October 18, 2018

The following document contains patient care guidelines, procedures and clinical standards to be followed by EMS providers acting in their course of employment by a MEC EMS member agency. The level of care administered by MEC EMS providers is at the EMT, AEMT, or paramedic level, working under these written protocols and/or under the direct guidance and direction of the Medical Director. It is the responsibility of each member to know and understand the material included in this protocol. Conditions not specifically addressed in these protocols will be treated using the emergency medical responders scope of practice approved by the Ohio State Board of Emergency Medical, Fire and Transportation Services Division of EMS, that is in effect at the time of the care event.

This protocol is effective January 1, 2019 and shall remain in effect until either it is replaced by an updated protocol or discontinued by the medical director. Specific focused protocol changes, without a complete protocol revision, may be periodically required as dictated by changes in medication availability, advances in medical or pre-hospital practice or administrative/regulatory requirements. The medical director will distribute any such protocol change as a written amendment to this protocol.

Protocol Approved:

[Signature]

Paul Zeeb, MD, FACEP
MEC EMS Medical Director

In the State of Ohio, County of Franklin, I this 18th day of October 2018, witness and verify the signature of the above, Paul Zeeb, MD.

[Signature]

Christina S. Williamson
Printed Name

My Commission Expires: February 05, 2019
Comments for Future Protocol Changes
(Sticky Notes)
Legend

General Information

Emergency Medical Technician Scope of Practice

Advanced Emergency Medical Technician Scope of Practice

Paramedic Scope of Practice

Black or Heavy Lined Boxes contain important information

All Drugs color coded in Dark Green. Example: Atropine

Calculated Drugs are Blue. Example: 125 mg

= Drug Shortage. This is found in Pharmacology Section drugs that may not be available and will link you to the Drug Shortage page for alternative drug(s) to be used.

Use Dextrose 50% in place of Dextrose 10% during shortages

Found in Pharmacology Section, listed drug is used only when there is a drug shortage

General Information boxes

Important Note:

Pharmacology Section: Indications. This links where particular medication will be found in the protocol. Example; Albuterol Indications.

Toxic Exposure. Not specifically used for Toxic Exposure, but is referenced being used if Smoke Inhalation/Co Poisoning and patient is wheezing, not used for other exposures typically.
# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Subsection</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cover</strong></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>Signature Page</strong></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td><strong>Future Protocol Changes</strong></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td><strong>Legend</strong></td>
<td></td>
<td>4</td>
</tr>
<tr>
<td><strong>Adult Section</strong></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td><strong>Adult Assessment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scene Size-up</td>
<td>Adult Assessment</td>
<td>15</td>
</tr>
<tr>
<td>Adult Primary Assessment</td>
<td>Adult Assessment</td>
<td>16</td>
</tr>
<tr>
<td>Patient Assessment-Medical</td>
<td>Adult Assessment</td>
<td>17</td>
</tr>
<tr>
<td>Patient Assessment-Trauma</td>
<td>Adult Assessment</td>
<td>18</td>
</tr>
<tr>
<td><strong>Cardiovascular</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asystole/PEA</td>
<td>Cardiovascular</td>
<td>20</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>Cardiovascular</td>
<td>21</td>
</tr>
<tr>
<td>Cardiac Arrest</td>
<td>Cardiovascular</td>
<td>22</td>
</tr>
<tr>
<td>Chest Pain/MI</td>
<td>Cardiovascular</td>
<td>23</td>
</tr>
<tr>
<td>Dialysis Patients in Cardiac Arrest</td>
<td>Cardiovascular</td>
<td>24</td>
</tr>
<tr>
<td>Narrow Complex Tachycardia (PSVT)</td>
<td>Cardiovascular</td>
<td>25</td>
</tr>
<tr>
<td>Post Resuscitation</td>
<td>Cardiovascular</td>
<td>26</td>
</tr>
<tr>
<td>Premature Ventricular Contractions (PVC's)</td>
<td>Cardiovascular</td>
<td>27</td>
</tr>
<tr>
<td>V-Fib/Pulseless V-Tach</td>
<td>Cardiovascular</td>
<td>28</td>
</tr>
<tr>
<td>Wide Complex Tachycardia (V-Tach w/Pulse)</td>
<td>Cardiovascular</td>
<td>29</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bites/Envenomations</td>
<td>Environmental</td>
<td>31</td>
</tr>
<tr>
<td>Drowning/Near Drowning</td>
<td>Environmental</td>
<td>32</td>
</tr>
<tr>
<td>Hyperthermia/Heat Exposure</td>
<td>Environmental</td>
<td>33</td>
</tr>
<tr>
<td>Hypothermia</td>
<td>Environmental</td>
<td>34</td>
</tr>
<tr>
<td><strong>Gastrointestinal</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Renal Dialysis</td>
<td>Gastrointestinal</td>
<td>36</td>
</tr>
<tr>
<td><strong>General</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adult IV/IO</td>
<td>General</td>
<td>38</td>
</tr>
<tr>
<td>Behavioral</td>
<td>General</td>
<td>39</td>
</tr>
<tr>
<td>Epistaxis-Nosebleed</td>
<td>General</td>
<td>40</td>
</tr>
<tr>
<td>Hyperglycemia/Hypoglycemia</td>
<td>General</td>
<td>41</td>
</tr>
<tr>
<td>Non-Traumatic Shock/Dehydration</td>
<td>General</td>
<td>42</td>
</tr>
<tr>
<td>Pain Control</td>
<td>General</td>
<td>43</td>
</tr>
<tr>
<td>Sepsis</td>
<td>General</td>
<td>44</td>
</tr>
<tr>
<td>Unconscious/Unknown</td>
<td>General</td>
<td>45</td>
</tr>
<tr>
<td>Universal Patient Assessment</td>
<td>General</td>
<td>46</td>
</tr>
<tr>
<td><strong>Neurological</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CVA/Unconscious</td>
<td>Neurological</td>
<td>48</td>
</tr>
<tr>
<td>CVA/Unconscious-continued</td>
<td>Neurological</td>
<td>49</td>
</tr>
<tr>
<td>Seizure</td>
<td>Neurological</td>
<td>50</td>
</tr>
</tbody>
</table>
Table of Contents

OB/GYN
  Abnormal Deliveries
  Childbirth/Labor
  Obstetric Emergencies-Eclampsia
  Obstetric Emergencies-Vaginal Bleeding
  Sexual Assault

Respiratory
  Adult Airway
  Allergic Reaction/Anaphylactic Shock
  Esophageal Foreign Body
  Failed Airway
  Hyperventilation
  Pulmonary Edema/CHF
  Rapid Sequence Intubation (RSI)
  Respiratory Distress

Toxicology
  Carbon Monoxide Poisoning
  Overdose
  Toxic Exposure

Trauma
  Abdominal Trauma
  Burns
  Chest Trauma
  Crush Syndrome
  Spinal Injury Assessment
  Dental Injuries
  Extremity Trauma
  Multiple Trauma
  Neurological Trauma (Head)
  Ocular Trauma
  Trauma in Pregnancy

Pediatric Section
  Pediatric Assessment
    Pediatric Scene Size-up
    Pediatric Primary Assessment
    Pediatric Assessment-Medical
    Pediatric Assessment-Trauma

  Pediatric Cardiovascular
    Pediatric Bradycardia
    Pediatric Pulseless Arrest
    Pediatric Tachycardia

  Pediatric General
<table>
<thead>
<tr>
<th>Table of Contents, Page 3</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Topic</th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pediatric Brief Resolved Unexplained Event (BRUE)</td>
<td>Pediatric General</td>
<td>93</td>
</tr>
<tr>
<td>Pediatric Behavioral Emergencies</td>
<td>Pediatric General</td>
<td>94</td>
</tr>
<tr>
<td>Pediatric Fever</td>
<td>Pediatric General</td>
<td>95</td>
</tr>
<tr>
<td>Pediatric Hypovolemic Shock</td>
<td>Pediatric General</td>
<td>96</td>
</tr>
<tr>
<td>Pediatric IV/IO</td>
<td>Pediatric General</td>
<td>97</td>
</tr>
<tr>
<td>Pediatric Pain Control</td>
<td>Pediatric General</td>
<td>98</td>
</tr>
<tr>
<td>Universal Pediatric Assessment</td>
<td>Pediatric General</td>
<td>99</td>
</tr>
<tr>
<td>Pediatric Neonatal</td>
<td>Pediatric Neonatal</td>
<td>100</td>
</tr>
<tr>
<td>Pediatric Neonatal Care</td>
<td>Pediatric Neonatal</td>
<td>101</td>
</tr>
<tr>
<td>Pediatric Neurological</td>
<td>Pediatric Neurological</td>
<td>103</td>
</tr>
<tr>
<td>Pediatric Neonatal Unconscious/Hypoglycemic</td>
<td>Pediatric Neurological</td>
<td>104</td>
</tr>
<tr>
<td>Pediatric Respiratory</td>
<td>Pediatric Respiratory</td>
<td>106</td>
</tr>
<tr>
<td>Pediatric Airway</td>
<td>Pediatric Respiratory</td>
<td>107</td>
</tr>
<tr>
<td>Pediatric Allergic Reaction</td>
<td>Pediatric Respiratory</td>
<td>108</td>
</tr>
<tr>
<td>Pediatric Respiratory Distress (Lower Airway)</td>
<td>Pediatric Respiratory</td>
<td>109</td>
</tr>
<tr>
<td>Pediatric Respiratory Distress (Upper Airway)</td>
<td>Pediatric Respiratory</td>
<td></td>
</tr>
<tr>
<td>Pediatric Toxicology</td>
<td>Pediatric Toxicology</td>
<td>111</td>
</tr>
<tr>
<td>Pediatric Toxic Overdose</td>
<td>Pediatric Toxicology</td>
<td></td>
</tr>
<tr>
<td>Pediatric Trauma</td>
<td>Pediatric Trauma</td>
<td>113</td>
</tr>
<tr>
<td>Pediatric Burns</td>
<td>Pediatric Trauma</td>
<td>114</td>
</tr>
<tr>
<td>Pediatric Chest Trauma</td>
<td>Pediatric Trauma</td>
<td>115</td>
</tr>
<tr>
<td>Pediatric Child Abuse</td>
<td>Pediatric Trauma</td>
<td>116</td>
</tr>
<tr>
<td>Pediatric Head Trauma</td>
<td>Pediatric Trauma</td>
<td>117</td>
</tr>
<tr>
<td>Pediatric Multiple Trauma</td>
<td>Pediatric Trauma</td>
<td></td>
</tr>
<tr>
<td>Pharmacology</td>
<td>Pharmacology</td>
<td>119</td>
</tr>
<tr>
<td>Adenosine (Adenocard)</td>
<td>Pharmacology</td>
<td>120</td>
</tr>
<tr>
<td>Afrin (Oxymetazoline)</td>
<td>Pharmacology</td>
<td>121</td>
</tr>
<tr>
<td>Albuterol (Proventil Ventolin)</td>
<td>Pharmacology</td>
<td>122</td>
</tr>
<tr>
<td>Amiodarone (Cordarone)</td>
<td>Pharmacology</td>
<td>123</td>
</tr>
<tr>
<td>Aspirin</td>
<td>Pharmacology</td>
<td>124</td>
</tr>
<tr>
<td>Atropine</td>
<td>Pharmacology</td>
<td>125</td>
</tr>
<tr>
<td>Benzocaine (Cetacaine)</td>
<td>Pharmacology</td>
<td>126</td>
</tr>
<tr>
<td>Calcium Chloride</td>
<td>Pharmacology</td>
<td>127</td>
</tr>
<tr>
<td>Cyanokit</td>
<td>Pharmacology</td>
<td>128</td>
</tr>
<tr>
<td>Dexamethasone (Decadron)</td>
<td>Pharmacology</td>
<td>129</td>
</tr>
<tr>
<td>Dextrose (D10)</td>
<td>Pharmacology</td>
<td>130</td>
</tr>
<tr>
<td>Dextrose (50)</td>
<td>Pharmacology</td>
<td>131</td>
</tr>
<tr>
<td>Diazepam Auto Injector (Valium)</td>
<td>Pharmacology</td>
<td>132</td>
</tr>
<tr>
<td>Diazepam (Valium)</td>
<td>Pharmacology</td>
<td>133</td>
</tr>
<tr>
<td>Diphenhydramine (Benadryl)</td>
<td>Pharmacology</td>
<td>134</td>
</tr>
<tr>
<td>Epinephrine 1:1,000</td>
<td>Pharmacology</td>
<td></td>
</tr>
<tr>
<td>Drug Name</td>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>--------------------</td>
<td>------</td>
</tr>
<tr>
<td>Epinephrine 1:10,000</td>
<td>Pharmacology</td>
<td>135</td>
</tr>
<tr>
<td>Epinephrine Infusion</td>
<td>Pharmacology</td>
<td>136</td>
</tr>
<tr>
<td>Etomidate (Amidate)</td>
<td>Pharmacology</td>
<td>137</td>
</tr>
<tr>
<td>Fentanyl (Sublimaze)</td>
<td>Pharmacology</td>
<td>138</td>
</tr>
<tr>
<td>Glucagon</td>
<td>Pharmacology</td>
<td>139</td>
</tr>
<tr>
<td>Haloperidol (Haldol)</td>
<td>Pharmacology</td>
<td>140</td>
</tr>
<tr>
<td>Ibuprofen (Motrin, Advil)</td>
<td>Pharmacology</td>
<td>141</td>
</tr>
<tr>
<td>Ipratropium (Atrovent)</td>
<td>Pharmacology</td>
<td>142</td>
</tr>
<tr>
<td>Ketamine (Ketalar)</td>
<td>Pharmacology</td>
<td>143</td>
</tr>
<tr>
<td>Lidocaine (Xylocaine)</td>
<td>Pharmacology</td>
<td>144</td>
</tr>
<tr>
<td>Magnesium Sulfate</td>
<td>Pharmacology</td>
<td>145</td>
</tr>
<tr>
<td>Methylprednisolone (Solu-Medrol)</td>
<td>Pharmacology</td>
<td>146</td>
</tr>
<tr>
<td>Midazolam (Versed)</td>
<td>Pharmacology</td>
<td>147</td>
</tr>
<tr>
<td>Morphine</td>
<td>Pharmacology</td>
<td>148</td>
</tr>
<tr>
<td>Naloxone (Narcan)</td>
<td>Pharmacology</td>
<td>149</td>
</tr>
<tr>
<td>Nitroglycerin</td>
<td>Pharmacology</td>
<td>150</td>
</tr>
<tr>
<td>Normal Saline</td>
<td>Pharmacology</td>
<td>151</td>
</tr>
<tr>
<td>Ondansetron (Zofran)</td>
<td>Pharmacology</td>
<td>152</td>
</tr>
<tr>
<td>Oral Glucose (Glucose 15 Insta-Glucose)</td>
<td>Pharmacology</td>
<td>153</td>
</tr>
<tr>
<td>Oxygen</td>
<td>Pharmacology</td>
<td>154</td>
</tr>
<tr>
<td>Pralidoxime (2-PAM)</td>
<td>Pharmacology</td>
<td>155</td>
</tr>
<tr>
<td>Prochlorperazine (Compazine)</td>
<td>Pharmacology</td>
<td>156</td>
</tr>
<tr>
<td>Racemic Epinephrine 2.25%</td>
<td>Pharmacology</td>
<td>157</td>
</tr>
<tr>
<td>Rocuronium (Zemuron)</td>
<td>Pharmacology</td>
<td>158</td>
</tr>
<tr>
<td>Sodium Bicarbonate</td>
<td>Pharmacology</td>
<td>159</td>
</tr>
<tr>
<td>Succinylcholine (Anectine)</td>
<td>Pharmacology</td>
<td>160</td>
</tr>
<tr>
<td>Tetracaine</td>
<td>Pharmacology</td>
<td>161</td>
</tr>
<tr>
<td>Tranexamic Acid (TXA)</td>
<td>Pharmacology</td>
<td>162</td>
</tr>
<tr>
<td>Drug Substitutions (DS)</td>
<td>Pharmacology</td>
<td>163</td>
</tr>
<tr>
<td>Drug Substitutions (DS)-continued</td>
<td>Pharmacology</td>
<td>164</td>
</tr>
</tbody>
</table>

