrical Burn – Adult, Trauma

P ParamedicM Medical Control

Α

Legend EMT

A-EMT





### Pearls

### REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Provider Safety is paramount! Ensure Chemical Source is not a hazard to responders and Electrical Sources are not contacting patient prior to assessment. Don't allow yourself or your crew to become victims.
- Safety First! Assure a Chemical source of burn is NOT a hazard to responders. Assure an Electrical source of burn is OFF or no longer contacting pt.
- High Voltage Electrical Burns (>600 volts) require spinal immobilization, continuous cardiac monitor and IV access regardless of external appearance of injury
- Chemical burns require removal of contaminated clothing, brush away dry powder before irrigation. Flush with copious warm water on scene and continue irrigation en route. Be sure to brush excess away and remove contaminated clothing BEFORE beginning irrigation
- Superficial appearance of Electrical Burns does NOT indicate severity of underlying tissue damage
- Attempt to locate contact points in Electrical Burns, generally contact point with source and where patient is grounded. Do not refer to them as entry or exit wounds. Surface appearance may belie the damage below
- Electrical Burns cause ventricular and atrial irritability and dysrhythmias; anticipate cardiac problems and treat accordingly





Α

D

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Consider tension pneumothorax in any patient with penetrating chest trauma, OR blunt chest trauma with decreased unilateral breath sounds, hypotension, tachycardia, hypoxia, tracheal deviation (late) or JVD (late)
- Aortic root injuries, bronchial disruption and tracheal disruptions are common with major deceleration injuries (i.e. MVC)
- Cardiac contusions are common with blunt chest trauma, and may present with ectopy, PVCs or even STEMI appearance on cardiac monitor
- Pericardial Tamponade is a surgical emergency and needs rapid transport. Look for muffled heart tones, hypotension, tachycardia



- REQUIRED EXAM: Vital Signs, GCS, Lung Sounds, Neuro Exam, Musculoskeletal Exam
- Structural Collapse, Crush Scenes are often full of hazards, provider safety is the most important consideration
- Patients may become hypothermic, even in warm environments
  - -Hypothermia can lead to coagulopathy, which will increase bleeding times and have worse outcomes for the patient
- Crush injuries can result in hyperkalemia from shift of Potassium out of injured cells. Cardiac monitoring is required and 12-lead ECG preferred whenever possible (as dicated by the situation)
- Monitor extremities for signs of compartment syndrome after crush injury; **P**ain, **P**allor, **P**aresthesias, **P**aralysis, **P**ulselessness and **P**oikilothermia (inability to regulate core body temperature)
- \*Utilize different IV lines or flush between bicarb and calcium to prevent precipitation in the line

### Trauma Protocols - Adult

84



#### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

Have a HIGH index of suspicion for possible spinal injuries. Any diving injury or submersion with unclear details should be fully immobilized

- Hypothermia is often associated with near-drowning and submersion injuries. Consider the Hypothermia Protocol as appropriate
- All patients with Near-Drowning / Submersion Injury should be transported for evaluation due to delayed presentation of respiratory failure
- With diving injuries (decompression / barotrauma) consider availability of a hyperbaric chamber; contact Medical Control early.
- Near-drowning patients who are awake and cooperative but with respiratory distress may benefit from CPAP / Positive Pressure Ventilation

# Environmental, Hyperthermia – Adult, Trauma

AA-EMTPParamedicMMedical Control

Legend EMT



### <u>Pearls</u>

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- Extremes of Age are more prone to heat emergencies due to inability to easily self-extricate from hot environments
- Patients on Tricyclic Antidepressants, Anticholinergics, Diuretics (i.e. Lasix) are more susceptible to heat emergencies due to medication effects
- Cocaine, amphetamines and salicylates all may elevate body temperature or interfere with the ability to auto-regulate
- Sweating generally disappears as body temperature rises above 104°F
- If Heat Cramps resolved without IV Access or Medications, patients may refuse transport, IF tolerating oral fluids and VS normal

# Environmental, Hypothermia – Adult, Trauma

A A-EMT P Paramedic M Medical Control

Legend EMT



### Pearls

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- Hypoglycemia is found in many hypothermic patients, because hypothermia may be a result of hypoglycemia
- Severe hypothermia may cause myocardial irritability and rough handling can theoretically cause V-fib. <u>Please handle carefully</u>.
- Do not withhold intubation or CPR for this concern, but only the most experienced provider available should *gently* attempt intubation
   Below 86°F (30°C), antiarrhythmics may not be effective. If given, they should be given at reduced intervals. Do NOT attempt to pace below 86°F. If antiarrhythmics necessary for severely hypothermic patient, Contact Medical Control
- 50 T. Tantan mything inclusive and the severely hypothetime patient, contact we deal control
- Extremes of age, malnutrition, EtOH and drug abuse and outdoor hobbies / employment all predispose to hypothermia

Legend EMT A A-EMT P Paramedic M Medical Control

# Extremity Injury – Adult, Trauma



### Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Immobilization of bony injuries should include the joint above and below. Joint injuries require immobilization of bone above and below
- Palpate and document Circulation, Movement and Sensation both before and after splint application
- Tourniquets should remain in place once hemorrhage control is adequate. The tourniquet is tight enough when the bleeding stops!
- If active hemorrhage and bony/soft tissue deformity, priority should be put on hemorrhage control *first*, then splinting remember A,B,C's
- If amputated extremities available, seal in a plastic bag and place in cool water and bring to the hospital with the patient





D

REQUIRED EXAM: VS, GCS, Visual Acuity, Neuro Exam, Extraocular Movements

- Stabilize any penetrating objects. DO NOT remove any embedded / impaled objects
- If Long Spine Board not indicated, transport with head of stretcher elevated to 60 degrees to help reduce intraocular pressure .
- Remove contact lenses when possible
- Always cover both eyes to prevent further injury
- Orbital fractures increase concern for globe or optic nerve injury; follow visual acuity and extraocular movements for changes
- Normal visual acuity can be present, even with severe injury

Legend EMT A A-EMT P Paramedic M Medical Control

# Hazmat, General – Adult, Trauma



### <u>Pearls</u>

#### REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- The most important factor in Hazmat response is provider safety you can't help anyone else if you're a victim as well
- In any Hazmat situation, consider that the exposure may not be accidental; consider intentional releases, secondary devices and terrorism
- Always park upwind and uphill of any potential exposures, and be conscious of any symptoms you may begin to develop
- Communication is key; contact the appropriate Hazmat authority early and notify the Hazmat leader as well as the Comm Center of findings
- In a large-scale event, have the Comm Center activate Dane County Mass Casualty Plan and notify the Base Hospital to get prepared
- Inhaled bicarb is controversial but seems to help. Aslan S, Kandis H, Akgun M, Cakir Z, Inandi T, Görgüner M. The effect of nebulized NaHCO3 treatment on "RADS" due to chlorine gas inhalation. *Inhal Toxicol*. 2006 Oct. 18(11):895-900.



### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- If GCS ≤13 consider Air transport or Rapid Transport
- Airway interventions can be detrimental to patients with head injury by raising intracranial pressure, worsening hypoxia (and secondary brain injury) and increasing risk of aspiration. Whenever possible these patients should be managed in the least invasive manner to safely maintain O2 saturation >90% (ie. NRB, BVM with 100% O2)
- Acute herniation should be suspected when the following signs are present: acute unilateral dilated and non-reactive pupil, abrupt deterioration in mental status, abrupt onset of motor posturing, abrupt increase in blood pressure, abrupt decrease in heart rate.
- Only in suspected acute herniation increase ventilatory rate (rate 20/minute) and target EtCO2 30-35mmHg
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushings response)
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively
- Most important vital sign to monitor and document is level of consciousness (GCS)
- Concussions are periods of confusion or loss of consciousness (LOC) associated with trauma which may have resolved by the time EMS arrives. Any confusion or mental status abnormality which does not return to normal within 15 minutes or any documented loss of consciousness should be transported to an Emergency Department. Any questions or clarifications, contact Medical Control.

# Hemorrhage Control – Adult, Trauma

Legend EMT A A-EMT P Paramedic M Medical Control



### Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Hypotension in trauma needs blood products early, so minimize scene time. Goal for scene time in major trauma cases should be <10 min
- Multiple casualty incident or obvious life threatening hemorrhage, consider Tourniquet Procedure and/or Hemostatic Dressing FIRST
- Hemostatic Dressings are appropriate for hemorrhage that can't be controlled with a tourniquet, such as junctional wounds in the groin or axilla.
   Remember hemostatic agents are contraindicated in wounds that violate the thoracic or abdominal cavity; if unsure, use sterile roll gauze.
- Signs/Symptoms of Shock include: altered mental status, pallor, hypotension (SBP <100), cap refill >3 sec, faint/absent peripheral pulses





REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- National lightning safety guidelines state that risk continues for 30 minutes after the last lightning is seen or thunder heard
- Lightning not striking twice is a myth; if there is continued risk to EMS providers, remove the patient to a safe place before treatment
- Full spinal immobilization should be performed in any patient with altered level of consciousness, as spinal injuries are common from the concussive force of the strike and/or involuntary muscle spasms
- There are reports of patients surviving prolonged periods of arrest after lightning strike. Treatment for cardiopulmonary arrest is per ACLS protocols, but *decision to terminate resuscitation should be made in coordination with Medical Control*.



REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Safety first for Providers, Police and Patients. Never restrain any patients in the prone (face down) position.
- Document the site of electrode penetration as well as whether the barb was completely intact or broken on removal
- Patients who require repeated deployments of the Electronic Control Device are at a significantly higher risk of cardiac dysrhythmias as well as in-custody death. Have a high index of suspicion and a low threshold to treat per the Behavioral Emergencies Protocol
- Patients who are actively restrained by Law Enforcement require an officer be present in the ambulance patient compartment during transport. It is a patient safety issue as well as a medicolegal liability for the EMS Provider.



#### <u>Pearls</u>

REQUIRED EXAM: Motor Function both upper and lower extremities, Sensation of upper and lower extremities, subjective abnormal sensation, Tenderness to palpation of bony prominences OR paraspinal muscles

- **\*Clinical Intoxication** A transient condition resulting in disturbances in level of consciousness, cognition, perception, affect or behavior, or other psychophysiological functions and responses. Common examples include; ataxia, emotional instability, flight of ideas, tangential thought or motor incoordination.
- **\*\*Distracting Injury** Examples include, but are not limited to; long bone fracture, dislocations, large lacerations, deforming injuries, burns **OR** any condition preventing patient cooperation with history.
- ALL shallow water near drownings, diving injuries and high-voltage electrical injuries (lightning, ≥1000V AC or ≥1500V DC) MUST be fully immobilized
- If immobilization *indicated but refused*; advise the patient of risk of death, permanent disability or long term impairment. Clearly document the refusal and the conversation (re: risk); Apply a cervical collar, if allowed and transport in neutral alignment.
- Long spine boards have risks and benefits for patients. Spinal immobilization should always be applied when any doubt exists about the possibility of spinal trauma.
- It is always safer and better patient care to assume that a Cervical Spine injury has occurred and provide protection, and should be the standard of care in trauma patient management
- Long spine boards can be very useful for extricating patients, transferring locations, and providing a firm surface for chest compressions.
- Very thoughtful consideration should go into any decision to NOT use the rigid cervical collar OR long spine board.



### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Major Trauma Criteria Step 1 and Step 2 in Destination Determination Protocol. GCS ≤13, SBP <90mmHg, Respiratory Rate <10 or >29 or need for ventilatory support
- Intimate Partner Violence is very difficult to disclose, and many victims call 9-1-1 with vague complaints; Have a HIGH index of suspicion
- Never judge a victim of intimate partner violence or sexual assault on the way they dress, act or present themselves
- Do not be afraid to involve Law Enforcement for assistance as needed, and have a low threshold to transport to a SANE Capable Emergency Department where Social Work, SANE Nurses, and Advocates can provide support and resources for these patients

# Hypotension / Shock (Trauma) – Adult, Trauma

A A-EMT P Paramedic M Medical Control

Legend EMT



### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Hypotension in trauma needs blood products early, so minimize scene time. Goal for scene time in major trauma cases should be <10 min
- Remember the Triad of Death in Trauma Hypotension, Hypothermia and Coagulopathy; IVF are important during resuscitation, but it is important to remember how fluids impact these three elements
- Multiple casualty incident or obvious life threatening hemorrhage, consider Tourniquet Procedure and/or Hemostatic Dressing FIRST
- Hemostatic Dressings are appropriate for hemorrhage that can't be controlled with a tourniquet, such as abdominal and pelvic wounds
- Signs/Symptoms of Shock include: altered mental status, pallor, hypotension (SBP <100), cap refill >3 sec, faint/absent peripheral pulses



REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- \*Each DuoDote Kit contains 600mg 2-PAM and 2.1mg of Atropine. The kits in the ambulance are intended for responder use only. If/When the emergency cache has been released by the State of Wisconsin, those kits may be used for the general public.
- SLUDGEM Salivation, Lacrimation, Urination (Incontinence), Defecation (Incontinence), GI Upset, Emesis, Miosis
- For patients with major symptoms, there is no max dosing for Atropine; continue administering until salivation/secretions improved
- Follow all Hazmat procedures, strictly adhere to personal protective equipment for exposure prevention and begin decontamination early
  - Patients who have been exposed to organophosphates are highly likely to off-gas; be sure to use all responder PPE and to avoid exposure to clothing or exhalations of victims. Helicopter EMS is generally NOT appropriate for these patients.