**Clinical Standards**

<table>
<thead>
<tr>
<th>Topic</th>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accidental Death, Murder, Suicide</td>
<td>Clinical Standards</td>
<td>166</td>
</tr>
<tr>
<td>Accidental Death, Murder, Suicide-continued</td>
<td>Clinical Standards</td>
<td>167</td>
</tr>
<tr>
<td>Athletic Pre-Planning</td>
<td>Clinical Standards</td>
<td>168</td>
</tr>
<tr>
<td>Athletic Pre-Planning Checklist A</td>
<td>Clinical Standards</td>
<td>169</td>
</tr>
<tr>
<td>Athletic Pre-Planning Checklist B</td>
<td>Clinical Standards</td>
<td>170</td>
</tr>
<tr>
<td>Child Abuse</td>
<td>Clinical Standards</td>
<td>171</td>
</tr>
<tr>
<td>Child Abuse-continued</td>
<td>Clinical Standards</td>
<td>172</td>
</tr>
<tr>
<td>Consent, Refusal or Treatment/Transport</td>
<td>Clinical Standards</td>
<td>173</td>
</tr>
<tr>
<td>Consent, Refusal of Treatment/Transport Part B</td>
<td>Clinical Standards</td>
<td>174</td>
</tr>
<tr>
<td>EMS Patient Refusal Checklist</td>
<td>Clinical Standards</td>
<td>175</td>
</tr>
<tr>
<td>Refusal of Care/Treatment Checklist</td>
<td>Clinical Standards</td>
<td>176</td>
</tr>
<tr>
<td>Topic</td>
<td>Section</td>
<td>Page</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>Controlling Protocol and In-Charge Paramedic</td>
<td>Clinical Standards</td>
<td>177</td>
</tr>
<tr>
<td>COTS Exceptions to Trauma Transport and Caveats</td>
<td>Clinical Standards</td>
<td>178</td>
</tr>
<tr>
<td>Ohio Trauma Triage-Adult</td>
<td>Clinical Standards</td>
<td>179</td>
</tr>
<tr>
<td>Ohio Trauma Triage-Geriatric</td>
<td>Clinical Standards</td>
<td>180</td>
</tr>
<tr>
<td>Ohio Trauma Triage-Pediatric</td>
<td>Clinical Standards</td>
<td>181</td>
</tr>
<tr>
<td>Criteria for Death or Withholding Resuscitation</td>
<td>Clinical Standards</td>
<td>182</td>
</tr>
<tr>
<td>Diversion of Psychiatric Patients Part A</td>
<td>Clinical Standards</td>
<td>183</td>
</tr>
<tr>
<td>Diversion of Psychiatric Patients Part B</td>
<td>Clinical Standards</td>
<td>184</td>
</tr>
<tr>
<td>DNR-Advanced Directive Part A</td>
<td>Clinical Standards</td>
<td>185</td>
</tr>
<tr>
<td>DNR-Advanced Directive Part B</td>
<td>Clinical Standards</td>
<td>186</td>
</tr>
<tr>
<td>DNR-Advanced Directive Part C</td>
<td>Clinical Standards</td>
<td>187</td>
</tr>
<tr>
<td>DNR-Advanced Directive Part D</td>
<td>Clinical Standards</td>
<td>188</td>
</tr>
<tr>
<td>Documentation of a Patient Encounter</td>
<td>Clinical Standards</td>
<td>189</td>
</tr>
<tr>
<td>Documentation of a Patient Encounter-continued</td>
<td>Clinical Standards</td>
<td>190</td>
</tr>
<tr>
<td>Domestic Violence and Elderly Abuse</td>
<td>Clinical Standards</td>
<td>191</td>
</tr>
<tr>
<td>Domestic Violence and Elderly Abuse-continued</td>
<td>Clinical Standards</td>
<td>192</td>
</tr>
<tr>
<td>Emergency Transport Plan</td>
<td>Clinical Standards</td>
<td>193</td>
</tr>
<tr>
<td>Emergency Transport Plan-continued</td>
<td>Clinical Standards</td>
<td>194</td>
</tr>
<tr>
<td>EMS Blood Collection of Blood Sample</td>
<td>Clinical Standards</td>
<td>195</td>
</tr>
<tr>
<td>EMS Branch Operations Part A</td>
<td>Clinical Standards</td>
<td>196</td>
</tr>
<tr>
<td>EMS Branch Operations Part B</td>
<td>Clinical Standards</td>
<td>197</td>
</tr>
<tr>
<td>EMS Branch Operations Part C</td>
<td>Clinical Standards</td>
<td>198</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part A</td>
<td>Clinical Standards</td>
<td>199</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part B</td>
<td>Clinical Standards</td>
<td>200</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part C</td>
<td>Clinical Standards</td>
<td>201</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part D</td>
<td>Clinical Standards</td>
<td>202</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part E</td>
<td>Clinical Standards</td>
<td>203</td>
</tr>
<tr>
<td>High Performance/Priority Based CPR Part F</td>
<td>Clinical Standards</td>
<td>204</td>
</tr>
<tr>
<td>Interfacility Transfers</td>
<td>Clinical Standards</td>
<td>205</td>
</tr>
<tr>
<td>Interfacility Transfer Form</td>
<td>Clinical Standards</td>
<td>206</td>
</tr>
<tr>
<td>Interfacility Transport Part A</td>
<td>Clinical Standards</td>
<td>207</td>
</tr>
<tr>
<td>Interfacility Transport Part B</td>
<td>Clinical Standards</td>
<td>208</td>
</tr>
<tr>
<td>Medication Cross Check Part A</td>
<td>Clinical Standards</td>
<td>209</td>
</tr>
<tr>
<td>Medication Cross Check Part B</td>
<td>Clinical Standards</td>
<td>210</td>
</tr>
<tr>
<td>Medication Cross Check Part C</td>
<td>Clinical Standards</td>
<td>211</td>
</tr>
<tr>
<td>Minimal Equipment at the Patient Side</td>
<td>Clinical Standards</td>
<td>212</td>
</tr>
<tr>
<td>Pain Control Standard</td>
<td>Clinical Standards</td>
<td>213</td>
</tr>
<tr>
<td>Patient Restraint</td>
<td>Clinical Standards</td>
<td>214</td>
</tr>
<tr>
<td>Patient Transport Part A</td>
<td>Clinical Standards</td>
<td>215</td>
</tr>
<tr>
<td>Patient Transport Part B</td>
<td>Clinical Standards</td>
<td>216</td>
</tr>
<tr>
<td>Patient Transport Part C</td>
<td>Clinical Standards</td>
<td>217</td>
</tr>
<tr>
<td>Patient Transport Part D</td>
<td>Clinical Standards</td>
<td>218</td>
</tr>
</tbody>
</table>
## Table of Contents, Page 6

### Clinical Standards

- Patient Transport Part E  
  - Clinical Standards 219
- Physician on Scene  
  - Clinical Standards 220
- Physician on Scene-continued  
  - Clinical Standards 221
- Pre-Existing Medical Devices/Drug Administrations Part A  
  - Clinical Standards 222
- Pre-Existing Medical Devices/Drug Administrations Part B  
  - Clinical Standards 223
- Protocol Review and Revisions  
  - Clinical Standards 224
- Provider Credentialing Part A  
  - Clinical Standards 225
- Provider Credentialing Part B  
  - Clinical Standards 226
- Provider Credentialing Request  
  - Clinical Standards 227
- Provider Recredentialing Request Part A  
  - Clinical Standards 228
- Provider Recredentialing Request Part B  
  - Clinical Standards 229
- Rescue Task Force Response Part A  
  - Clinical Standards 230
- Rescue Task Force Response Part B  
  - Clinical Standards 231
- Rescue Task Force Response Part C  
  - Clinical Standards 232
- Rescue Task Force Response Part D  
  - Clinical Standards 233
- Safe Discharge of Diabetic Patients  
  - Clinical Standards 234
- Special Needs Patients  
  - Clinical Standards 235
- Surgical Emergency Response Team (SERT)  
  - Clinical Standards 236
- Termination of Resuscitation Part A  
  - Clinical Standards 237
- Termination of Resuscitation Part B  
  - Clinical Standards 238
- Termination of Resuscitation-Checklist  
  - Clinical Standards 239
- Transport of Patient with Pre Existing Condition  
  - Clinical Standards 240

### Procedures

- 12 Lead ECG  
  - Procedures 242
- AED  
  - Procedures 243
- AutoPulse  
  - Procedures 244
- AutoPulse-Positioning  
  - Procedures 245
- Blood Draw for Stroke Patients  
  - Procedures 246
- Blood Glucose  
  - Procedures 247
- Breech Delivery  
  - Procedures 248
- Capnography  
  - Procedures 249
- Carboxyhemoglobin Monitor RAD-57  
  - Procedures 250
- Cardioversion  
  - Procedures 251
- Central Line Access  
  - Procedures 252
- Chest Decompression  
  - Procedures 253
- Childbirth  
  - Procedures 254
- CPAP-Boussignac  
  - Procedures 255
- CPAP O2-RESQ  
  - Procedures 256
- CPAP-Port O2 Vent  
  - Procedures 257
- CPR  
  - Procedures 258
- Cricothyrotomy-Needle  
  - Procedures 259
- Cricothyrotomy-Surgical  
  - Procedures 260
<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cricothyrotomy-Surgical Images</td>
<td>261</td>
</tr>
<tr>
<td>Defibrillation</td>
<td>262</td>
</tr>
<tr>
<td>End Tidal CO2 Detector</td>
<td>263</td>
</tr>
<tr>
<td>Endotracheal Tube Introducer (Gum Bougie)</td>
<td>264</td>
</tr>
<tr>
<td>Epinephrine Auto-Injector</td>
<td>265</td>
</tr>
<tr>
<td>Esophageal Intubation Detector-Eid</td>
<td>266</td>
</tr>
<tr>
<td>External Transcutaneous Pacing-Physio</td>
<td>267</td>
</tr>
<tr>
<td>External Transcutaneous Pacing-Zoll</td>
<td>268</td>
</tr>
<tr>
<td>Eye Irrigation</td>
<td>269</td>
</tr>
<tr>
<td>Foreign Body Airway Obstruction</td>
<td>270</td>
</tr>
<tr>
<td>Helmet Removal: Non-Football</td>
<td>271</td>
</tr>
<tr>
<td>Helmet Removal-Football</td>
<td>272</td>
</tr>
<tr>
<td>I-gel Supraglottic Airway</td>
<td>273</td>
</tr>
<tr>
<td>Intraosseous Infusion EZ-IO (Humerus)</td>
<td>274</td>
</tr>
<tr>
<td>Intraosseous Infusion EZ-IO (Distal Tibia)</td>
<td>275</td>
</tr>
<tr>
<td>Intraosseous EZ-IO (Proximal Tibia)</td>
<td>276</td>
</tr>
<tr>
<td>Intubation-Oral</td>
<td>277</td>
</tr>
<tr>
<td>Intubation-Pediatric Oral</td>
<td>278</td>
</tr>
<tr>
<td>IV Therapy</td>
<td>279</td>
</tr>
<tr>
<td>King Vision Video Laryngoscope</td>
<td>280</td>
</tr>
<tr>
<td>LifeVest Part A</td>
<td>281</td>
</tr>
<tr>
<td>LifeVest Part B</td>
<td>282</td>
</tr>
<tr>
<td>Lucas Device Part A</td>
<td>283</td>
</tr>
<tr>
<td>Lucas Device Part B</td>
<td>284</td>
</tr>
<tr>
<td>Lucas Device Part C</td>
<td>285</td>
</tr>
<tr>
<td>Lucas Device Part D</td>
<td>286</td>
</tr>
<tr>
<td>Morgan Eye Lens</td>
<td>287</td>
</tr>
<tr>
<td>Mucosal Atomizer Device (MAD)</td>
<td>288</td>
</tr>
<tr>
<td>Nebulizer</td>
<td>289</td>
</tr>
<tr>
<td>Pain Assessment</td>
<td>290</td>
</tr>
<tr>
<td>Pulse Oximetry</td>
<td>291</td>
</tr>
<tr>
<td>QuickClot Combat Gauze</td>
<td>292</td>
</tr>
<tr>
<td>Saline Lock</td>
<td>293</td>
</tr>
<tr>
<td>Splinting</td>
<td>294</td>
</tr>
<tr>
<td>Suctioning of ET Tubes &amp; Tracheostomy Tubes</td>
<td>295</td>
</tr>
<tr>
<td>Taser Removal</td>
<td>296</td>
</tr>
<tr>
<td>Tourniquet Application</td>
<td>297</td>
</tr>
<tr>
<td>Twin Cath</td>
<td>298</td>
</tr>
<tr>
<td>Valsalva Maneuver</td>
<td>299</td>
</tr>
<tr>
<td>Ventricular Assist Device (VAD) Part A</td>
<td>300</td>
</tr>
<tr>
<td>Ventricular Assist Device (VAD) Part B</td>
<td>301</td>
</tr>
<tr>
<td>Ventricular Assist Device (VAD) Part C</td>
<td>302</td>
</tr>
<tr>
<td>Topic</td>
<td>Category</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
</tr>
<tr>
<td>Wound Care Procedures</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part A</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part B</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part C</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part D</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part E</td>
<td>Reference</td>
</tr>
<tr>
<td>Protocol Changes-Part F</td>
<td>Reference</td>
</tr>
<tr>
<td>Capnography-Basics</td>
<td>Reference</td>
</tr>
<tr>
<td>Capnography-Information</td>
<td>Reference</td>
</tr>
<tr>
<td>Capnography-Information/Waveforms</td>
<td>Reference</td>
</tr>
<tr>
<td>Medication Infusions</td>
<td>Reference</td>
</tr>
<tr>
<td>Epinephrine Drip</td>
<td>Reference</td>
</tr>
<tr>
<td>Pediatric Lower Airway Disorders</td>
<td>Reference</td>
</tr>
<tr>
<td>Pediatric Vital Signs</td>
<td>Reference</td>
</tr>
<tr>
<td>Phone Numbers</td>
<td>Reference</td>
</tr>
<tr>
<td>Phone Numbers-continued</td>
<td>Reference</td>
</tr>
<tr>
<td>RSI Assessment Tips</td>
<td>Reference</td>
</tr>
<tr>
<td>FLACC-Revised Scale</td>
<td>Reference</td>
</tr>
</tbody>
</table>

**Supplemental Medication**

<table>
<thead>
<tr>
<th>Supplemental Medication</th>
<th>Supplemental Medication</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alteplase (TPA)</td>
<td></td>
<td>323</td>
</tr>
<tr>
<td>Antibiotic Advisory</td>
<td></td>
<td>324</td>
</tr>
<tr>
<td>Blood Administration</td>
<td></td>
<td>325</td>
</tr>
<tr>
<td>Chest Tube</td>
<td></td>
<td>326</td>
</tr>
<tr>
<td>Diltiazem (Cardizem)</td>
<td></td>
<td>327</td>
</tr>
<tr>
<td>Dobutamine (Dobutrex)</td>
<td></td>
<td>328</td>
</tr>
<tr>
<td>Dopamine (Intropin)</td>
<td></td>
<td>329</td>
</tr>
<tr>
<td>Heparin</td>
<td></td>
<td>330</td>
</tr>
<tr>
<td>Insulin (Humulin)</td>
<td></td>
<td>331</td>
</tr>
<tr>
<td>Metoprolol (Lopressor)</td>
<td></td>
<td>332</td>
</tr>
<tr>
<td>Nitroglycerin (Tridal)</td>
<td></td>
<td>333</td>
</tr>
<tr>
<td>Oxytocin (Pitocin)</td>
<td></td>
<td>334</td>
</tr>
<tr>
<td>Phentoin/Fosphenytoin (Dilantin/Celebyx)</td>
<td>Supplemental Medication</td>
<td>335</td>
</tr>
<tr>
<td>Propofol (Diprivan)</td>
<td></td>
<td>336</td>
</tr>
</tbody>
</table>
Scene Size-up:
Don appropriate level of Body Substance Isolation (BSI) precautions
Assess the scene for dangers to the rescuer. Consider the number of patients, mechanism of injury or nature of the illness. Request additional help if necessary
Clinical Indications:
Begin an ABC approach to the patient from a general impression and establish the presence of a life threatening injury or illness.

Initial Assessment

1. Quickly assess level of consciousness using the AVPU Method.
   - Alert: Eyes Open
   - Verbal: Responds to vocal stimuli
   - Pain: Responds only to pain
   - Unresponsive: No response to verbal or Painful stimuli

2. Assess the airway (protect c-spine if uncertain)
   a. Responsive - no intervention needed, proceed to step 3.
   b. If unresponsive - use the appropriate medical or trauma maneuver to open the airway
   c. If airway remains partially or totally obstructed, continue attempts to clear the airway
      (refer to airway emergencies).

3. Assess adequacy of breathing
   a. Observe chest rise and fall, auscultate breath sounds anteriorly, posteriorly and peripherally.
   b. Observe for signs of distress - use of secondary muscles, cyanosis
   c. Count the respiratory rate and obtain pulse oximeter reading (SpO2) if available
   d. If breathing adequate - go to step 4.
   e. If breathing is inadequate and patient is unresponsive - assist breathing with appropriate device
   f. If breathing is inadequate and patient is responsive - administer Oxygen as needed, as necessary to maintain SaO2 > 94%

4. Assess the circulation / perfusion
   a. Assess rate and quality of pulses - peripheral and central pulses
   b. Stop any active bleeding, assess skin color, temperature, and obtain blood pressure.
   c. If there is no palpable pulse or rate is too slow to maintain cerebral blood flow, begin CPR
   d. If bleeding is present - manage bleeding

5. Provide care for any compromise in airway, breathing, circulation, or neurological status per protocol and perform basic life support as per current American Heart Association Guidelines.

6. Identify priority patients and make a transport decision.
   a. Priority patients include those with compromises in airway, level of consciousness, breathing, and circulation, which are not easily remedied with basic intervention.
   b. If identified as a non-priority medical patient, go to Patient Assessment Medical.
   c. If identified as a non priority trauma patient, go to Patient Assessment-Trauma.

7. Further Assessments, Go to: Patient Assessment-Medical or Patient Assessment-Trauma
Clinical Indications:
If patient unresponsive, go to Rapid Assessment. History of Present illness including but not limited to below:

**Focused History and Physical Exam Non-Priority Medical Patients**

1. History of Present illness including but not limited to:
   - O-Onset of the problem
   - P-Provocation
   - Q-Quality – “Crushing, Pressure, Stabbing”
   - R-Radiating
   - S-Severity ”1 - 10 Scale” and Duration
   - T-Time since this onset of this episode

2. Provide appropriate interventions as per protocols. Splint injured, painful or swollen extremities. Apply dressings and bandage all wounds. Consult MCP with any questions, further treatments or omission of interventions as written.

**Priority Medical Patients Rapid Assessment**

1. **Rapidly assess the patient “head to toe”. (1 - 1 1/2 minutes total)**
   - **Head, Ears, Eyes, Nose, Throat**
     The head should be examined for signs of abnormality. The ears should be examined for presence of fluid and foreign bodies. The pupils should be checked for symmetry and response to light. The nose should be examined for presence of fluid and patency. Examine the throat for signs of obstruction, redness and patency. The neck should be examined for pain, stiffness or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence of neck injury, employ cervical spine precautions. Assess for any signs of trauma.

2. **Chest, and Abdomen**
   The chest should be examined for signs of visible injury. Assess for breath sounds as well as chest movement, symmetry, and effort. The chest should be palpated for pain. The abdomen should be assessed for signs of injury, pain, tenderness, rigidity, and guarding. The pelvis should be palpated for stability if any history of trauma.

3. **Extremities and Back**
   The lower as well as the upper extremities should be examined -and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist. The back should be examined for signs of pain. For patients with possible spinal injury, assess the back during the log roll procedure.

4. **A SAMPLE history should also be obtained if possible. This should include:**
   - S - Signs and Symptoms
   - A - Allergies
   - M - Medications
   - P - Past illnesses
   - L - Last meal
   - E - Events of the injury or illness

     A. Obtain baseline vital signs and prepare the patient for transport.
Clinical Indications:
Rapid Assessment should be performed on all priority transport patients after the Initial Assessment. Patient with a mechanism or nature of illness consistent with the possibility of spinal trauma should first have manual spinal control and after the rapid assessment be fully spinal immobilized.

Non-Priority Trauma Patients
1. Assess injuries based on chief complaint.
   a. Obtain Vital Signs
   b. Provide care based on signs and symptoms.
   c. Continue with Detailed Assessment as appropriate

Priority Trauma Patients Rapid Trauma Assessment
1. Rapidly assess the patient “head to toe”. (1 - 1 1/2 minutes total)
   **Head, Ears, Eyes, Nose, Throat**
   The head should be examined for signs of abnormality. The ears should be examined for presence of fluid and foreign bodies. The pupils should be checked for symmetry and response to light. The nose should be examined for presence of fluid and patency. Examine the throat for signs of obstruction, redness and patency. The neck should be examined for pain, stiffness or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence of neck injury, employ cervical spine precautions. Assess for any signs of trauma.

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   The lower as well as the upper extremities should be examined -and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist. The back should be examined for signs of pain. For patients with possible spinal injury, assess the back during the log roll procedure.