# Public Safety Personnel Rehab – Special Operations



### **Pearls**

- REQUIRED EXAM: Mental Status, Skin Condition, Temperature, Heart Rate, Respiratory Rate, Blood Pressure, SpO2, SpCO
- This Protocol was named "Public Safety Rehab", and should be applied to any situation during which Firefighters, Law Enforcement Officers, Emergency Medical Services or ANY Emergency Response Personnel are exerting themselves for > 40 minutes.
- o This INCLUDES training operations, special events and non-emergency operations lasting longer than 40 minutes.
- *Per NFPA 1584 Requirements*, the Rehab Site should be set up in a location that provides shelter for the members, is far enough away from the active scene that the turnout gear, SCBA and protective equipment may be safety doffed, and provide protection from the environmental conditions.
- Ideally, members should be shielded from view of the active scene, to reduce anxiety and to prevent members from trying to exit rehab inappropriately.
   The purpose of this Protocol is to protect the physical and mental condition of members operating at the scene of an emergency or a training exercise and to prevent decompensation of the individual. By keeping the individuals safe, it improves the safety and integrity of the team as well as the operation.
- prevent decompensation of the individual. By keeping the individuals safe, it improves the safety and integrity of the team as well as the operation.
- At a minimum, turnout coat and nomex hood should be removed and turnout pants pushed down to the knees while seated in Rehab

Lar

# Quick Reference – Peds (<12 y/o)

16 kgs

18 kgs

20 kgs

Normal Vital Signs In Children									
Age	Heart Rate (Be	ats Per Minute)	Respiratory Rate (Breaths Per Minute)	Systolic Blood Pressure	Weight (kg)				
	Awake Rate	Sleeping Rate							
Newborn	100-180	80-160	30-60	60-90	2-3				
Infant (1-12mos)	100-170	75-160	30-60	87-105	4-10				
Toddler (1-2yrs)	80-150	60-90	24-40	85-102	10-14				
Preschool (3-5yrs)	70-130	60-90	20-34	89-108	14-18				
School Age (6-12yrs)	65-120	60-90	15-30	94-120	20-42				
Adolescent (13-17yrs)	55-90	50-90	12-20	107-132	>50				

Modified Glasgow Coma Scale for Infants and Children				Wiscon (2	Visconsin EMSC Recommended Weight Conversion (2.2lbs = 1kg -OR- 1lb = 0.45kg)					
	Child	Score	Infant	Lbs.	Kgs.	Lbs.	Kgs.	Lbs.	Kgs.	
					2 kgs	20 lbs	9 kgs	35 lbs	16 kgs	
	Spontaneous	4	4 Spontaneous 3 To Speech 2 To Pain 1 None		3	21	10	36	16	
	To Speech	3			3	22	10	37	17	
Eye Opening	To Pain	2			4	23	10	38	17	
	None	1			4	24	11	39	18	
	Oriented Annopriete	-	Case and Dabbles	10 lbs	5 kgs	25 lbs	11 kgs	40 lbs	18 kgs	
	Oriented, Appropriate	5	Coos and Babbles	11	5	26	12	41	19	
Best Verbal Response	Confused	4	Irritable, Cries	12	5	27	12	42	19	
	inappropriate words	3	Cries in Response to Pain	13	6	28	13	43	20	
-	Incomprenensible Sounds	2	Moans in Response to Pain	14	6	29	13	44	20	
	None Obava Carata da		None	15 lbs	7 kgs	30 lbs	14 kgs	45 lbs	20 kgs	
Best Motor	Ubeys Commands	6	With draws in Dependents to Touch	16	7	31	14	46	21	
	Localizes Palmul Sumulus	5	Withdraws in Reponse to Touch	17	8	32	15	47	21	
	Flavian in Response to Pain	4	Abasement Flavian Destructo Pain	10	0	22	10	10	21	
Response	Flexion in Response to Pain	3	Abnormal Flexion Posture to Pain	10	0	33	15	48	22	
	Extension in Response to Pain	2	Abnormal Extension Posture to Pain	19	9	34	15	49	22	
	None 1 None		www.chawisconsin.org 50 lbs					23 kgs		

Response	Flexion ir	n Response to Pa	in   3	Abnormal Flex	cion Posture to Pa	ain	18	8	33	15	48	22	
	Extension in Response to Pain 2		ain 2	Abnormal Extension Posture to Pain			19	9	34	15	49	22	
		None	1		None			www.chawi	sconsin.	org	50 lbs	50 lbs 23 kgs	
						r							
Equipment	GRAY 3-5kg	PINK Small Infant 6-7kg	RED Infant 6-9kg	PURPLE Toddler 10-11kg	YELLOW Small Child 12-14kg	WH Cł 15-:	HTE iild 18kg	BLUE Child 19-23kg	L	ORANGE arge Child 24-29kg	GI A 30	REEN Idult -36kg	
Resuscitation Bag		Infant/Child	Infant/Child	Child	Child	Cł	nild	Child		Child	A	dult	
Oxygen Mask (NRB)		Pediatric	Pediatric	Pediatric	Pediatric	Ped	iatric	Pediatric	:	Pediatric	Ped	liatric/ dult	
Oral Airway (mm)		50	50	60	60	e	50	70		80		80	
Laryngoscope Blade (Size)		1 Straight	1 Straight	1 Straight	2 Straight	2 Sti	aight	2 Straigh OR Curve	t 2 d C	2 Straight OR Curved	3 St OR	traight Curved	
Endotracheal Tube (mm)		3.5 Uncuffed 3.0 Cuffed	3.5 Uncuffed 3.0 Cuffed	4.0 Uncuffed 3.5 Cuffed	4.5 Uncuffed 4.0 Cuffed	5.0 Ur 4.5 C	cuffed Cuffed	5.5 Uncuff 5.0 Cuffe	ed d	5.0 Cuffed	6.5	Cuffed	
King Airway	Size 0 (Clear)	Size 1 (White)	Size 1 (White)	Size 1 (White)	Size 2 (Green)	Size 2	(Green)	Size 2.5 (Orange)		Size 3 (Yellow)	Si (Ye	ize 3 ellow)	
LMA	NA	#1	#1	#1.5	#2	#2	2.5	#3		#3.5		#4	
Suction Catheter (French)		8	8	10	10	1	.0	10		10	1	0-12	
BP Cuff	Neonatal #5/ Infant	Infant/Child	Infant/Child	Child	Child	Cł	nild	Child		Child	Sma	ll Adult	
IV Catheter (ga)		22-24	22-24	20-24	18-22	18	-22	18-20		18-20	1	6-20	
IO (ga)		18/15	18/15	15	15	1	.5	15		15	15		
NG Tube (French)		5-8	5-8	8-10	10	1	.0	12-14		14-18	16-18		

### Legend EMT A A-EMT P Paramedic

# **Destination Determination**

M Medical Control



Legend EMT Α A-EMT D Paramedic

# General Approach – Peds, Medical

Medical Control



### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- Continuous Cardiac Monitor should be applied early for any non-traumatic pain complaint between the ear lobes and the umbilicus (belly button). Consider 12-Lead if concerning findings on Cardiac Monitor.
- Include Blood Glucose reading for any patient with weakness, altered mental status, seizure, loss of consciousness or known history of diabetes
- Measure and document SpO2, EtCO2 for ANY patient with complaint of weakness, altered mental status, respiratory distress, respiratory failure or EMS managed airwav
- If hypotensive (Systolic BP<Reference Page Value) and/or clinical evidence of dehydration, consider Peds IV Access Protocol and Shock (Non-Trauma) Peds Medical Protocol
- Any patient contact which does not result in an EMS transport must have an appropriately executed and completed refusal form .
- Never hesitate to consult Medical Control for assistance with patient refusals that can't meet all required fields, clarification of protocols or for patients that make you uncomfortable.



#### REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Digital capnography is the standard of care and is to be used with ALL methods of advanced airway management and endotracheal intubation
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 >93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital; strong preference should be given to the least invasive airway management that gets effective results.
- Always assume that patient reports of dyspnea and shortness of breath are physiologic, NOT psychogenic! Treatment for dyspnea is O2, not a paper bag!
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Each Attempt should include change in approach, operator and/or equipment NO MORE THAN TWO (2) ATTEMPTS TOTAL
- Once secured, every effort should be made to keep the advanced airway in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, an Attempt is defined as passing the tip of the laryngoscope blade or Advanced Airway past the teeth



- REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose, Lung Exam, Posterior Pharynx
- Digital capnography is the standard of care and is to be used with all methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Advanced Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask or supraglottic airway and waveform SpO2 ≥93%, it is acceptable to defer advanced
  airway placement in favor of basic maneuvers and rapid transport to the hospital; Endotracheal Tube placement is a complicated skill that is not without
  potential consequence
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allows
- Once secured, every effort should be made to keep the endotracheal tube in the airway; commercially available tube holders and C-collars are good adjuncts
- For all protocols, an Intubation Attempt is defined as passing the tip of the laryngoscope blade or Blindly Inserted Airway Device (BIAD) tube past the teeth
- Recent history of Upper Respiratory Infection, Missing / Loose Teeth or Dentures all will increase complexity of airway management
- **REMEMBER** Bag-Valve-Mask devices ONLY provide supplemental O<sub>2</sub> when you squeeze the bag; otherwise the patient does not receive oxygen!



#### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- Paralytics block movement of skeletal muscle but do NOT change awareness. Remember that without sedation, patients may be awake but paralyzed
- Monitor Vital Signs closely when managing airways and sedation. Changes that indicate pain, anxiety *as well as tube dislodgment* may be subtle (at first)!!
   Document Vital Signs before and after administration of every medication to prove effectiveness.
- Document Vital Signs before and after administration of every medication to prove effectiveness
- ANY change in patient condition, reassess from the beginning. Use the mnemonic DOPE (Dislodgment, Obstruction, Pneumothorax, Equipment) to troubleshoot problems with the ET Tube
- Ketamine may be considered for sedation AFTER standard regimen exhausted AND if Ketamine NOT used as induction agent for intubation
- Continuous End Tidal CO<sub>2</sub> is mandatory for all intubated patients color change is not sufficient proof of ET Tube in the trachea



#### REQUIRED EXAM: VS, GCS, Lung Sounds, RR, Skin, Neuro

- A patient with a "failed airway" is near death or dying, not stable or improving. Inability to place a BIAD airway or low SpO2 alone are not indications for surgical airway.
- Continuous digital capnography is the standard of care and is to be used with ALL methods of advanced airway management and endotracheal intubation. If a service does not have digital capnography capabilities and an Invasive Airway Device is placed, an intercept with a capable service **MUST** be completed
- If Airway Management is adequately maintained with a Bag-Valve Mask and waveform SpO2 ≥93%, it is acceptable to defer advanced airway placement in favor of basic maneuvers and rapid transport to the hospital
- Gastric decompression with Oral Gastric Tube should be considered on all patients with advanced airways, if time and situation allow
- Once secured, every effort should be made to keep the advanced airway in the airway; commercially available tube holders and C-collars are good adjuncts
- For this protocol, an Attempt is defined as passing the tip of the laryngoscope blade or advanced airway past the teeth



#### REQUIRED EXAM: VS, 12 Lead, GCS, RR, Lung Sounds, Accessory muscle use, nasal flaring

- Do not delay inhaled meds to get an extended history. Assessments and interviews may be carried out simultaneously with breathing treatments
- Supplemental O2 should be administered for all cases of hypoxia, tachypnea, and subjective air hunger
- Magnesium Sulfate is contraindicated if there is a history of renal failure
- Keep patient in position of comfort if partial obstruction
- EpiPen Jr. is 0.15mg and is indicated for patients <60lbs. The adult EpiPen is 0.30mg and is indicated for patients ≥60lbs
- Severe Asthma attacks may have such severe obstruction that they do NOT wheeze. Cases of "Silent Chest" need aggressive management with inhaled and IV medications. This is an ominous sign of impending respiratory failure.
- \* Albuterol max 3 doses total, Ipratropium max 2 doses total. If pt. requires repeat dosing of either medication, contact Med Control AND/OR Activate ALS



# **Newly Born Resuscitation - Peds**



#### Pearls

REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- Call early for ALS Intercept on neonates who are critically ill, and involve Medical Control so arrangements can be made at the receiving facility
- Transport rapidly to an OB Receiving Facility
- Consider hypoglycemia as etiology of neonatal arrest/peri-arrest situation. If not able to evaluate blood sugar, treat presumptively x 1
- The increased concentration of fetal hemoglobin (HbF) and its increased affinity for oxygen is a factor to consider in establishing target SpO2 values in the neonate. HbF will shift the oxygen dissociation curve to the left due to its high affinity for oxygen, which may result in high oxygen saturation (eg, 85 percent) at PaO2 levels below 40 mmHg


#### **CPR Quality**

- Push hard (>1/3 of anterior-posterior diameter of chest) and fast (at least 100/min) and allow for complete chest recoil
- Minimize interruptions in compressions • Count out loud or use metronome
- Avoid excessive ventilations
  - One breath every 6 seconds
- Rotate compressors every 2 minutes
- If no advanced airway, 15:2 compressions:ventilations ratio.
- If advanced airway, give 10 breaths per minute with continuous chest compression\*\*

#### **Shock Energy for Defibrillation**

- First Shock 2 J/kg
- Second Shock 4 J/kg
  - Subsequent Shocks >4 J/kg Maximum 10 J/kg **or** adult dose

#### **Reversible Causes**

- Hypovolemia
- Hypoxia
- Hydrogen Ion (acidosis)
- Hypoglycemia
- Hypo- / Hyperkalemia
- Hypothermia
- Tension Pneumothorax
- Tamponade, Cardiac
- Toxins
- Thrombosis, Pulmonary
- Thrombosis, Coronary

#### **Resuscitation Medications**

#### Amiodarone IV/IO Dose

- 5mg/kg bolus in VF/pulseless V-Tach, max 300mg
- May repeat up to 2 times if refractory VF/Pulseless VT
- Atropine IM/IV/IO Dose
   0.02 mg/kg IM/IV/IO, minimum dose 0.1mg; max 1mg Calcium IV/IO
- 100mg/kg, max 1gm
  - Dextrose IV/IO
- 0.5 1mg/kg (5-10mL/kg of D10W or 2-4mL/kg of D25W)
- Use D10W if patient is <10kg or has peripheral IV only **Epinephrine** IV/IO Dose:
- 0.01mg/kg (0.1mL/kg of 1:10,000 concentration), max 1mg.
- Repeat every 3-5 minutes.
  - Lidocaine IV/IO Dose 1mg/kg, max 3mg
  - Sodium Bicarbonate IV/IO Dose
- 1mEq/kg, max 50mEq