4. **Neurological Survey**
   If not already done, a neurological evaluation as well as a history should be obtained. The pupils should be assessed for equality and reaction to light. The level of consciousness should be assessed using the AVPU method:
   - A – Alert
   - V – Verbal
   - P – Pain
   - U - Unresponsive

5. **A SAMPLE history should also be obtained if possible. This should include:**
   - S - Signs and Symptoms
   - A - Allergies
   - M - Medications
   - P - Past illnesses
   - L - Last meal
   - E - Events of the injury or illness

6. **Exposure**
   A thorough exam cannot be accomplished without properly exposing a patient. Passive warming
CPR Quality
- Push hard (> 2 inches (5 cm) and fast (> 100/minute) and allow complete chest recoil
- Minimize interrupts in compressions
- Avoid excessive ventilation. Deliver ventilations during chest compressions recoil
- Rotate compressor every 2 minutes
- If no advanced airway, 30:2 compression-ventilation ratio
- Quantitative waveform capnography
  - If PETCO₂ < 10 mmHg, attempt to improve CPR quality
  (PETCO₂ partial pressure of end-tidal carbon dioxide)
Return to Spontaneous Circulation (ROSC): Post Resuscitation

Shock Energy
- Biphasic: Manufacturer recommendation (120-200 J); if unknown, use maximum available. Second and subsequent doses should be equivalent, and higher doses may be considered.
- Monophasic: 360 J

Drug Therapy
- **Epinephrine 1:10,000** IV, IO
  1 mg every 3 – 5 minutes
  Maximum 5 doses (5 mg) total
  Consider advanced airway, capnography

Advanced Airway
- Supraglottic advanced airway or endotracheal intubation
- Waveform capnography to confirm and monitor ET tube placement
- 8-10 breaths per minute with continuous chest compressions

Reversible Causes
- Hypovolemia
- Hypoxia
- Hydrogen ion (acidosis)
- Hypoglycemia
- Hypo/hyperkalemia
- Hypothermia
- Tension pneumothorax
- Tamponade, cardiac
- Toxins
- Thrombosis, pulmonary
- Thrombosis, Coronary
- Trauma

---

**Cardiovascular**

**Asystole/PEA**

Administer **Oxygen**
Attach monitor/defibrillator
See: **Cardiac Arrest**

**CPR**
2 minutes
Adult IV/IO access

**Asystole/PEA**
No

**CPR**
2 minutes

**Epinephrine 1:10,000**
1 mg IV, IO
Repeat every 3 – 5 minutes
Maximum 5 doses (5 mg) total
Consider advanced airway, capnography

**Rhythm shockable?**

No

**CPR**
2 minutes
Treat reversible causes

**Rhythm shockable?**

Yes

**VF/VT**

Consider for prolonged resuscitation with effective ventilation; on return of spontaneous circulation.
Preexisting hyperkalemia
- **Sodium Bicarbonate**
  1 mEq/kg IVP, IO

No

**CPR**
2 minutes

**Rhythm shockable?**

Yes

Go to: **VF/VT**

**Epinephrine 1:10,000**
2 – 2.5 mg ET

**VF/VT**

Yes

Consider
for prolonged resuscitation with effective ventilation; on return of spontaneous circulation.
Preexisting hyperkalemia
- **Sodium Bicarbonate**
  1 mEq/kg IVP, IO

Also consider
- **Sodium Bicarbonate** if cardiac arrest due to tricyclic OD, Cocaine, ASA or Diphenhydramine

If no signs of return of spontaneous circulation (ROSC), go to CPR & Epinephrine or CPR every 2 minutes. Also start considering:
**Termination of Resuscitation**
- If ROSC, go to **Post Resuscitation**
Intervention by ems for bradycardia rhythm may not be necessary unless patient is symptomatic. Signs and symptoms such as hypotensive, altered mental status with inadequate perfusion, chest pain.

Bradycardia can be caused by: Hypoxia, MI, Sick sinus syndrome, Heart blocks, and other ectopy not producing a pulse. The palpable rate will be < 50. Remember, a slow heart rate can be normal in some patients if cardiovascular condition is in superb state.

Universal Patient Assessment

Cardiac Monitor / 12 Lead ECG
Transmit 12 Lead ECG
EMT: 12-lead EKG set up and application for electronic transmission

Adult IV/IO

Symptomatic
- Watch for 2nd or 3rd Degree Block
- Hypotension BP < 90 mm/Hg
- PVC’s, Altered Mental Status
- Symptoms-chest pain, dyspnea
- Ischemia or Infarction

For sedation
Midazolam (Versed)  2 mg IVP, IO
May repeat in 5 minutes x 1
or 5 mg IN (2.5 mg per nostril)
May be repeated x 1 in 5 minutes

No

Monitor

Yes

Atropine 0.5 mg IVP, IO
Maximum 3 mg

Epinephrine Drip 2 - 10 mcg/min

External Transcutaneous Pacing-Physio
Physio Control: Set Rate 70 bpm  Set Current
Conscious start at: 5 mA and increase by 5 mA
Unconscious start at: 20 mA and increase by 20 mA

External Transcutaneous Pacing-Zoll
Zoll: Set Rate 70 bpm  Set Current
Conscious start at: 30 mA and increase by 10 mA
Unconscious start at: 30 mA and increase by 10 mA
Immediate CPR and defibrillation are most important procedures to accomplish.

If no advanced airway is in place, deliver cycles of compressions and ventilations during CPR. Once airway is in place, compression rescuer should deliver 100 compressions a minute continuously, without pauses for ventilation. The ventilation rescuer should give 8-10 breaths per minute. 1 breath about every 6-8 seconds. Avoid excessive number of ventilations.
Unless extenuating circumstances, scene time should be 15 minutes or less.

The assessment of chest pain is important. Using the OPQRST method can be helpful.
O: Onset / Origin
P: Provokes
Q: Quality
R: Region
S: Severity
T: Time
Other symptoms like; Difficulty breathing, dizziness, arm pain, neck pain, pain in back or jaw, nausea/vomiting, syncope, sweating, pale/ashen color, weakness, and past history are important factors.

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S: Severity
T: Time
Other symptoms like; Difficulty breathing, dizziness, arm pain, neck pain, pain in back or jaw, nausea/vomiting, syncope, sweating, pale/ashen color, weakness, and past history are important factors.

Cardiovascular

Universal Patient Assessment

Cardiovascular

Cardiac Monitor / 12 Lead ECG
Transmit 12 Lead ECG
EMT: 12-lead EKG set up and application for electronic transmission

Oxygen should be administered to maintain SpO2 >94%

Aspirin 324 mg (baby Aspirin)

Adult IV/IO
If necessary, normal saline bolus 300 - 500 ml

Nitroglycerin Spray/Tablet
0.4 mg SL
May repeat x 2 if BP > 90 Systolic and IV established. (3 doses total)
Nitro Paste 1” concurrent with 1st NTG above
(See below) Hold for BP < 90 mmHg systolic

For ALL normotensive or hypertensive patients with chest pain when
1. Chest pain persists despite 3 doses of SL NTG or
2. Chest pain gone after 1 or more doses of SL NTG whether given by medic or patient self medicated. All nitrates to be used with caution with acute inferior STEMI (Normotensive: BP > 90 systolic)

Consider Fentanyl 1 mcg/kg IVP, IO every 3 - 5 minutes for pain 100 mcg maximum per dose Maximum 200 mcg

In a patient with suspected MI and PVC’s present, if the heart rate is 60 or above, and no 2nd or 3rd degree block is present, institute the following:

Amiodarone
Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min. IV Infusion

Use Twin Cath if STEMI
Do not delay transport.

Assist with Patient’s prescribed Nitroglycerin

Hypotension / Dysrhythmias, Treat per Protocols

Respensoft EMS Protocols
Page 23
01/01/2019
Universal Patient Assessment

CPR

Calcium Chloride 1 gm IVP, IO

Flush with 50 – 100 ml Normal Saline

CPR

Sodium Bicarbonate 100 mEq IVP, IO

CPR

Go to appropriate protocol:
- V-Fib/Pulseless V-Tach
- Asystole/PEA

Some causes of Renal Patients Coronary Heart Disease:
- Hypertension following erythropoietin (hormone that controls red blood cell production) in chronic kidney disease.
- Hypertension in dialysis patients
- Inflammation in renal insufficiency
- Myocardial dysfunction in end-stage renal disease
- Pericarditis in renal failure
- Serum cardiac enzymes in patients with renal failure

Hyperkalemia may be the cause of cardiac arrest in dialysis patients.
Universal Patient Assessment

Cardiac Monitor

Narrow Complex Tachycardia (PSVT)
Heart Rate 150 BPM or Greater

Adult IV/IO

Stable

Unstable

Synchronized Cardioversion

Physio Control
50, 100, 200, 300, 360 joules
Zoll
50, 70, 120, 150, 200 joules

For sedation
Midazolam (Versed) 2 mg IVP, IO
or 5 mg IN (2.5 mg per nostril)

If Atrial Fibrillation,
Synchronized Cardioversion
Physio Control
50, 100, 200, 300, 360 joules
Zoll
120, 150, 200 joules

If rhythm changes
Go to Appropriate Protocol

Responsoft EMS Protocols

SVT can originate from the Sinus node (responds to adenosine) or from the atria does not respond to adenosine). Among these concerns, the SVT may be symptomatic: chest pain, hypotension, altered mental status or may be asymptomatic.

For sedation
Midazolam (Versed) 2 mg IVP, IO
or 5 mg IN (2.5 mg per nostril)

Synchronized Cardioversion

Physio Control
50, 100, 200, 300, 360 joules
Zoll
50, 70, 120, 150, 200 joules

If Atrial Fibrillation,
Synchronized Cardioversion
Physio Control
50, 100, 200, 300, 360 joules
Zoll
120, 150, 200 joules

If rhythm changes
Go to Appropriate Protocol

Administer Adenosine (Adenocard) 12 mg rapid IVP over 1 – 3 seconds and flush immediately with 20 ml 0.9% NS

If no response after 1 – 2 minutes repeat Adenosine 12 mg rapid IVP over 1–3 seconds and flush immediately with 20 ml 0.9% NS

Monitor blood pressure closely after each dose
If during Adenosine administration patient develops hypotension (systolic BP < 90), chest pain, shortness of breath, decreased level of consciousness, proceed with direct synchronized Cardioversion of PSVT rhythm

Responsoft EMS Protocols

Page 25

01/01/2019
After ROSC, optimize hemodynamic, respiratory, and neurologic support. Identify and treat reversible causes of arrest.

Repeat Primary Assessment

Continue ventilatory support to adjust FiO2 as needed, to maintain O2 saturation or 94%

Obtain 12 Lead ECG & Transmit to ED

Hypotension

Consider NS Fluid Bolus 300 – 500 ml

Obtain vital signs every 3 - 5 minutes

Pulse Oximetry / Capnography

If Ventricular Ectopy or returning out of V-Fib / Pulseless V-Tach and Amiodarone NOT administered

Amiodarone
Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min. IV Infusion

If arrest reoccurs, revert to appropriate protocol and / or initial successful treatment

Continuous reassessment. Ventilatory support as needed must continue. Consider semi-Trendelenburg position and fluid bolus.

Bradycardia

Treat per Bradycardia Protocol
An ectopic impulse emerging from an irritable focus in the ventricles (bundle branches, Purkinje fibers, or ventricular muscle) and occurs prior to the next sinus complex.

**Universal Patient Assessment**

- Suspected AMI
- PVC's > 6 minute
- R on T Pattern
- More than 2 PVC's in Succession

**Heart Rate > 60 bpm**

- **Amiodarone**
  Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min. IV Infusion

**Heart Rate < 60 bpm**

- **Atropine**: 0.5 - 1 mg IVP, IO (Repeat every 3 - 5 minutes)
  Maximum 3 mg

- **Watch for 2nd or 3rd Degree Block**
- Hypotension BP < 90 mm/Hg
- PVC's, Altered Mental Status
- Symptoms - chest pain, dyspnea
- Ischemia or Infarction

**Consider:**

- Carbon Monoxide Poisoning
- Bradycardia Protocol

**Some causes of PVC's:**
- Hypoxia, Acid-base or electrolyte imbalance, MI, CHF, Alcohol, Caffeine, Tobacco, Drug toxicity

**Cardiac Monitor**

**Adult IV/IO**
Cardiac Arrest Protocol

**Zoll Defibrillation Settings**
- 120, 150, 200 Joules

Continuous compressions of at least 100 per minute (80 per minute with Autopulse)
- 8 - 10 breaths per minute.

Humeral IO preferred over tibial.

**Defibrillation**
Consider changing to "escalating non-stacked shocks".

For refractory VF, after 5 shocks, switch to Anterior-Posterior pads

**Epinephrine 1:10,000**
- 2 – 2.5 mg ET

OR

**Epinephrine 1:10,000**
- 1 mg IVP, IO

Repeat every 3 – 5 minutes
Maximum 5 doses (5 mg) total

**Consider Sodium Bicarbonate**
- 1 mEq/kg IVP, IO

**Defibrillation**
Physio 300 joules Zoll 120 joules

CPR x 2 min.

**Amiodarone**
- 300 mg IVP, IO

**Defibrillation**
Physio 360 joules Zoll 120 joules

CPR x 2 min.

**Amiodarone**
- 150 mg IVP, IO

**Defibrillation**
Physio 360 joules Zoll 120 joules

CPR x 2 min.

Criteria for Discontinuation?

Yes → **Termination of Resuscitation** Guideline

No → Continue **CPR**, Medications, Defibrillation Physio 360 joules Zoll 120 joules and Transport

Once an advanced airway is in place, 2 rescuers no longer deliver "cycles" of CPR. Instead, the compressing rescuer should give continuous chest compressions without pauses for ventilations.

**AT ANY TIME**
Return of Spontaneous Circulation
Go to Post Resuscitation Protocol

If torsades de pointes suspected
**Magnesium Sulfate**
- 2 grams IVP, IO

Responsoft EMS Protocols Page 28 01/01/2019
VT is usually associated with ischemia or heart disease. Some causes are: CHF, drug toxicity, cocaine, hypokalemia and electrolyte imbalance.

**V-Fib/Pulseless V-Tach Protocol**

- **Universal Patient Assessment**
  - Palpable pulse?
    - **Yes**
      - **Stable**
        - **Cardiac Monitor / 12 Lead ECG**
          - **Transmit 12 Lead ECG**
            - **EMT:** 12-lead EKG set up and application for electronic transmission
            - **Cardiac Monitor / 12-lead ECG**
              - For sedation
                - **Midazolam (Versed):** 2 mg IVP, IO or 5 mg IN (2.5 mg per nostril)
            - **Stable**
              - **Administer**
                - **Adenosine (Adenocard):** 12 mg rapid IVP over 1 – 3 seconds and flush immediately with 20 ml 0.9% NS
              - If no response after 1 – 2 minutes repeat
                - **Adenosine:** 12 mg rapid IVP over 1–3 seconds and flush immediately with 20 ml 0.9% NS
              - Monitor blood pressure closely after each dose
              - If during Adenosine administration patient develops hypotension (systolic BP < 90), chest pain, shortness of breath, decreased level of consciousness, proceed with direct synchronized **Cardioversion** of PSVT rhythm
        - **Unstable**
          - **Cardioversion**
            - **Synchronized Cardioversion**
              - 100, 200, 300, 360 joules
              - **Amiodarone**
                - Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min. IV Infusion
              - **Amiodarone**
                - Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min. IV Infusion
      - **Unstable Signs:**
        - Altered mental status, chest pain, hypotension, or other signs of shock.
        - Rate-related symptoms uncommon if heart rate < 150 min.
Rash, skin break, pain, soft tissue swelling, redness and/or blood oozing from the bite wound shortness of breath, wheezing, hives, itching, shock, hypotension

**Universal Patient Assessment**

**Adult IV/IO**

**Cardiac Monitor**

Consider the safety of the rescuer. Calm the patient.

Treat patient utilizing appropriate medical protocol and transport to medical facility.

**Dog / Human Bite**

Consider the safety of the rescuer.

Treat as a soft tissue injury. All bites are considered to be infectious. Treatment by a physician is recommended and necessary.

Notify local animal control and law enforcement. Provide transportation as necessary.

**Stings**

If stinger present, attempt to remove stinger by brushing it with the edge of a credit card or equivalent device. Clean the area once the stinger is removed; apply sting eze™ if available and patient not allergic (contains iodine) to it.

A. If possible, place the site below the level of the patient’s heart. **Cold packs** may be applied, but not directly to the skin. B. During transport, be prepared for vomiting. Monitor vital signs.

If bronchospasm, refer to

- **Allergic Reaction-Mild/Moderate**
- **Allergic Reaction-Severe/Anaphylactic Shock**

**Snake Bites**

Consider the safety of the rescuer. Calm the patient.

Remove jewelry, apply constricting bands (above and below), and immobilize extremity.

Be prepared for site swelling.

**Notify local animal control and law enforcement.** The snake is needed for ID purposes only.

Treat for shock, treat the soft tissue injury and manage other medical problems appropriately as per protocol.

Provide transportation as necessary.

Contact receiving facility, as soon as practical, as they can prepare for patient arrival.

Assessment as per protocol. “be prepared for patient to state “Hymenoptera” as their allergy, this is an allergy to the bites/stings of winged insects.

Obtain a complete history about the animal, insect or reptile (includes size, color, markings, shape of the head, location of the event, time of event, how it happened and if the predator was captured and available for transport to facility)

**Environmental Bites/Envenomations**

Responsoft EMS Protocols 01/01/2019
There are multiple considerations with Drowning / Near Drowning. Water temperature being primary. All cold water drowning should be worked. Trauma and C-Spine should be considered and managed. As with all environmental exposures, time and duration will also need to be noted.

Universal Patient Assessment

Spinal Injury Assessment

Cardiac Monitor

Adult Airway Protocol

Follow the appropriate protocol for the cardiac rhythm present:
- Asystole/PEA
- V-Fib/Pulseless v-Tach
regardless of hypothermia

Adult IV/IO

Monitor and reassess
If victim and/or water is extremely cold, limit ACLS/defibrillation attempts to one trial, continue resuscitation until rewarmed at medical facility.

Near Drowning
Insist on transportation to medical facility for evaluation. May have pulmonary complications.
Some causes of hyperthermia are:
High temperatures in the environment or excessive exercise in moderate to extremely high temperatures. Also, older or ill incapacitated patient, a failing of temperature regulating center.

Signs & Symptoms

Heat Cramps
Severe muscle cramps

Heat Exhaustion
Altered mental status, dizziness, nausea & vomiting, headache, elevated core body temperature

Heat Stroke
Extremely elevate core body temperature, the absence of sweating, with hot red or flushed dry skin, rapid pulse, difficulty breathing, strange behavior, hallucinations, confusion, agitation, disorientation seizure, coma

Universal Patient Assessment

Document patient temperature

Move to cooler environment, remove all outer clothing. Allow minimal modesty.

Apply room temperature water to skin and increase air flow around patient
Consider Cold packs to major artery sites

Adult IV/IO
Maintain systolic B/P greater than 90 mmHg.

Monitor and reassess

Appropriate Protocol
based on patient symptoms

Be prepared for seizures. Direct fan on patient if available.
DO NOT GIVE FLUIDS ORALLY.
A core body temperature of 95°F (35°C) can lead to decrease in heat production and increase in heat loss.

**Universal Patient Assessment**

Remove patient from cold environment, and remove wet clothing. Avoid rough movement.

**Cardiac Monitor**

Passive rewarming. Attempt rectal temperature if possible

**Adult IV/IO** (warmed)

- **Severe Hypothermia** < 88°F (< 31°C)
  - Withhold intubation unless the respiratory rate is less than 6/min and no gag reflex is present, or, the patient is in cardiac arrest
  - Limit resuscitation to one round of ACLS medications. (see appropriate rhythm)
  - Limit Defibrillation to 1 countershock @ 200 joules
  - Attempt further defibrillation only when core temperature rises

- **Moderate Hypothermia** 88-92°F (31-34°C)
  - Use appropriate protocol for rhythm, but decrease all cardiac medications by one-half

- **Mild Hypothermia** < 92-96°F (34-36°C)
  - Transport as soon as possible.

Medical considerations include time and duration of exposure. Level of patient distress indicated by clinical presentation such as presence of shivering, level of consciousness, core temperature reading. Auxiliary and oral measurements are poor measures of core temperature. Rectal temperatures are closer to estimate the core temperature.

Level of patient distress indicated by clinical presentation such as presence of shivering, level of consciousness, core temperature reading. Auxiliary and oral measurements are poor measures of core temperature. Rectal temperatures are closer to estimate the core temperature.
Dialysis: The process of filtering the blood, the way kidneys normally do, using a machine. Dialysis machine filters the blood to rid it of waste products. The filtered blood then returns to the patient through the venous catheter.

Medical concerns for the Renal Dialysis patient are: Pulmonary edema most common, Arrhythmia, Hypertensive crisis, Air embolus, Can occur during the dialysis procedure and Hyperkalemia (Wide QRS, Sine waves). DO NOT start IV or take a BP on a limb with a shunt or fistula.

Suspected Air Embolus

Hypotension

Must not give fluid bolus to patient in pulmonary edema. In these patients, look for other causes of hypotension (MI, hypoxia).

Consider NS Fluid Bolus 300 – 500 ml

Suspected Air Embolus

Cautions:

a) DO NOT take blood pressure on limb with shunt or fistula.
b) DO NOT start IV on limbs with shunt or fistula.
EXCEPTION: Rapid deterioration of vital signs and no venous access. An accidental break or rupture of a shunt can lead to rapid exsanguination. Guard shunts appropriately. Control bleeding.

Personal Precautions:

Serum Hepatitis: common in Dialysis patients.
a) Blood very infectious….avoid contact.
b) Virus gains entrance through cuts and hand to mouth contact.
c) Clean blood on vehicle and/or equipment. Should be wiped up and cleaned with PDI® Sani-Cloth® HB disposable wipes.
d) If exposed, fill out proper exposure forms.

Transportation:

a) If patient is stable, transport to the hospital where they receive dialysis. If patient is unstable transport to nearest hospital.
b) If arrest is not responsive to resuscitative efforts, transport patient to the nearest hospital.

Universal Patient Assessment

Adult IV/IO

Place patient in left side half-prone position with the head down 30%.

Pulmonary Edema

Pulmonary Edema/CHF Protocol

Gastrointestinal
**Universal Patient Assessment**

**Venipuncture Technique**
- Inform patient of IV insertion.
- Use aseptic technique
- Assessment of patient and equipment
- Venipuncture technique
- Dressings and maintenance of safety
- Instructions to patient
- Documentation

**IV Therapy**
- administer fluids
- administer medications

To minimize the risk of complications use:
- Proper choice of equipment
- careful choice of IV site
- good insertion technique
- aseptic preparation of infusions

**Assess need for IV**
- Emergent or potentially emergent medical or trauma condition

**IV Therapy**
- No more than four (4) attempts unless patient is critical.
- External Jugular IV (>12 yo) may also be attempted during 4 attempts for life-threatening event (one attempt only)

**Unsuccessful or Critical**

**Intraosseous**
- **Intraosseous Infusion EZ-IO (Proximal Tibia)**
- **Intraosseous Infusion EZ-IO (Humerus)**
- **Intraosseous Infusion EZ-IO (Distal Tibia)**
  
  for life-threatening event

**Trauma Care & Burn**

**Large bore IV(s)**

**Maintenance rate**
- **150 ml/hr**

**For Burns**: > 20% BSA or

**Trauma**
- If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).

**NS Fluid Bolus**: 20 ml/kg

Infuse fluid until return of radial pulse or maximum of 2 liters.

**Monitor infusion**

**Consider Saline Lock** when IV access but fluids or medication not indicated
Chemical restraint is preferred over physical restraint.

If patient is sedated, use Capnography.

Causes of Excited Delirium
Drug related, Stimulant drugs:
- Cocaine
- Amphetamines
- Club Drugs

Hallucinogens, Adverse Drug Reaction, Drug Withdrawal,
- Hypoglycemia, Head Trauma,
- Hypoxia, Hypoventilation,
- Shock, Psychiatric, New drug,
- Off Drugs, Other Medical Delirium, Infection, Dementia

Scene Safety

Treat suspected medical or trauma problems per appropriate protocol

Hyperglycemia/Hypoglycemia
Unconscious/Unknown
Overdose
Neurological Trauma (Head)

Universal Patient Assessment

Attempt to remove patient from stressful environment

Verbal techniques (reassurance, calm, establish rapport)

Explain all movements and procedures.
Look for a possible cause.

Agitated & Combative

Patient Restraint

Do not attempt to subdue or restrain unless adequate personnel are present and law enforcement is on the scene. Evacuate if they are not.

Ketamine
- 1 mg/kg IVP, IO
- 3 mg/kg IM

Midazolam Must be co-administered when Ketamine is given

Agitated

Patient Restraint (if necessary)

Only try to restrain the patient if they are threatening the safety of themselves, the crew or others.

Midazolam (Versed)
- 2 mg IVP, IO
- 5 mg IN or 2 mg IM

An alternative to Ketamine is: Midazolam. Midazolam should be used in patients in which Ketamine is contraindicated or ineffective or if there is suspicion that the agitation may be related to underlying seizure activity.
Epistaxis can be a symptom of hypertension. Be thorough in your evaluation while treating this minor problem.

Controlling significant bleeding or hemodynamic instability should take precedence over obtaining a lengthy history. Note the duration, severity of the hemorrhage, and the side of initial bleeding. Inquire about previous epistaxis, hypertension, hepatic or other systemic disease, family history, easy bruising, or prolonged bleeding after minor surgical procedures. Recurrent episodes of epistaxis, even if self-limited, should raise suspicion for significant nasal pathology. www.emedicine.medscape.com

Universal Patient Assessment

Place patient in either a standing or upright seated position. If patient is recumbent in bed and unable to sit up, have patient turn head to the side.

Have the patient tilt their head forward (chin to chest) and have the patient hold firm pressure on the nares. The patient should hold pressure for five (5) minutes.

Afrin (Oxymetazoline)

0.05% - 2 - 3 puffs/nares on side of bleeding.
In DKA patients, Kussmaul respiration helps correct acidosis. Patients with an EtCO2 of less than 29 were found to be in acidosis 95% of the time, whereas no patients with EtCO2 of 36 or higher were in acidosis.
Dehydration is an abnormal decrease in the total body water. It is accompanied by a disturbance in the balance of essential electrolytes.

Universal Patient Assessment

For heart rate less than 60 and BP less than 90 mmHg systolic with patient symptomatic, follow Bradycardia Protocol

Adult IV/IO

In any patient without rales or dyspnea who has a systolic BP less than 90 mmHg or less than 90 mmHg with signs of shock

0.9 NS Fluid Bolus

20 ml/kg

May repeat x 2

Titrate to effect

Systolic BP is less than 90 mmHg or less than 90 mmHg with signs of shock:

Epinephrine Drip

2 - 10 mcg/min

Dehydration may follow prolonged fever, diarrhea, vomiting, acidosis, and any condition which there is rapid depletion of body fluids.
Indications for Use: Chest pain, especially in acute M.I., pain associated with trauma, burns, known history of kidney stones, and abdominal pain, Acute (not chronic) musculoskeletal pain, etc.

Continuous Pulse Oximetry

Fentanyl

1 mcg/kg IVP, IO

Maximum single dose 100 mcg

Maxmum total 200 mcg

1.5 mcg/kg IN

May repeat original dose every 3 – 5 minutes

Maximum 200 mcg

Patient must be transported to hospital if Fentanyl administered.