#### **Advanced Airway**

- If no advanced airway is in place, ventilate with 1 breath every 3-5 seconds (12-20 breaths per minute)\*
- When bag-mask ventilation is unsuccessful... the LMA is acceptable when used by experienced providers to provide a patent airway and support ventilation.
  - Waveform capnography to confirm and monitor airway placement
- Once advanced airway in place, give 1 breath every 6 seconds (10 breaths per minute)\*\*

#### **Return of Spontaneous Circulation (ROSC)**

- Glucose, Pulse and Blood Pressure check and documentation
- Spontaneous arterial pressure waves in the intra-arterial monitoring

#### Pearls

#### **RECOMMENDED EXAM: Mental Status**

- IO is the preferred access for all Pediatric Cardiac Arrest patients.
- In order to successfully resuscitate a Pediatric patient, a cause of arrest must be identified and corrected
- Airway is the most important intervention. This should be addressed immediately. Survival is often dependent on successful airway management
- Airway management with BVM is often sufficient in the Pediatric patient.
- If evidence of tension pneumothorax unilateral decreased or absent breath sounds, tracheal deviation, JVD, tachycardia, hypotension consider needle thoracostomy. Chest decompression may be attempted at the 2<sup>nd</sup> intercostal space, mid clavicular line
- For Neonatal Resuscitation, refer to Neonatal Resuscitation, p. 109
- \*https://eccguidelines.heart.org/wp-content/themes/eccstaging/dompdf-master/pdffiles/part-11-pediatric-basic-life-support-and-cardiopulmonary-resuscitationquality.pdf
- \* \*https://eccguidelines.heart.org/wp-content/uploads/2015/10/PALS-Cardiac-Arrest-Algorithm.png





#### **RECOMMENDED EXAM: Mental Status**

- Monitor and treat for agitation and seizures
- Monitor and treat hypoglycemia
- If evidence of tension pneumothorax unilateral decreased or absent breath sounds, tracheal deviation, JVD, tachycardia, hypotension consider needle thoracostomy. Chest decompression may be attempted at the 2<sup>nd</sup> intercostal space, mid clavicular line
- Hyperventilation is a significant cause of hypotension / recurrent cardiac arrest in post resuscitation phase; avoid at all costs

Legend EMT A-EMT Paramedic

### M Medical Control

Α

D





#### Pearls

- **RECOMMENDED EXAM: Mental Status**
- Once Hemodynamically stable a 12-Lead ECG should be obtained
- Maintain patent airway throughout evaluation and treatment; assist breathing as necessary
- Probable Sinus tachycardia P-waves present before every QRS, constant P-R interval. Infants usually <220/min, Children usually <180/min
- Probable SVT history vague, nonspecific with abrupt rate change, P-waves absent / abnormal, HR not variable. Infants usually >220/min, Children >180/min
- Hemodynamic Instability Hypotension, Acutely Altered Mental Status, Signs of Shock
- Don't delay treatment to get 12-lead ECG if patient is unstable
- H's & T's Hypovolemia, Hypoxia, Hydrogen Ion (acidosis), Hypoglycemia, Hypo-/Hyperkalemia, Tension Pneumothorax, Tamponade (cardiac), Toxins, Thrombosis (pulmonary), Thrombosis (coronary), Trauma
- Alternative vagal maneuvers include cold pack to the face to illicit the "mammalian diving reflex"

## **Bradycardia With A Pulse - Peds**

P ParamedicM Medical Control

A-EMT

Α

Legend EMT



#### Pearls

#### RECOMMENDED EXAM: Mental Status

- Cardiopulmonary Compromise defined as hypotension, altered mental status, signs of inadequate perfusion
- Maintain patent airway throughout evaluation and treatment; assist breathing as necessary
- Don't delay treatment to get 12-lead ECG if patient is unstable
- Pediatric patients ALWAYS get CPR; CCR is not appropriate for the pediatric patient



**REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary** 

- Epinephrine Infusion: Mix 2mg (1:1,000) in 250mL NS. If worsening or refractory anaphylaxis, contact Med Control first. Start at 2mcg/min, titrate up.
- Famotidine dilution no longer reuired. Infuse over 2 minutes.
- In general, the shorter the time from allergen contact to start of symptoms, the more severe the reaction
- Consider the Airway Management Protocol early in patients with Severe Allergic Reaction or subjective throat closing
- Imminent Cardiac Arrest should be considered in patients with severe bradycardia, unresponsiveness, no palpable radial or brachial pulse
- If parents have administered diphenhydramine (Benadryl) prior to EMS arrival, confirm medication given as well as dose



REQUIRED EXAM: VS, GCS, Head, Neck, Blood Glucose

- Pay special attention to head and neck exam for bruising or signs of injury
- Altered Mental Status may be the presenting sign of environmental hazards / toxins. Protect yourself and other providers / community if concern. Involve Hazmat early
- Safer to assume hypoglycemia if doubt exists. Recheck blood sugar after dextrose/glutose administration and reassess
- Do not let EtOH fool you!! Intoxicated patients frequently develop hypoglycemia, Alcoholic Ketoacidosis (AKA) and often hide traumatic injuries!



#### REQUIRED EXAM: VS, GCS, Skin, Cardivascular, Pulmonary

- An Brief Resolved Unexplained Episode (BRUE) occurs in children ≤1 year of age and may be referred to as an "Apparent Life Threatening Episode (ALTE)" or "Near-miss SIDS"; it is an episode that is frightening to the observer/caregiver and involves some combination of the following: Apnea, Color Change, Marked Change In Muscle Tone, and Choking or Gagging
- The incidence of BRUE was found to be 7.5% in one studied out-of-hospital infant population
  The overwhelming majority of BRUE patients (83%) appeared to be in no apparent distress by EMS assessment
  Nearly half of the patients assessed by EMS to be in no apparent distress (48%) were later found to have significant illness upon ED evaluation
  - This is why the history of a BRUE must always result in transport to an emergency department regardless of the infant's appearance at the time of EMS assessment
- If the parent or guardian is refusing EMS transport, OLMC must be contacted prior to executing a refusal. Be supportive of parents as they may feel
- embarrassed for calling when the child now appears well.
- Always have a high index of suspicion for Non-Accidental Trauma (NAT). It affects all ethnicities, socioeconomic statuses and family types.

Legend EMT A A-EMT P Paramedic

## **Diabetic Emergencies - Peds**

M Medical Control



#### Pearls

REQUIRED EXAM: VS, SpO2, Blood Glucose, Skin, Respiratory Rate and Effort, Neuro Exam

- Do NOT administer oral glucose to patients that can't swallow or adequately protect their airway
- Do NOT give Bicarb to patients with hyperglycemia suspected to be in DKA This has been proven to result in WORSE outcomes for the patients
- Prolonged hypoglycemia may not respond to Glucagon; be prepared to start an IV and administer IV Dextrose
- Infants and patients with congenital liver diseases may not respond to Glucagon due to poor liver glycogen stores
- Patients on oral diabetes medications are at a very high risk of recurrent hypoglycemia and should be transported. Contact Medical Control for advice/patient counseling if patient is refusing. See Refusal after Hypoglycemia Treatment Protocol for additional information as necessary.
- Always consider intentional insulin overdose, and ask patients / family / friends / witnesses about suicidal ideation, comments or gestures



- In the setting of CARDIAC ARREST ONLY, any preexisting dialysis shunt or central line may be used by EMS for fluid and medication administration
- For patients who are hemodynamically unstable or in extremis, Medical Control MUST be contacted prior to accessing any preexisting catheters
- Upper extremity sites are preferred over Lower Extremity sites. Lower Extremity lvs are discouraged in patients with peripheral vascular disease or diabetes.
- In patients with hemodialysis catheters, avoid IV attempts, blood draws, injections or blood pressures in the extremity on the affected side.
- Saline Locks are acceptable in cases where access may be necessary but the patient is not volume depleted; having an IV does not mandate IV Fluid infusion.
- The preferred order of IV Access is: Peripheral IV, Intraosseous IV, IN/IM access UNLESS medical acuity or situation dictate otherwise.
  - Remember: Proximal Humerus IO is contraindicated in patients ≤18 years old.



- emesis and reliable contact info to the ED; this will be important in patient evaluation and assessment
- Be careful of off-gassing in cases of inhalation of volatile agents
- Many intentional overdoses involve multiple substances, some with cardiac toxicity; a 12-Lead ECG should be obtained on all overdoses situation permitting
- Contact Poison Control for all non-opiate overdoses: 1-800-222-1222
- SLUDGEM Salivation, Lacrimation, Urination, Defecation, GI Upset, Emesis, Miosis
- DIIMBRELLS Diarrhea Hrination Miosis/Muscle Weakness Bronchorrhea Bradycardia Emesis Lacrimation Letharov Salivation/Sweating



## **Pain Management - Peds**



#### Pearls

REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. Please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- As with all medical interventions, assess and document change in patient condition pre- and post-treatment
- Opiate naive patients can have a much more dramatic response to medications than expected; start low and titrate up as appropriate
- Allow for position of maximum comfort as situation allows
- Acetaminophen and Ibuprofen are optional for Paramedic level services
- \*Oral medications are contraindicated in anyone who may need an emergent surgery or procedure; "if in doubt, don't give PO"

## Medical Protocols - Pediatric

120

## **Refusal Protocol - Peds**



#### <u>Pearls</u>

#### **REQUIRED EXAM: VS, GCS, Nature of Complaint**

- \*Incapacitated definition: A person who, because of alcohol consumption or withdrawal, is unconscious or whose judgment is impaired such that they are
  incapable of making rational decisions as evidenced by extreme physical debilitation, physical harm or threats of harm to themselves, others or property. Evidence
  of incapacitation: inability to stand on one's own, staggering, falling, wobbling, vomit/urination/defecation on clothing, inability to understand and respond to
  questions, DTs, unconsciousness, walking or sleeping where subject to danger, hostile toward others.
- \*\*Intoxicated definition: A person whose mental or physical functioning is substantially impaired as a result of the use of alcohol.
- If there is ANY question, do not hesitate to involve Law Enforcement to ensure the best decisions are being made on behalf of the patient.



#### REQUIRED EXAM: Blood Sugar, SpO2, GCS, Neuro Exam

- Midazolam is effective in terminating seizures. Do not delay IM/IN administration to obtain IV access in an actively seizing patient. IN Midazolam is preferred to
  rectal Diazepam.
- Do not hesitate to treat recurrent, prolonged (>1 minute) seizure activity. Have a low threshold to give IN Midazolam rather than spend time on IV Access.
- Status epilepticus is a seizure lasting greater than 5 minutes OR ≥2 successive seizures without recovery of consciousness in between. This is a TRUE EMERGENCY requiring Airway Management and rapid transport to the most appropriate Pediatric ICU Capable facility
- Assess for possibility of occult trauma, substance abuse
- Active seizure in known or suspected pregnancy >20 weeks, give Magnesium 4gm IV/IO over 2-3 minutes



#### REQUIRED EXAM: VS, GCS, RR, Lung sounds, JVD

- Shock may present with initially normal VS and progress insidiously; follow frequent blood pressures, particularly if the patient "looks sicker than Vital Signs"
- Tachycardia may be the first and only sign of shock in the pediatric population; remember Peds patients compensate to a point, then crash quickly
- If evidence or suspicion of trauma (accidental OR non-accidental), move to Hypotension/Shock (Trauma) Protocol early
- Acute Adrenal Insufficiency State where the body cannot produce enough steroids. Primary adrenal disease vs. recent discontinuation of steroids (Prednisone) after long term use.
- \*\* If Adrenal Insufficiency suspected, contact Medical Control and review case. Medical Control may authorize Methylprednisone 2mg/kg IV/IO
   Hypotension is a LATE finding in pediatric patients, and is an ominous sign that they are losing their ability to compensate



## Sickle Cell Crisis - Peds



#### <u>Pearls</u>

REQUIRED EXAM: Vital Signs, GCS, Neuro Exam, Lung Sounds, Abdominal Exam, Musculoskeletal Exam, Area of Pain

- Provider Discretion to be used for patients suffering from chronic pain related issues. Please note that history of chronic pain does not preclude the patient from treatment of acute pain related etiologies.
- Pain severity (0-10) is a vital sign to be recorded pre- and post-medication delivery and at disposition
- Sickle Cell Anemia is a chronic hemolytic anemia occurring almost exclusively in African Americans; pain crises result from the occlusion of blood vessels by masses of misshapen blood cells during times of crisis
- Sickle Pain Crises occur typically in the joints and back. Liver, Pulmonary and CNS involvement can present with RUQ pain, hypoxia or stroke
  - Patients with sickle cell disease have a high incidence of life-threatening conditions at a very young age

# Quick Reference Page – Peds (<18 y/o)

16 kgs

18 kgs

20 kgs

Normal Vital Signs In Children								
Age	Heart Rate (Be	ats Per Minute)	Respiratory Rate (Breaths Per Minute)	Systolic Blood Pressure	Weight (kg)			
	Awake Rate	Sleeping Rate						
Newborn	100-180	80-160	30-60	60-90	2-3			
Infant (1-12mos)	100-170	75-160	30-60	87-105	4-10			
Toddler (1-2yrs)	80-150	60-90	24-40	85-102	10-14			
Preschool (3-5yrs)	70-130	60-90	20-34	89-108	14-18			
School Age (6-12yrs)	65-120	60-90	15-30	94-120	20-42			
Adolescent (13-17yrs)	55-90	50-90	12-20	107-132	>50			