Ketamine

0.2 mg/kg IVP, IO

For severe / excruciating / painful discomfort caused from a fracture / dislocation / subluxation

Consider, if Fentanyl is not sufficient or ineffective: Anticipate use for major burns and major trauma.
Are there signs and symptoms of acute infection/sepsis?

Suspect sepsis if any of the following are present.

Sepsis > Age 16

1. Pneumonia
2. Urinary Tract Infection
3. Abdominal pain or distension
4. Meningitis
5. Indwelling medical device or intravenous line
6. Cellulitis, septic arthritis, infected wound
7. Recent chemotherapy
8. Organ transplant (kidney, heart, lung etc)
9. Age > 65 years

Oxygen should be administered to maintain SpO2 > 94%

Modified Trendelenburg Position (feet up), if tolerated.

Initiate treatment for sepsis if all 3 criteria met:

1. Infection suspected
2. Two or more of the following:
   a. Temperature > 100.4 F (38 C) or < 96.8 F (36 C)
   b. Heart rate > 90 bpm
   c. Respiratory rate > 20
3. ETCO2 < 25 mmHg

If not in Acute Pulmonary Edema/CHF

Initiate 30 ml/kg Normal Saline rapid IV bolus

Auscultate the lungs frequently for rales. If rales appear or dyspnea increases at any time, terminate the fluid bolus.

Request receiving facility initiate a “Sepsis Alert” as part of radio report.

If the systolic blood pressure remains < 90 mmHg after Normal Saline bolus

Consider Epinephrine Drip 2 - 10 mcg/min

Titrated to a systolic blood pressure or > 90 mmHg
Fainting, "blacking out," or syncope is the temporary or transient loss of consciousness followed by the return to full recovery, but may encounter a short period of confusion. This loss of consciousness is accompanied by loss of muscle tone that can result in falling or slumping over.

Possible causes of syncope include: Hypoglycemia, Toxicity (alcohol, drugs, medications) CVA, underlying cardiac dysrhythmias, history of head trauma and seizure.

- **Universal Patient Assessment**

- **Spinal Injury Assessment**
  (If necessary)

- **Adult IV/IO**

- **Cardiac Monitor**

- **Blood Glucose**

Glucose 60 - 240 mg/dl

- **Naloxone (Narcan)**
  0.4 - 2 mg IVP, IO, IN
  May repeat every 5 minutes as needed
  Administer in lowest dose as needed to maintain adequate respirations

  EMT may administer via IN only

  **Naloxone (Narcan)**
  2 mg IN

Glucose < 60 mg/dl

- **See:**
  Hyperglycemia/Hypoglycemia

Consider other causes:

- Head injury,
- Overdose
- Stroke, Hypoxia
Scene Safety & BSI (body substance isolation)

**Adult Primary Assessment**
- **Patient Assessment-Medical**
- **Patient Assessment-Trauma**

**Documentation of Vitals Signs** per guideline
(Temperature if appropriate)

**Adult Airway** Protocol

**Cardiac Arrest**

**Consider:**
- **Pulse Oximetry**
- **Capnography**

**Nausea & Vomiting**
- **Ondansetron** (Zofran)
  - 4 mg IVP, IO

**Pain Control** Protocol

**Cardiac Monitor / 12 Lead ECG**
- Transmit 12 Lead ECG
  - **EMT:** 12-lead EKG set up and application for electronic transmission
  - If monitor capable of transmitting EKG, transmit all EKGs to receiving hospital.

**Repeate 12 Lead ECG for any significant change in cardiac rhythm (VT, VF, VT)**

**The Universal Patient Care Protocol should be used as primary guide to all patient assessment.**
A stroke is a sudden interruption in blood flow to the brain that results in a neurologic deficit.

Stroke can present with dysrhythmias, aphasia, vertigo, dizziness, headaches, weakness, paralysis, Head trauma, and tumors. There are 3 types of CVA, (Hemorrhagic, thrombosis, and embolus) Assess for time of onset and progression of symptoms. Hypertension can also be present with CVA.

Examine patient closely for signs of trauma

In patients with decreased level of consciousness of unknown etiology

\textbf{Naloxone} 0.4 - 2 mg IVP, IO, IN

May repeat 5 to 10 minutes if partial response is noted

EMT may administer via IN only

\textbf{Naloxone} \textit{(Narcan)} 2 mg IN

Obtain medical history and medications if possible. Any use of anti-coagulants is important. Hyperventilate patient to achieve an end-tidal CO$_2$ reading of 35 mmHg if vital signs are deteriorating or if there are signs of impending herniation as evidenced by unilateral dilated pupil, sudden change in level of consciousness, decorticate or decerebrate posturing

In Fairfield County – If Fairfield Medical Center is closest hospital, take stroke patient to Fairfield Medical Center, regardless of LAM score.

For patients when Columbus facility is closest hospital - Patients with symptom duration of < 4.5 hours (based upon when “last normal”) should be taken to the closest of the following facilities based upon their Los Angeles Motor Score (LAMS)

Go to: \textbf{CVA/Unconscious-continued}
Stroke Screen
Evaluate the patient using the Los Angeles Motor Scale (LAMS) EMS stroke triage tool below:

### LA Motor Scale

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face Weak</td>
<td>Absent = 0</td>
<td>Present = 1</td>
</tr>
<tr>
<td>Arm Weak</td>
<td>Absent = 0</td>
<td>Drift = 1</td>
</tr>
<tr>
<td>Grip Strength</td>
<td>Absent = 0</td>
<td>Weak = 1</td>
</tr>
</tbody>
</table>

**Total**

<table>
<thead>
<tr>
<th>Score</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
</table>

Stroke Scale Deficits?

Age > 18 years of age?

Symptom duration < 5 hours?

Blood Glucose 60 - 400 mg/dl?

Head Trauma Ruled Out?

If “yes” to all five questions above, then pre-hospital screening criteria is met. Declare “Stroke Alert” and follow appropriate treatment and transportation steps. In Fairfield County - transport to Fairfield Medical Center, if it is closest hospital.

Patients with LAMS Scores of 1 - 3 points and last know normal is less than 4.5 hours, should be transported to the closest hospital as listed below:

- Grant Medical Center
- Mt. Carmel East Hospital
- Mt. Carmel St. Ann’s Hospital
- OSU East Hospital
- OSU Wexner Medical Center
- Riverside Methodist Hospital
- Diley Ridge Medical Center

Patients with LAMS of 4 - 5 points OR last known well greater than 4.5 but less than 24 hours (regardless of LAMS score) should be transported to the closest Comprehensive Stroke Center unless bypassing a primary stroke center results in an incremental increase in transportation time greater than 15 minutes. Comprehensive stroke centers are:

- Mt. Carmel East Hospital
- Riverside Methodist Hospital
- OSU Wexner Medical Center

Last known well and greater than 24 hours transport to closest hospital.
Some causes of seizures are: Head injury, overdose, stroke, hypoxia, infection, hypoglycemia, hyperglycemia, brain tumor, eclampsia, alcohol.

Transport all patients experiencing first time seizure activity. Transport patients with known seizure disorders if seizure different than normal or continues longer than 3 - 5 minutes.

If patient is having active seizure on EMS arrival: **Midazolam (Versed)** (Preferred) IN dose see: **MAD**
10 mg IN (5 mg per nostril)

**Dextrose 10%** 100 ml boluses until patient awake &/or follow up blood sugar > 60 mg/dl
if unable to obtain IV

**Glucagon** 1 mg IM, IN

**Universal Patient Assessment**

**Spinal Injury Assessment**

If any patient with seizure activity upon arrival of EMS should be intubated if appropriate: **Adult Airway Protocol**

**Cardiac Monitor**

**Place in Rescue position (patient’s side)**

**Blood Glucose**

Glucose < 60 mg/dl

Dextrose 10%

100 ml boluses until patient awake &/or follow up blood sugar > 60 mg/dl

if unable to obtain IV

**Midazolam (Versed)** (Preferred) IN dose see: MAD
10 mg IN (5 mg per nostril)

2 mg IVP, IO

May repeat IVP, IO every 5 minutes x 2

IN is preferred unless IV/IO access has already been obtained. If IV/IO in place then preferred route is IV/IO.

**Focused history / Physical exam**

**Adult IV/IO**

**Blood Glucose > 60 mg/dl**

**Postictal**

**Midazolam (Versed)** (Preferred) IN dose see: MAD
10 mg IN (5 mg per nostril)

2 mg IVP, IO

May repeat IVP, IO every 5 minutes x 2

IN is preferred unless IV/IO access has already been obtained. If IV/IO in place then preferred route is IV/IO.

**Status / Seizure recurs?**

**Status epilepticus**

Any patient with seizure activity upon arrival of EMS should be intubated if appropriate

**Adult IV/IO**

**Status / Seizure recurs?**

**Midazolam (Versed)** (Preferred) IN dose see: MAD
10 mg IN (5 mg per nostril)

2 mg IVP, IO

May repeat IVP, IO every 5 minutes x 2

IN is preferred unless IV/IO access has already been obtained. If IV/IO in place then preferred route is IV/IO.

Responsoft EMS Protocols

Page 50

01/01/2019
Universal Patient Assessment

**Oxygen**
10 - 15 LPM NRB Mask

**Childbirth Procedure**

**Prolapsed Cord**

- Call for ALS upon recognition.
  Place mother in head down position with hips elevated

- Position mother with head down and buttocks elevated

- **Amniotic fluid any color other than clear may indicate fetal distress**

- Call for ALS upon recognition

- Immediate and rapid transport, notify receiving facility ASAP

- Insert one gloved hand into the vagina, following the cord as far as possible and gently push baby’s head off of the cord. Make sure to explain this procedure to patient.

- If delivery progressing, support legs and buttocks, then assist with delivery of the head

- If head does not deliver in 4-6 minutes, insert gloved hand into vagina and create an airway for the infant

**Breech Delivery**

- Transport while maintaining this position.

**Meconium Delivery**

- Do not stimulate before suctioning mouth.
  Suction mouth then nose with bulb syringe.
  Maintain airway, Transport as soon as possible.

- Signs/Notes:
  Thick = pea soup
  Common in late birth deliveries
  More common in low birth weight deliveries

**Multiple Births**
Make sure you have adequate manpower available.
Be prepared for more than one (1) resuscitation.
Consideration of one (1) ALS unit per infant.
Follow appropriate delivery algorithm, based upon scenario.

**Prolapsed Cord:**
An umbilical cord that comes out of the uterus ahead of the fetus.

**Breech Delivery:**
A delivery presenting the feet or the buttocks.

**Multiple Births:** More than one fetus.

**Meconium Delivery:** The first fetal stools in the amniotic fluid.
Three stages of labor:
**First Stage**: Onset of contractions with progressive changes in cervix.
**Second Stage**: Labor begins and fully dilated. Ends with birth.
**Third Stage**: Separation and delivery of placenta.

Obstetrical Emergencies - Vaginal Bleeding

- **Yes**
  - Abnormal vaginal bleeding?
  - Inspect perineum (No digital vaginal exam)
  - No crowning
    - Monitor and reassess
    - Document frequency and duration of contractions
  - Crowning
    - Priority symptoms
    - Crowning, patient needs to push.
    - See Abnormal Deliveries

- **No**
  - Have mother lie in preferred birthing position.

Universal Patient Assessment

- How far along in the pregnancy is the patient? Time contractions. Was there prenatal care? Has the patient's water broken? Is there any blood? Has crowning began yet? Is there any other presentation of the fetus?
  - **Note**: Up to 500 ml blood loss during delivery is normal and well tolerated by the mother.

Vaginal Bleeding after Delivery

- If brisk bleeding continues, massage “knead” the uterus over the lower abdomen above the pubis with firm pressure.

PREGNANT PEDIATRIC PATIENTS

All pediatric patients that are obviously pregnant, or, who have verified their pregnancy will be transported to the nearest hospital with an Obstetrical Unit. If traumatic injuries are involved, then transport to a Trauma Center is indicated. Nationwide Children’s HospitalSM is not equipped to deliver babies.
Eclampsia: New onset of grand mal seizure or unexplained coma during pregnancy.

ECLAMPSIA/TOXEMIA
Definition:
Toxemia: is the presence of any combination of the following after the 20th week of pregnancy. Can occur for up to 2 weeks post delivery.
A. Total body edema
B. Hypertension: BP systolic > 140 mmHg, BP diastolic > 90 mmHg or a change in the diastolic pressure > 15 mmHg from antenatal pressure.
C. Seizures after the 6th month of pregnancy

Eclampsia: is the presence of toxemia plus seizures.

Universal Patient Assessment

Adult IV/IO

Cardiac Monitor

Vaginal bleeding / Abdominal pain?

Seizure (Eclampsia/Toxemia)

Assessment and history of pregnancy

Protect patient from seizure activity

Suction secretions as needed, transport in left lateral decubitus position

Adult Airway Protocol

Midazolam (Versed) 2 mg IVP, IO
5 mg IN

This dose may be repeated in 5 minutes, if hypotension does not occur

Magnesium Sulfate 4 gm in 100 ml IV Infusion
0.9% NS, Infuse over 20 - 30 minutes (200 ml/hr)

Stop infusion if hypotension develops, difficulty breathing, decreased deep tendon reflexes or paralysis.
Pregnancy complications can occur for several reasons, including; trauma, and pre-existing health problems, ex. diabetes, hypertension, and heart disease to name a few.