	Modified Glasgow Coma Scale for	Wiscon (2	sin EMSC 2.2lbs = 1l	Recomme (g -Ol	ended We R- 1lb	ight Con = 0.45kg	version g)		
	Child	Score	Infant	Lbs.	Kgs.	Lbs.	Kgs.	Lbs.	Kgs.
				5 lbs	2 kgs	20 lbs	9 kgs	35 lbs	16 kgs
	Spontaneous	4	Spontaneous	6	3	21	10	36	16
	To Speech	3	To Speech	7	3	22	10	37	17
Eye Opening	To Pain	2	To Pain	8	4	23	10	38	17
	None	1	None	9	4	24	11	39	18
		-		10 lbs	5 kgs	25 lbs	11 kgs	40 lbs	18 kgs
	Oriented, Appropriate	5	Coos and Babbles	11	5	26	12	41	19
Best Verbal	Confused	4	Irritable, Cries	12	5	27	12	42	19
Response	Inappropriate Words	3	Cries in Response to Pain	13	6	28	13	/13	20
	Incomprehensible Sounds	2	Moans in Response to Pain	14	6	20	12	43	20
	None	1	None	14	-	29	15	44	20
	Obeys Commands	6	Moves Spontaneously and Purposely	15 lbs	7 kgs	30 lbs	14 kgs	45 lbs	20 kgs
	Localizes Painful Stimulus	5	Withdraws in Reponse to Touch	16	7	31	14	46	21
Best Motor	Withdraws in Response to Pain	4	Withdraws in Response to Pain	17	8	32	15	47	21
Response	Flexion in Response to Pain	3	Abnormal Flexion Posture to Pain	18	8	33	15	48	22
	Extension in Response to Pain	2	Abnormal Extension Posture to Pain	19	9	34	15	49	22
	None	1	None	w	ww.chaw	isconsin.c	org	50 lbs	23 kgs

Equipment	GRAY 3-5kg	PINK Small Infant 6-7kg	RED Infant 6-9kg	PURPLE Toddler 10-11kg	YELLOW Small Child 12-14kg	WHITE Child 15-18kg	BLUE Child 19-23kg	ORANGE Large Child 24-29kg	GREEN Adult 30-36kg
Resuscitation Bag		Infant/Child	Infant/Child	Child	Child	Child	Child	Child	Adult
Oxygen Mask (NRB)		Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric	Pediatric/ Adult
Oral Airway (mm)		50	50	60	60	60	70	80	80
Laryngoscope Blade (Size)		1 Straight	1 Straight	1 Straight	2 Straight	2 Straight	2 Straight OR Curved	2 Straight OR Curved	3 Straight OR Curved
Endotracheal Tube (mm)		3.5 Uncuffed 3.0 Cuffed	3.5 Uncuffed 3.0 Cuffed	4.0 Uncuffed 3.5 Cuffed	4.5 Uncuffed 4.0 Cuffed	5.0 Uncuffed 4.5 Cuffed	5.5 Uncuffed 5.0 Cuffed	6.0 Cuffed	6.5 Cuffed
King Airway	Size 0 (Clear)	Size 1 (White)	Size 1 (White)	Size 1 (White)	Size 2 (Green)	Size 2 (Green)	Size 2.5 (Orange)	Size 3 (Yellow)	Size 3 (Yellow)
LMA	NA	#1	#1	#1.5	#2	#2.5	#3	#3.5	#4
Suction Catheter (French)		8	8	10	10	10	10	10	10-12
BP Cuff	Neonatal #5/ Infant	Infant/Child	Infant/Child	Child	Child	Child	Child	Child	Small Adult
IV Catheter (ga)		22-24	22-24	20-24	18-22	18-22	18-20	18-20	16-20
IO (ga)		18/15	18/15	15	15	15	15	15	15
NG Tube (French)		5-8	5-8	8-10	10	10	12-14	14-18	16-18

# Destination Determination – Peds (<18 y/o)

P Paramedic M Medical Control

Α

Legend EMT

A-EMT



Legend EMT A A-EMT P Paramedic M Medical Control

## General Approach – Peds, Trauma



#### Pearls

REQUIRED EXAM: Vital Signs, GCS, Loss of Consciousness, Location of Pain (then targeted per Appropriate Trauma Protocol)

- Assess for major trauma criteria immediately upon patient contact
  - -RR <10 or >upper normal (p.121); SBP <70 + (age in years x 2)mmHG; Pulse <50 or >upper normal (p.121); GCS <13; SpO2<93%
    - -Transport to Trauma Center, minimize scene time to goal of <10 minutes
- Disability assess for neuro deficits including paralysis, weakness, abnormal sensation
- Suspect Tension Pneumothorax when:

-Mechanism consistent with Chest Trauma; Resp Distress; Decreased Breath Sounds; JVD; Low BP; Tachycardia; Tracheal Deviation -Signs and Symptoms of Tension Pneumothorax may be present with or without positive pressure ventilations

- -Needle Decompression should be performed with an 18-20ga needle at the 2<sup>nd</sup> intercostal space, midclavicular line
- -If repeat decompression necessary, continue to move laterally along the superior aspect of the 3<sup>rd</sup> rib

## Traumatic Cardiac Arrest – Peds, Trauma

Paramedic Medical Control Μ General Approach – Peds, Trauma Injuries Incompatible With Life? (Incineration, Decapitation, Yes Hemicorpectomy) Criteria for Death/Withholding No Resuscitation Policy p15 Rigor Mortis, Dependent Lividity or Yes Decomposition of Body Tissue? No **Contact Law Enforcement and/or** Continuous Cardiac Monitor **Medical Examiner Begin Resuscitation** Continue CPR Procedure p170 Throughout Transport to Closest Leveled Trauma Center (Preference to Level 1 Pediatric Trauma Center, if possible) Peds Airway Management Protocol p103 Full Spinal Immobilization with C-collar and Long Spine Board MANDATORY А Peds IV Access Protocol p118 А Normal Saline Bolus, 20mL/kg IV/IO **Consider Chest Decompression** Return of Go To Appropriate Trauma Protocol Ρ No Pulse Procedure p181 Notify Receiving Facility, Notify Receiving Facility, M **Contact Medical Control As Necessary Contact Medical Control** 

#### Pearls

Legend EMT

A-EMT

Α

Ρ

- **REQUIRED EXAM:** Pupillary Light Reflex, Palpation of Pulses, Heart and Lung Auscultation
- This protocol is compliant with the Joint Position Statement of the ACS, ACEP, NAEMSP and AAP and can be referenced here: http://www.annemergmed.com/article/S0196-0644(14)00074-2/fulltext#sec6
- Injuries incompatible with life include; decapitation, incineration, massively deforming head or chest injury, dependent lividity, rigor mortis
- As with all trauma patients, DO NOT delay transport •
- Consider using medical cardiac arrest protocols if uncertainty exists regarding etiology of arrest
- Use of a long spine board will make chest compressions more effective; however, if spinal immobilization interferes with CPR use reasonable effort to limit patient and spine movement
- Be aware that these may be crime scenes: do your best to avoid disturbing forensic evidence
- If provider safety becomes a concern, transport of deceased patients to the hospital is acceptable

# Bites and Envenomations – Peds, Trauma

P Paramedic M Medical Control

Α

Legend EMT

A-EMT



#### <u>Pearls</u>

REQUIRED EXAM: VS, GCS, Evidence of Intoxication, Affected Extremity Neurovascular Exam

- Cat bites may not initially appear serious, but can progress rapidly to severe infection
- Human bites have higher rates of infection than animal bites and need to be evaluated in the Emergency Department for antibiotics
- Bites on the hands and lacerations over knuckles should be assumed to be "Fight Bites" until proven otherwise, and need evaluation
- It is not necessary to bring the offending insects, animals or reptiles to the ED for identification; this may result in added danger to others
- Brown recluse spider bites are usually painless at the time of bite. Pain and tissue necrosis develops over hours to days
- Immunocompromised patients have higher risk of infection Think: Diabetes, Chemotherapy, Organ Transplant



#### <u>Pearls</u>

#### REQUIRED EXAM: VS, GCS, Lung Sounds, HEENT, Posterior Pharynx

- Safety First! Assure a Chemical source of burn is NOT a hazard to responders. Assure an Electrical source of burn is OFF or no longer contacting pt. Never overlook the possibility that a burn injury may be the result of child abuse / non-accidental trauma.
- High Voltage Electrical Burns (>600 volts) require spinal immobilization, continuous cardiac monitor and IV access regardless of external appearance of injury
- Chemical burns require removal of contaminated clothing, brush away dry powder before irrigation. Flush with copious warm water on scene and continue irrigation en route. Be sure to brush excess away and remove contaminated clothing BEFORE beginning irrigation Burns to face and eyes, remove contact lenses prior to irrigation
- Early intubation is strongly recommended if suspicion of inhalation injury. Suspicion is high in patients involved in an enclosed space fire, who have facial burns or show signs of airway involvement; carbonaceous sputum, facial burns or edema, hoarseness, singed nasal hairs, agitation, hypoxia or cyanosis
- Indications of possible Cyanide Poisoning Exposure to fumes from burning Nitrile (polyurethane, vinyl) Seizures, coma, cardiac arrest, headache, vertigo and/or cherry red skin color from increased venous O2 concentration



REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Consider tension pneumothorax in any patient with penetrating chest trauma, OR blunt chest trauma with decreased unilateral breath sounds, hypotension, tachycardia, hypoxia, tracheal deviation (late) or JVD (late)
- Aortic root injuries, bronchial disruption and tracheal disruptions are common with major deceleration injuries (i.e. MVC)
- Cardiac contusions are common with blunt chest trauma, and may present with ectopy, PVCs or even STEMI appearance on cardiac monitor
- Pericardial Tamponade is a surgical emergency and needs rapid transport. Look for muffled heart tones, hypotension, tachycardia



#### <u>Pearls</u>

#### REQUIRED EXAM: Vital Signs, GCS, Lung Sounds, Neuro Exam, Musculoskeletal Exam

- Structural Collapse, Crush Scenes are often full of hazards, provider safety is the most important consideration
- Patients may become hypothermic, even in warm environments

Albuterol 2.5mg/3mL Neb

- -Hypothermia can lead to coagulopathy, which will increase bleeding times and have worse outcomes for the patient
- Crush injuries can result in hyperkalemia from shift of Potassium out of injured cells. Cardiac monitoring is required and 12-lead ECG preferred whenever possible (as dicated by the situation)

Consider Pain Management, Peds

Protocol p120

Monitor and Reassess for Fluid

Overload

Notify Receiving Facility,

**Contact Medical Control As** 

Necessary

- Monitor extremities for signs of compartment syndrome after crush injury; Pain, Pallor, Paresthesias, Paralysis, Pulselessness and Poikilothermia (inability to regulate core body temperature)
- \* Sodium Bicarb Infusion: 1mEq/kg added to 1L NS, administered 20mL/kg IV just prior to extrication
- \*\*Utilize different IV lines or flush between bicarb and calcium to prevent precipitation in the line



REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

• Have a HIGH index of suspicion for possible spinal injuries. Any diving injury or submersion with unclear details should be fully immobilized

- Hypothermia is often associated with near-drowning and submersion injuries. Consider the Hypothermia Protocol as appropriate
- All patients with Near-Drowning / Submersion Injury should be transported for evaluation due to delayed presentation of respiratory failure
- With diving injuries (decompression / barotrauma) consider availability of a hyperbaric chamber; contact Medical Control early.
- Near-drowning patients who are awake and cooperative but with respiratory distress may benefit from CPAP / Positive Pressure Ventilation

# Environmental, Hyperthermia – Peds, Trauma

A EMT A A-EMT P Paramedic M Medical Control

Legend



#### Pearls

REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status

- Extremes of Age are more prone to heat emergencies due to inability to easily self-extricate from hot environments
- Patients on Tricyclic Antidepressants, Anticholinergics, Diuretics (i.e. Lasix) are more susceptible to heat emergencies due to medication effects
- Cocaine, amphetamines and salicylates all may elevate body temperature or interfere with the ability to auto-regulate
- Sweating generally disappears as body temperature rises above 104°F
- If Heat Cramps resolved without IV Access or Medications, patients may refuse transport, IF tolerating oral fluids and VS normal

# Environmental, Hypothermia – Peds, Trauma

P Paramedic M Medical Control

A-EMT

Α

Legend EMT



#### Pearls

- REQUIRED EXAM: VS, GCS, Skin, HEENT, Neuro, Evidence of Intoxication, Mental Status
- Hypoglycemia is found in many hypothermic patients, because hypothermia may be a result of hypoglycemia
- Severe hypothermia may cause myocardial irritability and rough handling can theoretically cause V-fib. <u>Please handle carefully</u>.
- -Do not withhold advanced airway or CPR for this concern, but only the most experienced provider available should gently attempt advanced airway
- Below 86°F (30°C), antiarrhythmics may not be effective. If given, they should be given at reduced intervals. Do NOT attempt to pace below 86°F. If antiarrhythmics necessary for severely hypothermic patient, Contact Medical Control
- Extremes of age, malnutrition, EtOH and drug abuse and outdoor hobbies / employment all predispose to hypothermia

Legend EMT A A-EMT P Paramedic

## Extremity Injury – Peds, Trauma





#### Pearls

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Immobilization of bony injuries should include the joint above and below. Joint injuries require immobilization of bone above and below
- Palpate and document Circulation, Movement and Sensation both before and after splint application
- Tourniquets should remain in place once hemorrhage control is adequate. The tourniquet is tight enough when the bleeding stops!
- If active hemorrhage and bony/soft tissue deformity, priority should be put on hemorrhage control first, then splinting remember A,B,C's
- If amputated extremities available, seal in a plastic bag and place in cool water and bring to the hospital with the patient



REQUIRED EXAM: VS, GCS, Visual Acuity, Neuro Exam, Extraocular Movements

- Stabilize any penetrating objects. DO NOT remove any embedded / impaled objects
- If Long Spine Board not indicated, transport with head of stretcher elevated to 60 degrees to help reduce intraocular pressure
- Remove contact lenses when possible
- Always cover both eyes to prevent further injury
- Orbital fractures increase concern for globe or optic nerve injury; follow visual acuity and extraocular movements for changes
- Normal visual acuity can be present, even with severe injury

Legend EMT A A-EMT P Paramedic

# Head Injury – Peds, Trauma



#### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

• If GCS ≤13 consider Air transport or Rapid Transport to Leveled Trauma Facility

- Airway interventions can be detrimental to patients with head injury by raising intracranial pressure, worsening hypoxia (causing secondary brain injury) and increasing risk of aspiration. Whenever possible these patients should be managed in the least invasive manner to safely maintain O2 saturation >90% (ie. NRB, BVM with 100% O2, etc.)
- Acute herniation should be suspected when the following signs are present: acute unilateral dilated and non-reactive pupil, abrupt deterioration in mental status, abrupt onset of motor posturing, abrupt increase in blood pressure, abrupt decrease in heart rate.
- Only in suspected acute herniation increase ventilatory rate with target EtCO2 30-35mmHg
- Increased intracranial pressure (ICP) may cause hypertension and bradycardia (Cushings response)
- Hypotension usually indicates injury or shock unrelated to the head injury and should be treated aggressively
- Most important vital sign to monitor and document is level of consciousness (GCS)
- Concussions are periods of confusion or loss of consciousness (LOC) associated with trauma which may have resolved by the time EMS arrives. Any confusion or mental status abnormality should be transported to an Emergency Department. Any questions or clarifications, contact Medical Control.





#### <u>Pearls</u>

REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Hypotension in trauma needs blood products early, so minimize scene time. Goal for scene time in major trauma cases should be <10 min
- Multiple casualty incident or obvious life threatening hemorrhage, consider Tourniquet Procedure and/or Hemostatic Dressing FIRST
- Hemostatic Dressings are appropriate for hemorrhage that can't be controlled with a tourniquet, such as junctional wounds in the groin or axilla.
   Remember hemostatic agents are contraindicated in wounds that violate the thoracic or abdominal cavity; if unsure, use sterile roll gauze.
- Signs/Symptoms of Shock include: altered mental status, pallor, cap refill >3 sec, faint/absent peripheral pulses, hypotension (age defined)



REQUIRED EXAM: Mental Status, HEENT, Heart, Lungs, Abdomen, Extremity, Back, Neuro

- Major Trauma Criteria Step 1 and Step 2 in Destination Determination Protocol.
- Intimate Partner Violence is very difficult to disclose, and many victims call 9-1-1 with vague complaints; Have a HIGH index of suspicion
- Never judge a victim of intimate partner violence or sexual assault on the way they dress, act or present themselves
- Do not be afraid to involve Law Enforcement for assistance as needed, and have a low threshold to transport to a SANE Capable Emergency
  Department where Social Work, SANE Nurses, and Advocates can provide support and resources for these patients
- Child Abuse Evaluation centers are also specialized units with specialized forensic capabilities, Child-Life Specialists and Social Work.

Legend EMT A-EMT Α Р Paramedic М

# Spinal Immobilization – Peds, Trauma

Medical Control



#### Pearls

REQUIRED EXAM: Motor Function both upper and lower extremities, Sensation of upper and lower extremities, subjective abnormal sensation, Tenderness to palpation of bony prominences OR paraspinal muscles

- \*Clinical Intoxication A transient condition resulting in disturbances in level of consciousness, cognition, perception, affect or behavior, or other psychophysiological functions and responses. Common examples include; ataxia, emotional instability, flight of ideas, tangential thought or motor incoordination.
- \*\*Distracting Injury Examples include, but are not limited to: long bone fracture, dislocations, large lacerations, deforming injuries, burns OR any condition preventing patient cooperation with history.
- It is always safer and better patient care to assume that a Spinal Cord injury has occurred and provide protection, and should be the standard of care in trauma patient management
- Rigid cervical collars and long spine boards have risks and benefits for patients. Spinal immobilization should always be applied when any doubt exists about the possibility of spinal trauma.
- EXTREMELY thoughtful consideration and careful physical exam should be part of any decision to apply or not apply the spinal immobilization, and must be well documented.

# King Guide To Parenteral Admixtures – Adult, Medical

Key To Symbols         C       – May Be Compatible         -       Incompatible         -       Incompatible	D5W	D10NS	NS	LR	Aden osine	Amiodarone	Atropine	Calcium chloride	Diazepam	Diltiazem	Diphenhydramine	Dopamin e	Epinephrine	Etomidate	Famotidine	Fentanyl	Glucagon	Hal operid ol	Hydroxocobal am in	Ketamine	Ketorolac	Lidocaine	Lorazepam	Magnesium sulfate	Methylpredni solone	Midazolam	Morphine sulfate	Naloxone	Nitroglycerin	Norepinephrine	Ondansetron	Rocuronium	Sodium Bicarb	Succinylcholine	ТХА	Vasopressin
Adenosine	С		С	С																																
Amiodarone							С	С		С	С	С	С		С			С		С		С	С			С	С	С	С		С	С		С		С
Atropine			С	С		С		С			С	С	С	С	С	С				С	С	С		С	С	С	С	С	С	С	С		С	С		С
Calcium chloride	С		С	С		С	С			С	С	С	С		С	С						С	С			С	С	С	С	С	С	С		С		С
Diazepam																																				
Diltiazem	С		С			С		С			С	С	С		С	С		С				С	С	С		С	С	С	С	С	С	С		С		С
Diphenhydramine	С	С	С	С		С	С	С		С		С	С		С	С				С		С	С	С		С	С	С	С	С	С	С		С		С
Dopamine	С		С	С		С	С	С		С	С		С		С	С				С	С	С	С	С	С	С	С	С	С	С	С	С		С		С
Epinephrine	С	С		С		С	С	С		С	С	С			С	С				С	С	С	С	С	С	С	С	С	С	С	С	С		С		С
Etomidate							С									С						С	С			С	С							С		
Famotidine	С		С	С		С	С	С		С	С	С	С			С					С	С	С	С		С	С	С	С	С	С		С	С		С
Fentanyl	С		С	С			С	С		С	С	С	С	С	С						С	С	С	С	С	С	С	С	С	С	С	С	С	С		С
Glucagon																												С								
Haloperidol	С					С				С										С			С									С				
Hydroxocobalamin	С		С	С																																
Ketamine	С		С			С	С				С	С	С					С						С		С		С								
Ketorolac	С		С	С			С					С	С		С	С						С	С	С	С		С	С	С	С	С		С	С		С
Lidocaine	С		С	С		С	С	С		С	С	С	С	С	С	С					С		С	С	С	С	С	С	С	С	С	С	С	С		С
Lorazepam						С		С		С	С	С	С	С	С	С		С			С	С		С	С	С	С		С	С			С	С		С
Magnesium sulfate	С		С	С			С			С	С	С	С		С	С				С	С	С	С			С	С		С	С	С	С	С	С		С
Methylprednisolone			С				С					С	С			С					С	С	С				С	С	С	С			С	С		С
Midazolam	С		С			С	С	С		С	С	С	С	С	С	С				С		С	С	С			С	С	С	С	С	С		С		С
Morphine sulfate	С	С		С		С	С	С		С	С	С	С	С	С	С					С	С	С	С	С	С		С	С	С	С	С	С	С		С
Naloxone	С		С	С		С	С	С		С	С	С	С		С	С	С			С	С	С			С	С	С			С	С	С	С	С		С
Nitroglycerin						С	С	С		С	С	С	С		С	С					С	С	С	С	С	С	С			С	С	С	С	С		С
Norepinephrine	С		С	С			С	С		С	С	С	С		С	С					С	С	С	С	С	С	С	С	С		С			С		С
Ondansetron	С		С	С		С	С	С		С	С	С	С		С	С					С	С		С		С	С	С	С	С		С		С		С
Rocuronium	С		С	С		С		С		С	С	С	С			С		С				С		С		С	С	С	С		С		С			С
Sodium Bicarb	С	С	С				С								С	С					С	С	С	С	С		С	С	С			С				С
Succinylcholine	С	С	С	С		С	С	С		С	С	С	С	С	С	С					С	С	С	С	С	С	С	С	С	С	С					С
ТХА	С		С	С																																
Vasopressin	С		С	С		С	С	С		С	С	С	С		С	С					С	С	С	С	С	С	С	С	С	С	С	С	С	С		

King Guide To Parenteral Admixtures – Adult, Medical

# **Airway Emergency Reference – Adult, Medical**

			Paralysis and Inc	duction		Post Placement Management								
Medication	Name	Etomidate	Ketamine	Succinylcholine	Rocurc	onium	Fentanyl	Midazolam	Ketamine					
Dose		0.3 mg/kg	2 mg/kg	2 mg/kg	1 mg	;/kg	1 mcg/kg	0.05 mg/kg	2 mg/kg					
Concentra	ation	2 mg/mL	100 mg/mL	20 mg/mL	10 mg	g/mL	50 mcg/mL	5 mg/mL	100 mg/mL					
lbs	kg													
66	30	9mg / 4.5mL	60mg / 0.6mL	60mg / 3mL	30mg ,	/ 3mL	30mcg / 0.6mL	1.5mg / 0.3mL	60mg / 0.6mL					
88	40	12mg / 6mL	80mg / 0.8mL	80mg / 4mL	40mg /	/ 4mL	40mcg / 0.8mL	2mg / 0.4mL	80mg / 0.8mL					
110	50	15mg / 7.5mL	100mg / 1mL	100mg / 5mL	50mg /	/ 5mL	50mcg / 1mL	2.5mg / 0.5mL	100mg / 1mL					
132	60	18mg / 9mL	120mg / 1.2mL	120mg / 6mL	60mg ,	/ 6mL	60mcg / 1.2mL	3mg / 0.6mL	120mg / 1.2mL					
154	70	21mg / 10.5mL	140mg / 1.4mL	140mg / 7mL	70mg /	/ 7mL	70mcg / 1.4mL	3.5mg / 0.7mL 140mg / 1.4mL						
176	80	24mg / 12mL	160mg / 1.6mL	160mg / 8mL	80mg /	/ 8mL	80mcg / 1.6mL	<u>4mg / 0.8mL</u>	160mg / 1.6mL					
198	90	27mg / 13.5mL	180mg / 1.8mL	180mg / 9mL	90mg ,	/ 9mL	90mcg / 1.8mL	4mg / 0.8mL	180mg / 1.8mL					
220	100	<u>30mg / 15mL</u>	200mg / 2mL	<u>200mg / 10mL</u>	<u>100mg</u>	<u>/ 10mL</u>	<u>100mcg / 2mL</u>	4mg / 0.8mL	200mg / 2mL					
242	110	30mg / 10mL	220mg / 2.2mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	220mg / 2.2mL					
264	120	30mg / 10mL	240mg / 2.4mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	240mg / 2.4mL					
286	130	30mg / 10mL	260mg / 2.6mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	260mg / 2.6mL					
308	140	30mg / 10mL	280mg / 2.8mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	280mg / 2.8mL					
330	150	30mg / 10mL	300mg / 3mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	300mg / 3mL					
Max Dos	se	30mg / 10mL	400mg / 4mL	200mg / 10mL	100mg /	/ 10mL	100mcg / 2mL	4mg / 0.8mL	400mg / 4mL					

### Airway Emergency Reference – Adult, Medical

# **Pressor FAQs – Adult, Medical**

PRESSOR	Receptor	Main Effect	Main Shock Use	Other
Epinephrine	α1, α2, β1, β2	Vasoconstriction Inotropy (increased squeeze) Dromotropy (increased conduction through AV node) Chronotropy (increased rate)	Anaphylaxis Asthma Cardiac Arrest	<ul> <li>Nonspecific α and β receptor activation</li> <li>Hard on myocardium</li> <li>Typically an add-on agent to norepinephrine in septic shock when an additional agent is required and occasionally an alternative first-line agent if norepinephrine is contraindicated.</li> <li>Increases heart rate.</li> <li>May decrease mesenteric perfusion, may induce tachyarrhythmias and ischemia</li> <li>Must be diluted; eg, a usual concentration is 1 mg of 1:1,000 in 250 mL D5W (4 micrograms/mL).</li> </ul>
Norepinephrine	α1, β1	Vasoconstriction Inotropy	Septic Shock Undifferentiated Shock	<ul> <li>First line med for most kinds of shock</li> <li>Initial vasopressor of choice in septic, cardiogenic and hypovolemic shock.</li> <li>Wide range of doses used clinically.</li> <li>Must be diluted; a usual concentration is 4mg in 250mL of D5W or NS (16mcg/mL)</li> </ul>
Phenylephrine	α1	Vasoconstriction	Hypotension ("push dose" pressors in the ED)	<ul> <li>May cause reflex bradycardia</li> <li>Pure alpha-adrenergic vasoconstrictor.</li> <li>Alternative vasopressor for patients with septic shock who: (1) develop tachyarrhythmias on norepinephrine, (2) have persistent shock despite use of two or more vasopressor/inotropic agents including vasopressin (salvage therapy), or (3) high cardiac output with persistent hypotension.</li> <li>May decrease stroke volume and cardiac output in patients with cardiac dysfunction.</li> <li>May be given as bolus dose of 50 to100 micrograms to support blood pressure during rapid sequence intubation.</li> </ul>
Dobutamine	β1, β2	Inotropy Vasodilation	Cardiogenic Shock	<ul> <li>Minimal change in heart rate</li> <li>Hard on myocardium</li> <li>Initial agent of choice in cardiogenic shock with low cardiac output and maintained blood pressure.</li> <li>Add-on to norepinephrine for cardiac output augmentation in septic shock with myocardial dysfunction or ongoing hypoperfusion despite adequate intravascular volume and MAP.</li> <li>Increases cardiac contractility and rate; may cause hypotension and tachyarrhythmias.</li> </ul>
Dopamine	α1, α2, β1, β2, DA	Vasoconstriction (high doses) Inotropy Dromotropy Chronotropy	Septic Shock (2 <sup>nd</sup> line behind Norepinephrine)	<ul> <li>More adverse effects (eg, tachycardia, arrhythmias particularly at doses ≥20 mcg/kg/minute) and failed therapy than norepinephrine.</li> <li>May be useful in selected patients (eg, with compromised systolic function or bradycardia at low risk for tachyarrhythmias).</li> <li>Must be diluted; eg, a usual concentration is 400mg in 250mL D5W (1.6 mg/mL); use of a commercially available pre-diluted solution is preferred.</li> </ul>
Vasopressin	V1	Vasoconstriction	Norepinephrine sparing effect at low doses	<ul> <li>Add-on to another vasopressor (eg, norepinephrine) to augment efficacy and decrease initial vasopressor requirement. Not recommended as a replacement for a first-line vasopressor.</li> <li>Pure vasoconstrictor; may decrease stroke volume and cardiac output in myocardial dysfunction or precipitate ischemia in coronary artery disease.</li> <li>Must be diluted; eg, a usual concentration is 25units in 250mL D5W or NS (0.1 units/mL).</li> </ul>

## Pressor FAQs – Adult, Medical
## **Pressor Drip Reference – Adult, Medical**

	The abbrevation gtt comes from the Latin "guttae", meaning "drops"									
	EPINEPHRINE (1mg of 1:1,000 in 250mL NS or D5W) 60 gtt tubing									
mcg/min	gtt/min		mcg/min	gtt/min		mcg/min	gtt/min			
1 mcg/min	15 gtt/min		5 mcg/min	75 gtt/min		9 mcg/min	135 gtt/min			
2 mcg/min	30 gtt/min		6 mcg/min	90 gtt/min		10 mcg/min	150 gtt/min			
3 mcg/min	45 gtt/min		7 mcg/min	105 gtt/min						
4 mcg/min	60 gtt/min		8 mcg/min	120 gtt/min	]					

All gtt/min rates on this page are based off 60 gtt tubing. If using 10 gtt tubing, divide the listed gtt/min rate by 6.