**Universal Patient Assessment**

- **Adult IV/IO**
  - Large bore IV Titrate to keep
  - BP > 90 systolic

- **Cardiac Monitor**
  - if hemodynamically unstable

- Obtain history of pregnancy and estimate amount of bleeding
- **Consider performing orthostatic vital signs**

**Vaginal Bleeding during Pregnancy:**
- **< 20 Weeks (Miscarriage)**
  - Miscarriage – Termination of pregnancy before fetus is viable.
- **> 20 Weeks (abruption or Placenta Previa)**
  - Abruption - Premature separation of the placenta from the wall of the uterus
  - Placenta Previa - Attachment of the placenta very low in the uterus that completely or part covers the internal cervical opening.

- **Oxygen**
  - 10 - 15 LPM via NRB Mask

- **Miscarriage < 20 weeks**
  - Apply external vaginal pads
  - Bring any fetal tissues to hospital.
  - Do not remove anything from the vaginal area.
  - Transport to appropriate facility, on left side.
  - Consider second IV enroute if patient unstable

- **Abruption or Placenta Previa > 20 weeks**
  - Control bleeding
    - Do not insert packing into vagina
  - Elevate hips of patient
  - Transport immediately to OB hospital

Pregnancy complications can occur for several reasons, including; trauma, and pre-existing health problems, ex. diabetes, hypertension, and heart disease to name a few.
Sexual assault is sexual contact without the consent of the person assaulted.

Universal Patient Assessment

Unless victim has life threatening injuries, verbally obtain permission to treat before you begin.

ABC’s, assess and treat injuries as usual

Protect crime scene. Remove only clothing necessary to assess and treat injuries; then give to law enforcement.

Examine genitalia only if profusely bleeding

Discourage patient from bathing, douching, changing clothes, voiding, combing hair or cleaning nails. Clean only wounds that are necessary.

Transport to a hospital designated as a Rape Crisis Center if possible.

The victim of a sexual assault may display many different emotions. Approach the victim calmly.

ALL alleged or suspected sexual assaults must be reported to police.

Sexual assault is sexual contact without the consent of the person assaulted.

Sexual assault is sexual contact without the consent of the person assaulted.
Objective criteria for evaluation of the Respiratory Distress patient includes:

- Accessory muscle use / retractions
- O2 saturation < 94%
- Respiratory rate > 24
- Unable to speak full sentences
- Abdominal / paradoxic breathing
- Altered mentation (GCS 11-14)

Breath Sounds: Listen for absent, diminished, unequal, wheezing, Rhonchi, Crackles, Stridor.

Important skills to master for the adult airway are:
- Best method for airway management
- Managing the airway relevant to patients condition
- Rapid assessment for intubation
- Realizing when planned interventions have failed and the need for an alternative technique is required

Basic airway maneuvers:
Manual, nasal or oral airway.
Consider Spinal Injury Assessment if necessary.
Ventilate with bag mask device

If necessary Suction
Obstruction

Intubation-Oral or I-gel

Foreign Body Airway Obstruction
Direct laryngoscopy and remove using Magill forceps if possible.

Establish airway and re attempt to ventilate.

Failed Airway Protocol

Cricothyrotomy-Surgical

Supplemental Oxygen

Pulse Oximetry & Capnography

Oxygen

Assess ABC’s, respiratory rate, effort, adequacy

Inadequate

Adequate

Pulse Oximetry

Breath Sounds
An allergic reaction may include one or several symptoms. Most allergic reactions occur within minutes of the exposure, but some reactions may occur several hours later.

**Signs & Symptoms:**
Rash, itching, hives, difficulty swallowing, swelling of local area or face, eyes and tongue, abdominal cramping, chest pain, anxiety, nausea & vomiting, difficulty breathing, wheezing, unconsciousness, respiratory arrest.

**Universal Patient Assessment**

- **Albuterol / Ipratropium (Atrovent)**
  - 2.5 mg & 0.5 mg / 5.5 ml saline Nebulized
  - If evidence of bronchospasm, the aerosol should be discontinued if significant PVC’s appear.

- **Diphenhydramine**
  - 50 mg IVP, IO, IM, PO
  - Over 1 – 2 minutes, watch for hypotension

- **Dexamethasone**
  - 10 mg IVP, IO, PO

**Cardiac Monitor**

**Adult IV/IO**

**Epinephrine Auto-Injector**

**Epinephrine 1:1,000**

- 0.3 - 0.5 mg IM
- May repeat every 20 minutes If wheezing

**Shock or Circulatory Collapse**

**Epinephrine 1:10,000**

- 0.5 mg (5 ml) IVP, IO

**NS Fluid Bolus**

- 20 ml/kg to maintain BP ≥ 90 mmHg systolic
- Place patient in shock position, if tolerated.

**Consider**

- **Epinephrine Drip**
  - 2 - 10 mcg/min

If none of the above are present, then treat symptomatically. In asymptomatic patients with known history of anaphylactic reaction (as opposed to local reaction), administer **Epinephrine 1:1,000** 0.3 ml IM

**Extrapyramidal Symptoms (EPS)** is not an allergic reaction, but Benadryl can also be used for EPS.

**Common symptoms:**
- **Pseudoparkinsonism**: tremor, masklike facies, drooling, rigidity
- **Akathisia**: motor restlessness, anxiety to inability to lie or sit quietly
- **Dystonias**: involuntary, irregular, clonic contortions of the muscles of the trunk and limbs
- **Tardive**: having symptoms that develop slowly or that appear long after inception.
- **Dyskinesia**: impairment in the ability to control movements, characterized by spasmodic or repetitive motions or lack of coordination.
A foreign body in the esophagus is most likely the result of a food bolus impaction. Although most foreign bodies pass readily, occasionally they are the result of some underlying medical condition. Esophageal foreign bodies can occur more frequently in mentally impaired individuals or the elderly. Signs of an esophageal foreign body may include the following:

1. Dysphagia (difficulty swallowing)
2. Pain or tenderness in the neck
3. Inability to swallow oral secretions (indication total obstruction)
4. Other symptoms such as retro-sternal fullness, regurgitation of undigested food, and painful swallowing
Unsuccessful attempts at intubation by most proficient technician on scene

SPO₂ > 94% with BVM ventilation & 100% O₂

No

Unable to establish airway

BVM w/100% O₂

SPO₂ > 94%?

Continue ventilation with BVM

Supraglottic Airway (Pulseless & Apneic)

Supraglottic Airway (Apneic)

Unsuccessful, or

Facial Trauma or swelling? (Avoid cricothyrotomy if possible, with most medical patients)

Yes

Cricothyrotomy-Surgical (Adult only)

Consider securing airway, despite SPO₂ reading if airway needs controlled

Continue BVM w/100% O₂

SPO₂ > 94% with BVM ventilation & 100% O₂

Yes

Difficult Airway: something one anticipates.
Failed Airway: Something one experiences. Walls, 2002

Assistive techniques that are also of great value are the Sellick's maneuver. It is important to remember: As unsuccessful attempts at intubation increase, the likelihood of tracheal swelling, soft tissue trauma, and aspiration can occur.
When a patient is hyperventilating, the patient is breathing rapidly, which results in excess elimination of CO2.

Hyperventilation is a sign of many physiologic disorders including heart disease (M.I.), lung disease (COPD, pulmonary embolus, etc.), metabolic disorders (hyperglycemia, toxic ingestions, etc.), neurological disease, acidosis, hypoxia from any cause and others.

This sign of increased respiratory rate and/or depth should be interpreted as possible indication of serious underlying disease and supplemental OXYGEN should be applied to the patient and transported. Therefore, EMS personnel in the field may not use a paper bag or any re-breathing device without supplemental OXYGEN.

Universal Patient Assessment

**Signs & Symptoms**
1. Fatigue
2. Nervousness
3. Dizziness
4. Chest pain
5. Numbness and tingling around the mouth, hands, and feet

Reassure, Exclude other medical causes

- **Oxygen**
  - Adequate amount to maintain
  - \( O_2 \) sat > 94%
  - Consider use of **Capnography**

Responsoft EMS Protocols
Pulmonary Edema Signs and Symptoms:
Difficulty breathing, anxiety & restlessness, coughing that produces pink frothy sputum, pale, cool and clammy, chest pain, wheezing, course crackles, tachycardia, ankle edema, JVD, hypertension.

Universal Patient Assessment

Oxygen
NRB Mask 12 – 15 LPM
or

If patient in acute respiratory distress
CPAP-Boussignac  CPAP-Port O2 Vent  CPAP O2-RESQ

Adult IV/IO

Cardiac Monitor

Nitroglycerin
Spray/Tablet
0.4 mg SL
May repeat x 2 if BP > 90 systolic and IV established (3 doses total)

Nitro Paste 1” concurrent with 1st NTG above
Hold for BP < 90 mmHg systolic

BP < 90 mmHg systolic

Epinephrine Drip
2 - 10 mcg/min

Transport with head elevated if there is no hypotension. Treat any dysrhythmia as per the protocol.

Rapid Sequence Intubation (RSI) Procedure

Intubate if patient shows signs of increasing respiratory distress, lethargy, unconsciousness or diminished respiratory effort.

If sedation is needed, use Versed: 1 mg IVP, IO, IN (instead of fentanyl)

Respiratory
Respiratory

General
EMT
AEMT
Paramedic

Responsoft EMS Protocols Page 63 01/01/2019
Patient preparation steps for intubation:

1. Gather and check all supplies: ETT, Syringe Stylet, Laryngoscope (handle and multiple blade sizes) and Suction. Rescue airway should be immediately available.
2. Monitor EKG, Blood Pressure and Pulse Ox throughout procedure
3. Pre-oxygenate via cannula at 10+ lpm, non-rebreather mask or CPAP
4. Sedate and Paralyze:
   1. **Ketamine (Ketalar)**  1 mg/kg  IVP, IO
   2. **Succinylcholine (Anectine)**  1 mg/kg  IVP, IO
5. Intubation Procedure:
   1. Apply cricoid pressure (Sellick Maneuver)
   2. Perform Tracheal Intubation (if unable to intubate, place oral airway, continue to use BVM and proceed to supraglottic airway)
   3. Confirm Tube Placement (auscultate for equal, bilateral breath sounds and absence of sounds over the epigastrium, apply capnography (ETCO2) for continuous monitoring.
   4. Inflate ETT cuff with 10 ml of air
   5. Secure ETT and document size and depth of tube.
   6. Reassess the need for possible sedation and paralysis

Sedation for Transportation:

1. **Fentanyl (Sublimaze)**  2 mcg/kg  IVP, IO  **No dose limit/no Maximum dose**
2. **Midazolam (Versed)**  Adults 2 mg IVP, IO, Pediatrics 0.1 mg/kg IVP, IO to  **Maximum dose of 2 mg**
3. Fentanyl and Midazolam may be given up to  two additional doses every 20 minutes to maintain adequate sedation.

**Rocuronium**  1 mg/kg  may be substituted for Succinylcholine through June 30, 2019
Some causes of respiratory distress include: Pulmonary Edema, COPD, Asthma, Emphysema, Anaphylaxis, Pulmonary Embolism, Pneumothorax, Pneumonia, Bronchitis, or Cardiac related problem. Patients may present with complaint of shortness of breath, pursed lip breathing, Tripod position, accessory muscle use and inability to complete sentences.

Many specific disorders are responsible for respiratory distress. Included area; Chronic bronchitis & emphysema-COPD, asthma, pneumonia, and lung cancer.

Universal Patient Assessment

- **Wheezing / Rhonchi**
  - **Albuterol**: 2.5 mg/3 ml saline and
  - **Ipratropium**: 0.5 mg/2.5 ml saline
  - Mixed together (May repeat x 2)
  - **Dexamethasone**: 10 mg IVP, IO, IM, PO

- **Crackles / Signs of CHF**
  - **Pulmonary Edema Protocol**

- **Oxygen**

- **Cardiac Monitor**

- **Adult IV/IO**

Continued Distress

- **Refractory to above treatments**
  - **Magnesium Sulfate**: 2 grams / 100 ml NS Infuse over 20 minutes. IV Infusion

- **Epinephrine 1:1,000**: 0.3 – 0.5 ml IM
  - May be given concurrent with above in severe cases or anaphylaxis.
  - May repeat in 20 minutes if needed

Transport in a position of comfort

Patients over 50 years of age who receive EPINEPHRINE or ALBUTEROL/IPRATROPIUM should be placed on a monitor and transported.

If patient continues to deteriorate and

- Pulse oximetry < 94% consider CPAP, or **Intubation**
- See **Rapid Sequence Intubation (RSI)** Procedure

NOTE: Use EPINEPHRINE with caution in any patient who has used an aerosol bronchodilator within the past 4 hours.

NOTE: Consider other causes of wheezing in the patient with presumed asthma.