ALWAYS check drug concentrations BEFORE using any charts in this book

	NOREPINEPHRINE (4mg in 250mL NS or D5W) 60 gtt tubing										
mcg/min	gtt/min		mcg/min	gtt/min		mcg/min	gtt/min				
1 mcg/min	4 gtt/min		11 mcg/min	41 gtt/min		21 mcg/min	79 gtt/min				
2 mcg/min	8 gtt/min		12 mcg/min	45 gtt/min		22 mcg/min	82 gtt/min				
3 mcg/min	11 gtt/min		13 mcg/min	49 gtt/min		23 mcg/min	86 gtt/min				
4 mcg/min	15 gtt/min		14 mcg/min	53 gtt/min		24 mcg/min	90 gtt/min				
5 mcg/min	19 gtt/min		15 mcg/min	56 gtt/min		25 mcg/min	94 gtt/min				
6 mcg/min	23 gtt/min		16 mcg/min	60 gtt/min		26 mcg/min	98 gtt/min				
7 mcg/min	26 gtt/min		17 mcg/min	64 gtt/min		27 mcg/min	101 gtt/min				
8 mcg/min	30 gtt/min		18 mcg/min	68 gtt/min		28 mcg/min	106 gtt/min				
9 mcg/min	34 gtt/min		19 mcg/min	71 gtt/min		29 mcg/min	109 gtt/min				
10 mcg/min	38 gtt/min		20 mcg/min	75 gtt/min		30 mcg/min	113 gtt/min				

#### Pressor Drip Reference – Adult, Medical

Medication Name	Indication (Protocol Use)	First Dose	Second Dose	Мах
Acetaminophen	Pain Management, Adult (p. 69)	650 mg		
	Pain Management, Peds (p. 120)	15 mg / kg		650 mg
Adenosine	Tachycardia With A Pulse (p. 46)	6.0 mg	12.0 mg	May repeat 12.0mg x1
Albuterol	COPD / Asthma / Stridor (p. 38)	2.5 mg	2.5 mg	3 doses
	Allergic Reaction (p. 50)	2.5 mg	2.5 mg	3 doses
	Prolonged Crush Injury (p. 84)	2.5 mg		
	Hazmat, General (p. 90)	2.5 mg		
Amiodarone	Cardiac Arrest, Adult (p. 40)	300 mg	150 mg	
	Tachycardia With A Pulse (p. 46)	<b>150 mg over 10 minutes</b> (Irregular, Wide Complex)		
	Tachycardia With A Pulse (p. 46)	150 mg over 10 minutes (V-Tach with a Pulse)		
Aspirin	CHF / Pulmonary Edema (p. 39)	324 mg		
	Chest Pain / Suspected ACS (p. 44)	324 mg		
	ST Elevation MI (STEMI) (p. 45)	324 mg		
Atropine	Bradycardia With A Pulse (p. 48)	0.5 mg	0.5 mg	3 doses
	Cholinergic / Organophosphate Overdose (p. 60)	Minor – 2.0 mg Major – 6.0 mg		
	Beta Blocker Overdose (p. 61)	0.5 mg	0.5 mg	3 doses
	Calcium Channel Blocker Overdose (p. 62)	0.5 mg	0.5 mg	3 doses
	WMD / Nerve Agent Exposure (p. 98)	Minor – 2.0 mg Major – 6.0 mg		
Calcium Chloride	Cardiac Arrest, Adult (p. 40)	1.0 g		1 dose
	Beta Blocker Overdose (p. 61)	1.0 g		1 dose
	Calcium Channel Blocker Overdose (p. 62)	1.0 g		1 dose
	Prolonged Crush Injury (p. 84)	1.0 g over 3 min		1 dose

Medication Name	Indication (Protocol Use)	First Dose	Second Dose	Max Dose
Dextrose	Diabetic Emergencies (p. 53)	D10W – 125mL D5W – 250mL D50 – 25mL		
Diltiazem	Tachycardia With A Pulse (p. 46)	0.25 mg/kg	0.35 mg/kg	20 mg
Diphenhydramine	Allergic Reaction (p. 50)	50 mg		
	Antipsychotic OD / Acute Dystonic Reaction (p. 65)	25 mg		2 doses
Epinephrine (1:1,000)	Allergic Reaction (p. 50)	0.3 mg IM		3 doses
	COPD / Asthma / Stridor (p. 38)	0.3 mg IM	0.15mg IF HR >150 or Age > or CAD	
	COPD / Asthma / Stridor (p. 38)	1 mg Neb in 2mL NS	0.15mg IF HR >150 or Age > or CAD	
Epinephrine (1:10,000)	Cardiac Arrest (p. 40)	1 mg		
Epinephrine Infusion (1mg of 1:1,000 in 250mL D5W)	Allergic Reaction (p. 50)	0.1 mg over 5 minutes (0.1mL of 1:1000 into 10mL NS) 0.1 mg over 5 minutes (0.1mL of 1:1000 into 10mL NS) NS)		Epi Infusion 2-10 mcg/min
	Bradycardia With A Pulse (p. 48)	2-10 m		
	Calcium Channel Blocker Overdose (p. 62)	2-10 m	ncg/min (See Pressor Drip Sheet)	
	Hypotension / Shock (Non-Trauma) (p. 75)	2-10 m	ncg/min (See Pressor Drip Sheet)	
	Hypotension / Shock (Trauma) (p. 97)	2-10 m	ncg/min (See Pressor Drip Sheet)	
Etomidate	Rapid Sequence Airway (p. 35)	0.3 mg/kg		30mg
Famotidine	Allergic Reaction, Adult (p. 50)	20 mg		
Fentanyl	Post Advanced Airway Sedation (p. 36)	1 mcg/kg		100mcg, max 3 doses
	Tachycardia With A Pulse (cardioversion) (p. 46)	1 mcg/kg		100mcg
	Bradycardia With A Pulse (pacing) (p. 48)	1 mcg/kg		100mcg
	Pain Management (p. 69)	1 mcg/kg IV/IN		100mcg IV, max 2 doses (50 mcg per nare)

Medication Name	Indication (Protocol Use)	Second Dose	Max Dose	
Glucagon	Cardiac Arrest (p. 40)	50 mcg/kg		5 mg
	Diabetic Emergencies (p. 53)	1.0 mg		
	Calcium Channel Blocker Overdose (p. 62)	50 mcg/kg		5 mg
	Beta Blocker Overdose (p. 61)	50 mcg/kg		5 mg
Glucose (Oral)	Diabetic Emergencies (p. 53)	15 g PO (1 tube)		2 tubes
Haloperidol	Behavioral / Excited Delirium (p. 52)	<60 kg – 5 mg IM >60 kg – 10 mg IM		
Hydroxycobalamin (Cyanokit)	Cyanide Poisoning (p. 64)	70 mg/kg		5 g
Ibuprofen	Pain Management, Adult (p. 69)	600 mg		
	Pain Management, Peds (p. 120)	10 mg / kg		600 mg
Ipratroprium Bromide	Asthma / COPD (p. 38)	0.5 mg / neb		2 doses
	Hazmat, General (p. 90)	0.5 mg / neb		5 mg
Ketamine	Rapid Sequence Airway (RSA) (p. 35)	2-4 mg/kg		400 mg
	Post Advanced Airway Sedation (p. 36)	2 mg/kg		200mg
	Behavioral / Excited Delirium (p. 52)	2-4 mg/kg IM		400mg
	Pain Management (p. 69)	0.2 mg/kg		20 mg
Ketorolac	Pain Management (p. 69)	15 mg		
Lidocaine 2%	Intraosseous Venous Access Procedure (p. 195) (Awake and aware of pain)	10-20 mg ½ - 1 mL of 2% at 100mg/5mL concentration		

Medication Name	Indication (Protocol Use)	First Dose	Second Dose	Max Dose
Lorazepam	Tachycardia With A Pulse (cardioversion) (p. 46)	0.04 mg/kg IV/IO		2 mg
	Bradycardia With A Pulse (pacing) (p. 48)	0.04 mg/kg IV/IO		2 mg
	Behavioral / Excited Delirium (p. 52)	<60kg-1mg IM ≥60kg-1-2mg IM		
	OB General (seizures) (p. 56)	1-2mg		4 mg total
	Antipsychotic Overdose / Acute Dystonic Reaction (p. 65)	1-2mg		2 mg
	Cocaine and Sympathomimetic Overdose (p. 67)	1-2mg		2 mg
	Tricyclic Overdose (p. 68)	1-2mg		
	Seizure (p. 72)	1-2mg		
Magnesium Sulfate	COPD / Asthma / Stridor (p. 38)	2 g over 10 minutes		
	Cardiac Arrest (p. 40)	2 g over 1-2 minutes		
	Tachycardia With A Pulse (p. 46)	2 g over 1-2 minutes		
	OB General (p. 56)	4 g over 10 minutes		
	Beta Blocker Overdose (p. 61)	2 g over 1-2 minutes		
MARK I Kit	Cholinergic / Organophosphate Overdose (p. 60)	2 mg Atropine IM & 600 mg 2-PAM IM		
	WMD / Nerve Agent Exposure (p. 98)	2 mg Atropine IM & 600 mg 2-PAM IM		
Methylprednisone	Asthma / COPD (p. 38)	125 mg IV/IO		
	Allergic Reaction (p. 50)	125 mg IV/IO		

Medication Name	Indication (Protocol Use)	First Dose	Second Dose	Max Dose
Midazolam	Airway Management (p. 34)	1 mg IV/IN		
	Post Advanced Airway Sedation (p. 36)	4 mg IV/IO		Max 3 doses
	CHF / Pulmonary Edema (p. 39)	1 mg IV		
	Tachycardia With A Pulse (cardioversion) (p. 46)	2-4 mg IM/IN/IV/IO		Max 4 mg
	Bradycardia With A Pulse (pacing) (p. 48)	2-4 mg		4 mg
	OB General (p. 56)	5 mg IM/IN/IV/IO		May repeat x 1
	Antipsychotic Overdose / Acute Dystonic Reaction (p. 65)	5 mg if <60 y/o 2.5 mg if ≥60 y/o		5 mg
	Cocaine and Sympathomimetic Overdose (p. 67)	2-4 mg		
	Tricyclic Overdose (p. 68)	2-4 mg		
	Seizure (p. 72)	5 mg if <60 y/o 2.5 mg if <u>≥</u> 60 y/o		
	Bites and Envenomations (p. 79)	5 mg IM/IN or 2 mg IV/IO		
	Environmental – Hyperthermia (p. 86)	2 mg		
Naloxone	Opioid Overdose (p. 66)	0.5-2.0 mg		May repeat x 2
Nitroglycerin	CHF / Pulmonary Edema (p. 39)	0.4 mg SL if IV present OR 1", 1.5" or 2" Nitro Paste	0.4 mg SL if no IV present	3 doses
	Chest Pain / Suspected ACS (p. 44)	0.4 mg SL if IV present OR 1", 1.5" or 2" Nitro Paste	0.4 mg SL if no IV present	3 doses
	ST Elevation Myocardial Infarction (STEMI) (p. 45)	0.4 mg SL if IV present OR 1", 1.5" or 2" Nitro Paste	0.4 mg SL if no IV present	3 doses
Nitrous Oxide	Pain Management (p. 69)			
	Nitrous Oxide – Procedure (p. 199)			
Norepinephrine	Hypotension / Shock (Non-Trauma) (p. 75)	8-12 m	ncg/min (See Pressor Drip Sheet)	
	Hypotension / Shock (Trauma) (p. 97)	8-12 m	ncg/min (See Pressor Drip Sheet)	

Medication Name	Indication (Protocol Use)	ol Use) First Dose Second Dose		Max Dose
Ondansetron	Post Advanced Airway Sedation (p. 36)	4.0 mg		4.0 mg
	Chest Pain / Suspected ACS (p. 44)	4.0 mg		4.0 mg
	ST Elevation MI (nausea) (p. 45)	4.0 mg		4.0 mg
	Pain Management (p. 69)	4.0 mg		4.0 mg
	Environmental – Hyperthermia (p. 86)	4.0 mg		4.0 mg
	Eye Pain – Trauma (p. 89)	4.0 mg		4.0 mg
Rocuronium	Rapid Sequence Airway (RSA) (p. 35)	1.0 mg/kg		100 mg
	Post Advanced Airway Sedation (p. 36)	1.0 mg/kg		100 mg
	Rapid Sequence Airway – Procedure (p. 146)	1.0 mg/kg		100 mg
Sodium Bicarb	Cardiac Arrest (hyperkalemia) (p. 40)	50 mEq		
	Beta Blocker Overdose (p. 61)	1 mEq/kg over 5 minutes		100 mEq
	Tricyclic Overdose (p. 68)	1 mEq/kg over 5 minutes		100 mEq
	Prolonged Crush Injury (p. 84)	50 mEq		
	Hazmat General (p. 90)	2.5mL Bicarb in 5mL NS, neb		
Succinylcholine	Rapid Sequence Airway (RSA) (p. 35)	2 mg/kg		200 mg
	Rapid Sequence Airway – Procedure (p. 146)	2 mg/kg		200 mg
Tranexamic Acid (TXA)	Hemorrhage Control – Trauma (p. 92)	1 gm over 10 minutes		2 gm
	Head Injury (p. 91)	1 gm over 10 minutes		2 gm

Mixing Directions: Tranexamic Acid (TXA) 1gm into 50mL NS (60mL total volume). Infuse over 10 minutes. 10 gtts tubing = 60 gtts/min

## **Airway Emergency Reference – Peds, Medical**

Medication Name		Etomidate	Ketamine	Succinylcholine	Rocuronium	Fentanyl	Midazolam	Ketamine
Dos	e	0.3 mg/kg	2 mg/kg	2 mg/kg	1 mg/kg	1 mcg/kg	0.05 mg/kg	2 mg/kg
Concent	ration	2 mg/mL	100 mg/mL	20 mg/mL	10 mg/mL	50 mcg/mL	5 mg/mL	100 mg/mL
lbs	kg		Paralysis and	I Inducction		P	ost Placement Manageme	ent
2-4	1	0.3mg / 0.15mL	2mg / 0.02mL	2mg / 0.1mL	1mg / 0.1mL	1mcg / 0.02mL	0.05mg / 0.01mL	2mg / 0.02mL
5	2	0.6mg / 0.3mL	4mg / 0.04mL	4mg / 0.2mL	2mg / 0.2mL	2mcg / 0.04mL	0.1mg / 0.02mL	4mg / 0.04mL
6-7	3	0.9mg / 0.45mL	6mg / 0.06mL	6mg / 0.3mL	3mg / 0.3mL	3mcg / 0.06mL	0.15 / 0.03mL	6mg / 0.06mL
8-9	4	1.2mg / 0.6mL	8mg / 0.08mL	8mg / 0.4mL	4mg / 0.4mL	4mcg / 0.08mL	0.2mL / 0.04mL	8mg / 0.08mL
10-12	5	1.5mg / 0.75mL	10mg / 0.1mL	10mg / 0.5mL	5mg / 0.5mL	5mcg / 0.1mL	0.25mg / 0.05mL	10mg / 0.1mL
13-14	6	1.8mg / 0.9mL	12mg / 0.12mL	12mg / 0.6mL	6mg / 0.6mL	6mcg / 0.12mL	0.3mg / 0.06mL	10mg / 0.12mL
15-16	7	2.1mg / 1.05mL	14mg / 0.14mL	14mg / 0.7mL	7mg / 0.7mL	7mcg / 0.14mL	0.35mg / 0.07mL	14mg / 0.14mL
17-18	8	2.4mg / 1.2mL	16mg / 0.16mL	16mg / 0.8mL	8mg / 0.8mL	8mcg / 0.16mL	0.4mg / 0.08mL	16mg / 0.16mL
19-20	9	2.7mg / 1.35mL	18mg / 0.18mL	18mg / 0.9mL	9mg / 0.9mL	9mcg / 0.18mL	0.45mg / 0.09mL	18mg / 0.18mL
21-23	10	3mg / 1.5mL	20mg / 0.2mL	20mg / 1mL	10mg / 1mL	10mcg / 0.2mL	0.5mg / 0.1mL	20mg / 0.2mL
26-27	12	3.6mg / 1.8mL	24mg / 0.24mL	24mg / 1.2mL	12mg / 1.2mL	12mcg / 0.24mL	0.6mg / 0.12mL	24mg / 0.24mL
32-34	15	4.5mg / 2.25mL	30mg / 0.3mL	30mg / 1.5mL	15mg / 1.5mL	15mcg / 0.3mL	0.75mg / 0.15mL	30mg / 0.3mL
43-45	20	6mg / 3mL	40mg / 0.4mL	40mg / 2mL	20mg / 2mL	20mcg / 0.4mL	1mg / 0.2mL	40mg / 0.4mL
55-56	25	7.5mg / 3.75mL	50mg / 0.5mL	50mg / 2.5mL	25mg / 2.5mL	25mcg / 0.5mL	1.25mg / 0.25mL	50mg / 0.5mL
110-111	50	15mg / 7.5mL	100mg / 1mL	100mg / 5mL	50mg / 5mL	50mcg/1mL	2.5mg / 0.5mL	100mg / 1mL
132-133	60	18mg / 9mL	120mg / 1.2mL	120mg / 6mL	60mg / 6mL	60mcg / 1.2mL	3mg / 0.6mL	120mg / 1.2mL
165-166	75	22.5mg / 11.25mL	150mg / 1.5mL	150mg / 7.5mL	75mg / 7.5mL	75mcg / 1.4mL	3.75mg / 0.75mL	150mg / 1.5mL
220-221	100	<u>30mg / 15mL</u>	<u>200mg / 2mL</u>	200mg / 10mL	<u>100mg / 10mL</u>	<u>100mcg / 2mL</u>	<u>4mg / 0.8mL</u>	<u>200mg / 2mL</u>
Max D	ose	30mg / 15mL	200mg / 2mL	200mg / 10mL	100mg / 10mL	100mcg / 2mL	4mg / 0.8mL	200mg / 2mL

Airway Emergency Reference – Peds, Medical

## Medication Quick Reference – Peds Cardiac Arrest (General) p. 109

Medicatio	n Name	1 <sup>st</sup> Shock	Epinephrine (1:10,000)	2 <sup>nd</sup> Shock	Amiodarone	Atropine	Calcium Gluconate	Sodium Bicarb	3 <sup>rd</sup> Shock	Lidocaine
Dos	e	Biphasic	0.01 mg/kg	Biphasic	5 mg/kg	0.02 mg/kg	100 mg/kg	1 mEq/kg	Biphasic	1 mg/kg
Concent	ration	2 J/kg	0.1 mg/mL	4 J/kg	50 mg/mL	0.1 mg/mL	100 mg/mL	1 mEq/mL	4-10 J/kg	20 mg/mL
lbs	kg				May repeat x 2 OR switch to					May repeat at 5-10 minutes, ½ dose
2-4	1	2 J	0.01mg / 0.1mL	4 J	5mg / 0.1mL	0.1mg / 1mL (minimum)	100mg / 1mL	1mEq / 1mL	4-10 J	1mg / 0.05mL
5	2	4 J	0.02mg / 0.2mL	8 J	10mg / 0.2mL	0.1mg / 1mL (minimum)	200mg / 2mL	2mEq / 2mL	8-20 J	2mg / 0.1mL
6-7	3	6 J	0.03mg / 0.3mL	12 J	15mg / 0.3mL	0.1mg / 1mL (minimum)	300mg / 3mL	3mEq / 3mL	12-30 J	3mg / 0.15mL
8-9	4	8 J	0.04mg / 0.4mL	16 J	20mg / 0.4mL	0.1mg / 1mL (minimum)	400mg / 4mL	4mEq / 4mL	16-40 J	4mg / 0.2mL
10-12	5	10 J	0.05mg / 0.5mL	20 J	25mg / 0.5mL	0.1mg / 1mL	500mg / 5mL	5mEq / 5mL	20-50 J	5mg / 0.25mL
13-14	6	12 J	0.06mg / 0.6mL	24 J	30mg / 0.6mL	0.12mg / 1.2mL	600mg / 6mL	6mEq / 6mL	24-60 J	6mg / 0.3mL
15-16	7	14 J	0.07mg / 0.7mL	28 J	35mg / 0.7mL	0.14mg / 1.4mL	700mg / 7mL	7mEq / 7mL	28-70 J	7mg / 0.35mL
17-18	8	16 J	0.08mg / 0.8mL	32 J	40mg / 0.8mL	0.16mg / 1.6mL	800mg / 8mL	8mEq / 8mL	32-80 J	8mg / 0.4mL
19-20	9	18 J	0.09mg / 0.9mL	36 J	45mg / 0.9mL	0.18mg / 1.8mL	900mg / 9mL	9mEq / 9mL	36-90 J	9mg / 0.45mL
21-23	10	20 J	0.1mg / 1mL	40 J	50mg / 1mL	0.2mg / 2mL	<u>1gm / 10mL</u>	10mEq / 10mL	40-100 J	10mg / 0.5mL
26-27	12	24 J	0.12mg / 1.2mL	48 J	60mg / 61.2mL	0.24mg / 2.4mL	1gm / 10mL	12mEq / 12mL	48-120 J	12mg / 0.6mL
32-34	15	30 J	0.15mg / 1.5mL	60 J	75mg / 1.5mL	0.3mg / 3mL	1gm / 10mL	15mEq / 15mL	60-150 J	15mg / 0.75mL
43-45	20	40 J	0.2mg / 2mL	80 J	100mg / 2mL	0.4mg / 4mL	1gm / 10mL	20mEq / 20mL	80-200 J	20mg / 1mL
55-56	25	50 J	0.25mg / 2.5mL	100 J	125mg / 2.5mL	0.5mg / 5mL	1gm / 10mL	25mEq / 25mL	100-200 J	25mg / 1.25mL
110-111	50	100 J	0.5mg / 5mL	<u>200 J</u>	250mg / 5mL	<u>1mg / 10mL</u>	1gm / 10mL	<u>50mEq / 50mL</u>	<u>200 J</u>	50mg / 2.5mL
132-133	60	120 J	0.6mg / 6mL	200 J	<u>300mg / 6mL</u>	1mg / 10mL	1gm / 10mL	50mEq / 50mL	200 J	60mg / 3mL
165-166	75	150 J	0.75mg / 7.5mL	200 J	300mg / 6mL	1mg / 10mL	1gm / 10mL	50mEq / 50mL	200 J	75mg / 3.75mL
220-221	100	<u>200 J</u>	<u>1mg / 10mL</u>	200 J	300mg / 6mL	1mg / 10mL	1gm / 10mL	50mEq / 50mL	200 J	100mg / 5mL
Max D	ose	200 J	1mg / 10mL	200mg / 10mL	300mg / 6mL	1mg / 10mL	1gm / 10mL	50mEq	200 J	3 mg/kg

Medication Quick Reference – Peds Cardiac Arrest (General) p. 109

## Medication Quick Reference – Peds Perfusing Arrhythmias, p. 112-113

Medicatio	n Name		Epinephrine (1:10,000)	Atropine	Midazolam INTRANASAL	Lorazepam IV	Midazolam IV		Adenosine	Adenosine	Amiodarone
Dos	e		0.01 mg/kg	0.02 mg/kg	0.2 mg/kg	0.05 mg/kg	0.05 mg/kg		0.1 mg/kg	0.2 mg/kg	5 mg/kg
Concent	Concentration		0.1 mg/mL	0.1 mg/mL	5 mg/mL	20 mg/mL	5 mg/mL		3 mg/mL	3mg/mL	50 mg/mL
lbs	kg		Every 3-5 min while setting up to	If Brady due to vagal tone		Sedation for Pacing			First Dose	Second Dose	Infuse over 20-60 minutes
2-4	1	13	0.01mg / 0.1mL	0.1mg / 1mL (minimum)	0.2mg / 0.04mL	0.05mg / 0.003mL	0.05mg / 0.01mL	12	0.1mg / 0.03mL	0.2mg / 0.07mL	5mg / 0.1mL
5	2	H	0.02mg / 0.2mL	0.1mg / 1mL (minimum)	0.4mg / 0.08mL	0.1mg / 0.005mL	0.1mg / 0.02mL	7	0.2mg / 0.07mL	0.4mg / 0.13mL	10mg / 0.2mL
6-7	3	d.	0.03mg / 0.3mL	0.1mg / 1mL (minimum)	0.6mg / 0.12mL	0.15mg / 0.008mL	0.15mg / 0.03mL	d.	0.3mg / 0.1mL	0.6mg / 0.2mL	15mg / 0.3mL
8-9	4	e	0.04mg / 0.4mL	0.1mg / 1mL (minimum)	0.8mg / 0.16mL	0.2mg / 0.01mL	0.2mg / 0.04mL	e	0.4mg / 0.13mL	0.8mg / 0.27mL	20mg / 0.4mL
10-12	5	lls	0.05mg / 0.5mL	0.1mg / 1mL	1mg / 0.2mL	0.25mg / 0.013mL	0.25mg / 0.05mL	lls	0.5mg / 0.17mL	1mg / 0.33mL	25mg / 0.5mL
13-14	6	P	0.06mg / 0.6mL	0.12 mg / 1.2mL	1.2mg / 0.24mL	0.3mg / 0.015mL	0.3mg / 0.06mL	Ъ	0.6mg / 0.2mL	1.2mg / 0.4mL	30mg / 0.6mL
15-16	7	4	0.07mg / 0.7mL	0.14mg / 1.4mL	1.4mg / 0.28mL	0.35mg / 0.018mL	0.35mL / 0.07mL	۷	0.7mg / 0.23mL	1.4mg / 0.47mL	35mg / 0.7mL
17-18	8	th	0.08mg / 0.8mL	0.16mg / 1.6mL	1.6mg / 0.32mL	0.4mg / 0.02mL	0.4mg / 0.08mL	th	0.8mg / 0.27mL	1.6mg / 0.53mL	40mg / 0.8mL
19-20	9	<b>Š</b>	0.09mg / 0.9mL	0.18mg / 1.8mL	1.8mg / .36mL	0.45mg / 0.023mL	0.45mg / 0.09mL	<b>Vi</b>	0.9mg / 0.3mL	1.8mg / 0.6mL	45mg / 0.9mL
21-23	10		0.1mg / 1mL	0.2mg / 2mL	2mg / 0.4mL	0.5mg / 0.03mL	0.5mg / 0.1mL		1mg / 0.33mL	2mg / 0.67mL	50mg / 1mL
26-27	12	di	0.12mg / 1.2mL	0.24mg / 2.4mL	2.4mg / 0.48mL	0.6mg / 0.03mL	0.6mg / 0.12mL	dia	1.2mg / 0.4mL	2.4mg / 0.8mL	60mg / 1.2mL
32-34	15	ar	0.15mg / 1.5mL	0.3mg / 3mL	3mg / 0.6mL	0.75mg / 0.038mL	0.75mg / 0.15mL	ar	1.5mg / 0.5mL	3mg/1mL	75mg / 1.5mL
43-45	20	<b>X</b> C	0.2mg / 2mL	0.4mg / 4mL	4mg / 0.8mL	1mg / 0.05mL	1mg / 0.2mL	λc	2mg / 0.67mL	4mg / 1.33mL	100mg / 2mL
55-56	25	þ	0.25mg / 2.5mL	<u>0.5mg / 5mL</u>	5mg / 1mL	1.25mg / 0.063mL	1.25mg / 0.25mL	Ċ C	2.5mg / 0.83mL	5mg / 1.67mL	125mg / 2.5mL
110-111	50	ST 2	0.5mg / 5mL	0.5mg / 5mL	<u> 10mg / 2mL</u>	<u>2mg / 0.1mL</u>	<u>2mg / 0.4mL</u>	a	5mg / 1.67mL	10mg / 3.33mL	250mg / 5mL
132-133	60		0.6mg / 6mL	0.5mg / 5mL	10mg / 2mL	2mg / 0.1mL	2mg / 0.4mL		<u>6mg / 2mL</u>	<u>12mg / 4mL</u>	<u>300mg / 6mL</u>
165-166	75		0.75mg / 7.5mL	0.5mg / 5mL	10mg / 2mL	2mg / 0.1mL	2mg / 0.4mL		6mg / 2mL	12mg / 4mL	300mg / 6mL
220-221	100		<u>1mg / 10mL</u>	0.5mg / 5mL	10mg / 2mL	2mg / 0.1mL	2mg / 0.4mL		6mg / 2mL	12mg / 4mL	300mg / 6mL
Max D	ose		1mg / 10mL	0.5mg / 5mL	10mg / 2mL	2mg / 0.1mL	2mg / 0.4mL		6mg / 2mL	12mg / 4mL	300mg / 6mL

Medication Quick Reference – Peds Perfusing Arrhythmias, p. 112-113

# Medication Quick Reference – Peds Allergic Reaction, p. 114

Medicatio	n Name	Epinephrine IM (1:1,000)	Epinephrine IV (1:10,000)	Albuterol	Diphenhydramin e	Famotidine	Epinephrine gtt	Methylprednisolon e
Dos	e	0.01 mg/kg	0.005 mg/kg	2.5 mg / 3mL	1 mg/kg	0.5 mg/kg	0.1-1 mcg/kg/min	2 mg/kg
Concent	ration	1 mg/mL	0.1 mg/mL		50 mg/mL	10 mg/mL	1mg of 1:1,000 in 250mL D5W	62.5 mg/mL
lbs	kg							
2-4	1	0.01mg / 0.01mL	0.005mg / 0.05mL		1mg / 0.02mL	0.5mg / 0.05mL	1mcg/min / 15gtt/min	2mg / 0.03mL
5	2	0.02mg / 0.02mL	0.01mg / 0.1mL		2mg / 0.04mL	1mg / 0.1mL	2mcg/min / 30gtt/min	4mg / 0.06mL
6-7	3	0.03mg / 0.03mL	0.03mg / 0.3mL		3mg / 0.06mL	1.5mg / 0.15mL	3mcg/min / 45gtt/min	6mg / 0.09mL
8-9	4	0.04mg / 0.04mL	0.04mg / 0.4mL		4mg / 0.08mL	2mg / 0.2mL	4mcg/min / 60gtt/min	8mg / 0.13mL
10-12	5	0.05mg / 0.05mL	0.05mg / 0.5mL		5mg / 0.1mL	2.5mg / 0.25mL	5mcg/min / 75gtt/min	10mg / 0.16mL
13-14	6	0.06mg / 0.06mL	0.06mg / 0.6mL		6mg / 0.12mL	3mg / 0.3mL	6mcg/min / 90gtt/min	12mg / 0.19mL
15-16	7	0.07mg / 0.07mL	0.07mg / 0.7mL		7mg / 0.14mL	3.5mg / 0.35mL	7mcg/min / 105gtt/min	14mg / 0.22mL
17-18	8	0.08mg / 0.08mL	0.08mg / 0.8mL		8mg / 0.16mL	4mg / 0.4mL	8mcg/min / 120gtt/min	16mg / 0.26mL
19-20	9	0.09mg / 0.09mL	0.09mg / 0.9mL		9mg / 0.18mL	4.5mg / 0.45mL	9mcg/min / 135gtt/min	18mg / 0.29mL
21-23	10	0.1mg / 0.1mL	<u>0.1mg / 1mL</u>		10mg / 0.2mL	5mg / 0.5mL	<u>10mcg/min / 150gtt/min</u>	20mg / 0.32mL
26-27	12	0.12mg / 0.12mL	0.1mg / 1mL		12mg / 0.24mL	6mg / 0.6mL	10mcg/min / 150gtt/min	24mg / 0.38mL
32-34	15	0.15mg / 0.15mL	0.1mg / 1mL		15mg / 0.3mL	7.5mg / 0.75mL	10mcg/min / 150gtt/min	30mg / 0.48mL
43-45	20	0.2mg / 0.2mL	0.1mg / 1mL		20mg / 0.4mL	10mg / 1mL	10mcg/min / 150gtt/min	40mg / 0.64mL
55-56	25	0.25mg / 0.25mL	0.1mg / 1mL		25mg / 0.5mL	17.5mg / 1.75mL	10mcg/min / 150gtt/min	50mg / 0.8mL
110-111	50	<u>0.3mg / 0.3mL</u>	0.1mg / 1mL		<u>50mg / 1mL</u>	<u>20mg / 2mL</u>	10mcg/min / 150gtt/min	100mg / 1.6mL
132-133	60	0.3mg / 0.3mL	0.1mg / 1mL		50mg / 1mL	20mg / 2mL	10mcg/min / 150gtt/min	120mg / 1.92mL
165-166	75	0.3mg / 0.3mL	0.1mg / 1mL		50mg / 1mL	20mg / 2mL	10mcg/min / 150gtt/min	<u>125mg / 2mL</u>
220-221	100	0.3mg / 0.3mL	0.1mg / 1mL		50mg / 1mL	20mg / 2mL	10mcg/min / 150gtt/min	125mg / 2mL
Max D	ose	0.3mg / 0.3mL	0.1mg / 1mL		50mg / 1mL	20mg / 2mL	10mcg/min / 150gtt/min	125mg / 2mL

Medication Quick Reference – Peds Allergic Reaction, p. 114

### Medication Quick Reference – Peds Seizure, p. 122

Medication Name		Midazolam INTRANASAL	Lorazepam IV	Midazolam IV	Glucagon IM	D10
Dose		0.2 mg/kg	0.1 mg/kg	0.1 mg/kg		3 mL/kg
Concentration		5 mg/mL	20 mg/mL	5 mg/mL		
lbs	kg					
2-4	1	0.2mg / 0.04mL	0.1mg / 0.005mL	0.1mg / 0.02mL	0.5mg	3mL
5	2	0.4mg / 0.08mL	0.2mg / 0.01mL	0.2mg / 0.04mL	0.5mg	6mL
6-7	3	0.6mg / 0.12mL	0.3mg / 0.015mL	0.3mg / 0.06mL	0.5mg	9mL
8-9	4	0.8mg / 0.16mL	0.4mg / 0.02mL	0.4mg / 0.08mL	0.5mg	12mL
10-12	5	1mg / 0.2mL	0.5mg / 0.025mL	0.5mg / 0.1mL	0.5mg	15mL
13-14	6	1.2mg / 0.24mL	0.6mg / 0.03mL	0.6mg / 0.12mL	0.5mg	18mL
15-16	7	1.4mg / 0.28mL	0.7mg / 0.035mL	0.7mg / 0.14mL	0.5mg	21mL
17-18	8	1.6mg / 0.32mL	0.8mg / 0.04mL	0.8mg / 0.16mL	0.5mg	24mL
19-20	9	1.8mg / .36mL	0.9mg / 0.045mL	0.9mg / 0.18ml	0.5mg	27mL
21-23	10	2mg / 0.4mL	1mg / 0.05mL	1mg / 0.2mL	0.5mg	30mL
32-34	15	3mg / 0.6mL	1.5mg / 0075mL	1.5mg / 0.3mL	0.5mg	45mL
32-34	15	3mg / 0.6mL	1.5mg / 0075mL	1.5mg / 0.3mL	0.5mg	45mL
43-45	20	4mg / 0.8mL	<u>2mg / 0.1mL</u>	2mg / 0.4mL	0.5mg	60mL
55-56	25	5mg / 1mL	2mg / 0.1mL	2.5mg / 0.5mL	<u>1mg</u>	75mL
110-111	50	<u> 10mg / 2mL</u>	2mg / 0.1mL	5mg / 1mL	1mg	<u>125mL</u>
132-133	60	10mg / 2mL	2mg / 0.1mL	6mg / 1.2mL	1mg	125mL
165-166	75	10mg / 2mL	2mg / 0.1mL	7.5mg / 1.5mL	1mg	125mL
220-221	100	10mg / 2mL	2mg / 0.1mL	<u>10mg / 2mL</u>	1mg	125mL
Max Dose		10mg / 2mL	2mg / 0.1mL	10mg / 2mL	1mg	125mL

Disposable Diaper ROUGH Weight Estimate Chart				
Diaper Size	lbs	kg		
Р	<6	<2.7		
Ν	<10	<4		
1	8-14	3-6		
2	12-18	5-8		
3	16-28	7-13		
4	22-37	9-17		
5	27+	12+		
6	35+	16+		
7	41+	18+		

#### Medication Quick Reference – Peds Seizure, p. 122

Madison and Dane Coun	ty Responder Resou	irces
"In case you haven't felt it to In case you wanted to quit tod In case you need to talk but feel noone In case you haven't heard	day You are appreciated. lay Don't. You are needed. will listen There are many who w it today THANK YOU"	ill.
Call 2-1-1 any time for information about almost You can also visit http://www.211wisconsir	anything related to health and hum n.org or http://www.referweb.net/uwd	nan services. I <mark>c/</mark>
Employee Assistance Program (EAP) City of Madison		(608) 266-6561
tmartinez@citvofmadison.com	2300 S. Park St	
hkrueger@cityofmadison.com	Suite 111	
samos@cityofmadison.com	Madison, WI	
A CONTRACTOR	and a labor	
Employee Assistance Program (EAP) Dane County		(608) 280-2644
Karen Smith	Journey Mental Health Cer	iter
http://www.journeymhc.org/	49 Kessel Ct	
E LINE	Madison, WI	
Dane County Human Services ( <u>http://www.danecountyhumanservices.org</u>	<u>/default.aspx)</u>	(608) 242-6200
Mental Health Services		
Mental Health Crisis Line (24 Hours)		
Emergency and Crisis Child Care (24 hours per day)		(608) 244-5700
Parental Stress Line (8am – 10pm daily)		(608) 241-2221
Recovery Dane		
National Alliance on Mental Illness (NAMI) Dane County		(608) 240-7188
contact@namidanecounty.org	2059 Atwood Ave	
National Alliance on Mental Illness	Madison WI	22
	initialison, wi	220 029
Transportation		
Dane County Transportation Services	57/1	
http://danecountyhumanservices.org/Transportation/key phone nun	nbers.aspx	
Madison Metro Transit and Paratransit		13
https://cityofmadison.com/metro/ and https://www.cityofmadison.co	m/metro/paratransit/	115
BadgerCare / Medicaid		
	Y	
Emergency Veterinary Care Locations	TSY/	
Middleton – (VES) Veterinary Emergency Services (Open 24/7)		(608) 831-1101
<ul> <li>1612 High Point Rd., Suite 100</li> </ul>		
<ul> <li>Middleton, WI 53562</li> </ul>		(
Madison (UW Campus Area) – UW Veterinary Care (Open 24/7)		(608) 263-7600
<ul> <li>2015 Linden Drive</li> </ul>	TUC	
<ul> <li>Madison, WI 53706</li> </ul>	1777	(
East Madison – (VES) Veterinary Emergency Services (Open 24/7)		(608) 222-2455
4902 E. Broadway		
<ul> <li>IVIadison, WI 53/16</li> <li>Madison (Daltling (Manage Area)) Madison (Calting a contraction of the contractio</li></ul>		
Initialison (Beitline / Initialison Area) – Madison Veterinary Specialists (O) 2704 Poyal Avenua	pen 24/7)	(008) 2/4-///2
<ul> <li>Z/04 Koyai Avenue</li> <li>Madiaan W/L52712</li> </ul>		
<ul> <li>Iviadison, VVI 53/13</li> </ul>		

### Medical Emergency : Call 9-1-1