Discontinue treatment if significant PVC's appear.
Crews are to assure that ALL firefighters are assessed for elevated levels of CO after structural firefighting activities.

For patients with significant smoke inhalation or who display signs of altered mental status following exposure. (See Toxic Exposure: Cyanide Poisoning)

Remember that pulse oximetry should not be used as a determination of oxygenation in the patient with elevated carboxyhemoglobin. Symptomatic patients should be treated accordingly regardless of RAD 57 findings. Smokers may have baseline CO levels as high as 9%

Transportation to OSU-Main for Hyperbaric Oxygen Therapy if Carboxyhemoglobin 20% or higher.

Carbon Monoxide Poisoning

Patients suffering from exposure to byproducts of combustion should, when feasible, have a carboxyhemoglobin recorded using the RAD-57. These situations include fire victims of smoke inhalation, exposure to CO, firefighters during rehab activities, patients or families with complaints of general illness or headaches.

Universal Patient Assessment

Remove from exposure environment and remove contaminated clothing

Determine CO using Carboxyhemoglobin Monitor RAD-57 device

Adult Airway Protocol

If necessary NS Fluid Bolus 20 ml/kg

Cardiac Monitor

CO\text{Hb} Level \% | Signs & Symptoms | Treatment
--- | --- | ---
0 – 4% | None - Normal | None Necessary (smoker 3-5% higher)
5 – 9% | Minor Headache | 100\% O\text{2} via NRB Mask Reassess after 10-15 min.
10 – 19% | Headache / SOB | 100\% O\text{2} via NRB Mask And transport to closest hospital
20 – 29% | Headache, Nausea, Dizziness, Fatigue | ABC's, 100\% Oxygen, Transport HBO
30 – 39% | Severe Headache, Vomiting, Vertigo, ALOC | ABC's, 100\% Oxygen, Transport HBO
40 – 49% | Confusion, Syncope, Tachycardia | ABC's, 100\% Oxygen, Transport HBO
50 – 59% | Seizures, Shock, Apnea | ABC's, 100\% Oxygen, Transport HBO
60% - up | Cardiac Arrhythmias, Coma, Death | ABC's, 100\% Oxygen, Transport HBO

HBO: Hyperbaric Oxygenation
Obtain History
a) Medications - type, dose, bring bottles with patient.
b) Time and duration of exposure and via what route.
c) Notify receiving facility as soon as possible.

Poison Control
1-800-222-1222

Naloxone
0.4 - 2 mg IVP, IO, IN
May repeat every 5 minutes as needed
Administer in lowest dose as needed to maintain adequate respirations

EMT may administer via IN only

Calcium Channel Blocker OD

Calcium Chloride
0.5 gm IVP, IO
Every 3 – 5 minutes as needed for significant bradycardia

Naloxone
0.4 - 2 mg IVP, IO, IN
May repeat every 5 minutes as needed
Administer in lowest dose as needed to maintain adequate respirations

Blood Glucose
< 60 mg/dl

Hypoglycemia: Protocol

Tricyclic Antidepressants:
Elavil, Sinequan, Vivactyl, Endep,
Norpramin, Pamelaor, Surmontil, Tofranil,
Amimipryline, Doxepin, Imipramine, Nortriptyline, Desipramine

Universal Patient Assessment
Adult IV/IO

Cardiac Monitor

Contact Poison Control
1-800-222-1222 or
228-1323 or
Encode #101 or
9 Poison for information

If necessary
Spinal Injury Assessment

Lethargic or unconscious?

Specific ingestions

Tricyclic ingestion?

Sodium Bicarbonate 8.4%
1 mEq/kg IVP, IO

Seizures?
Seizure: Protocol

NS Fluid Bolus 300 - 500 ml
May repeat bolus if no response.

NS Fluid Bolus 250 ml/hr

Calcium Channel Blocker OD

Calcium Chloride
0.5 gm IVP, IO
Every 3 – 5 minutes as needed for significant bradycardia

Calcium Chloride
0.5 gm IVP, IO
Every 3 – 5 minutes as needed for significant bradycardia

Seizures?
Seizure: Protocol

Hypertension
Ventricular Dysrhythmia

NS Fluid Bolus 300 - 500 ml
May repeat bolus if no response.

Amlodipine
Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min.

EMT may administer via IN only

Contact Poison Control
1-800-222-1222 or
228-1323 or
Encode #101 or
9 Poison for information

If necessary
Spinal Injury Assessment

Lethargic or unconscious?

Specific ingestions

Tricyclic ingestion?

Sodium Bicarbonate 8.4%
1 mEq/kg IVP, IO

Seizures?
Seizure: Protocol

NS Fluid Bolus 300 - 500 ml
May repeat bolus if no response.

Amlodipine
Mix 150 mg in 100 ml of 0.9 NS over 10 minutes, 15 mg/min.
Universal Patient Assessment

Adult IV/IO

Cardiac Monitor

Contact Chemtrec
1-800-424-9300
Poison Control
Phone: 1-800-222-1222 or 228-1323
Radio: Encode #101 or 9 POISON

Skin Exposure
1. Remove clothing and wash skin with copious amounts of water (brush off dry chemicals but don't delay applying water).
2. Wear gloves and masks (appropriate mask for contaminant) while handling the patient.
3. Cover the patient with sheet (cloth or plastic) to prevent the spread of the contaminant.

Respiratory Exposure
Adult Airway Protocol

Organophosphate Exposure
Development of coma, ataxia, psychosis, dyspnea, convulsions, bradycardia, or cyanosis.

Atropine
2 - 5 mg IVP, IO, IM

2-PAM
600 mg IVP, IO, IM

May be repeated every 15 minutes until signs of flushing, dry mouth, and dilated pupils appear.

Smoke Inhalation / CO Poisoning
Adult Airway Protocol & RAD-57

2 Indications:
1. Firefighter down at fire scene & in cardiac arrest, or
2. Victim (FF or civilian) meeting all 3 criteria
Confined space smoke exposure
Altered Level of Consciousness
Nasal/Oral Soot or burns

Wheezing

Albuterol
2.5 mg/ 3 ml saline

Atrovent
0.5 mg/ 2.5 ml saline (May repeat)

Suspected Cyanide Poisoning
Cyanokit
5 grams in 200 ml 0.9% NS over 15 minutes

Transport to a facility with hyperbaric capabilities should be considered. If significant burns are involved, transport should be to a trauma center.

The amount and route of exposure to the nerve agent or OP pesticide, the type of nerve agent or pesticide, and the premorbid condition of the person exposed person will contribute to the time of onset and the severity of illness.
Organs of the abdomen involve: Liver, kidney’s, gall bladder, duodenum, pancreas, stomach, spleen, aorta, colon, appendix, small and large intestine.

Universal Patient Assessment

Multiple Trauma Protocol

Adult Airway Protocol

**Adult IV/IO**

- large bore IV
- **NS Fluid Bolus** 20 ml/kg
  (If necessary)

  If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).

**Infuse fluid until return of radial pulse or maximum of 2 liters.**

Cardiac Monitor

- If eviscerated bowel present, cover with **saline soaked sterile dressings.**
- Do not remove any impaled foreign object. Stabilize object for transport.
Burns can be thermal, or chemical. Types of burns are First degree (red and painful), Second degree (Skin blisters) and Third degree (Necrosis). Use the Lund-Browder to estimate body surface percentage affected. Take extra caution to use aseptic / sterile technique in all procedures.

- Providers should be careful to use gloves and other barrier precautions as needed to protect themselves from becoming injured from a chemical burn while rendering care.

**Universal Patient Assessment**

Remove rings, bracelets, and any other constricting items

**Spinal Injury Assessment**

If necessary

**Adult Airway** Protocol

Cover wounds with dry sterile dressings, maintain body warmth. May immerse body part in cool water if burn is limited to less than 10% BSA.

**Evaluate patient for other injuries (consider nature of accident). Assess the depth and extent of burns.**

**Cardiac Monitor**

For all electrical & lightning Injuries

**Smoke inhalation**

**Toxic Exposure** Protocol

“If cyanide poisoning is suspected”

**Pain control** Protocol

**Transport patient.**

**Pain Control** Protocol

**Adult IV/IO**

Remove clothing or expose area. Brush powder off

**Powder**

**Chemical**

Eye involvement?

Continuous Normal Saline flush

**Remove clothing or expose area**

Flush with copious amounts of water, but be cautious. Some chemicals should not be mixed with water.

**NOTE:** Evaluate for associated injuries, and treat per appropriate protocol.

Do not attempt IV unless reasonably certain one can be obtained. You cannot afford to ruin potential IV sites on burn victim with multiple attempts. You may “stick” a patient through a burn if that is all you can get for an IV/IO site.

Acute hypotension in burn victim is probably not from the burn itself. Think about other trauma with blood loss.
The thorax is a large, relatively common target for low and high velocity projectiles.

**Universal Patient Assessment**

**Spinal Injury Assessment**

**Adult Airway** Protocol

**Cardiac Monitor**

**Adult IV/IO**

**NS Fluid Bolus** 20 ml/kg

**Chest Decompression**

**Open Chest Wounds**

**Tension Pneumothorax**

**Flail Chest**

**Wound Care**

Assess for and treat other life-threatening injuries

**Multiple Trauma Protocol**

**Cover sucking wound with non-porous dressing** (Vaseline™ gauze, jelled defibrillator pad, cellophane, aluminum foil) taped over 3 sides, or Asherman Dressing.

**Monitor and reassess**

**Simple Pneumothorax**
1. Signs and Symptoms
   a. Respiratory distress
   b. Decreased breath sounds

**Chest Trauma Signs & Symptoms**

**Tension Pneumothorax**
1. Signs and symptoms
   a. Respiratory distress
   b. Shock
   c. Decreased breath sounds on the injured side

**Myocardial Contusion**

Myocardial contusion:
1. Signs and Symptoms
   a. History of blunt trauma to the anterior chest
   b. Symptoms may be the same as a heart attack

**Pericardial Tamponade**

Pericardial tamponade:
1. Signs and Symptoms
   a. Blunt or penetrating trauma to the chest
   b. Shock
   c. Distended neck veins
   d. Muffled heart sounds

**Simple Pneumothorax**
1. Treatment is supportive.
   a. Administer 100% **Oxygen** to maintain SpO2 >94%
   b. Monitor for development of tension pneumothorax
   c. Rapid transport
   d. Initiate IV at wide open

**Pericardial Tamponade**
1. Signs and Symptoms
   a. History of injury to the chest
   b. poor air movement
   c. paradoxical chest wall movement

**Flail Chest**

**Massive Hemothorax**

Do not decompress. Treat for hypovolemic shock. Support ventilations

**Reassess adequacy of ventilations and perfusion. “Load and Go” with continued treatments.**

If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).

Infuse fluid until return of radial pulse or maximum of 2 liters.

Blunt or penetrating injuries to the chest with shock that are not immediately responsive, should be transported without delay. Do not remove any impaled foreign object. Stabilize object for transport.

If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).

Infuse fluid until return of radial pulse or maximum of 2 liters.

Responsoft EMS Protocols Page 73 01/01/2019
Universal Patient Assessment

If patient has been trapped/pinned for longer than 20 - 30 minutes, and exhibits signs/symptoms of relevant mechanism of injury to suspect crushing injury.

Spinal Injury Assessment

Adult Airway Protocol

Adult IV/IO
Minimum of 2 IV’s (one for resuscitation/cardiac and one for administration of Sodium Bicarbonate)

Sodium Bicarbonate
Begin infusion: 2 liters over 1 hour 50 mEq/liter

Cardiac Monitoring
Obtain monitor tracing prior to and sequentially during further treatment.

Advise the receiving ED early of the patient’s “Crushing Injury”. Anticipate Crushing Syndrome and possible cardiac arrest upon extrication of patient.

Continue aggressive fluid resuscitation with NS Fluid Bolus 20 ml/kg
If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).
Infuse fluid until return of radial pulse

Monitor ECG closely, watch for:
Widen QRS complexes – 0.12 seconds or greater.
Presence of PVC’s, V-Fib / V-Tach,
Treat appropriately

NOTE: If patient is in cardiac arrest, treat as TRAUMA ARREST

Crush injury causes a toxic mixture of fluids, electrolytes, and acids from lack of cellular respiration to pool in the area that is crushed. Upon release of the mechanism of crush, that mixture starts to flow with normal circulation and mixes with oxygenated blood which makes the mixture even more toxic. When this mixture of toxins gets to the heart, the patient experiences sudden cardiac death.

Three mechanisms are responsible for the death of muscles cells. Immediate cell disruption, Direct pressure on muscle cells, Vascular compromise. Reference: Medicom.org James R. Dickson MD

Crush Syndrome

See: SERT Guideline

Sodium Bicarbonate
Begin infusion: 2 liters over 1 hour 50 mEq/liter

NOTE: If patient is in cardiac arrest, treat as TRAUMA ARREST
SMR includes taking steps to minimize head movement including the use of a cervical collar, padding, coaching and positioning. Long backboards, scoop stretchers, and other devices may be used for extrication purposes only. They are not necessary for spinal motion restriction and should be removed as soon as safe for the patient and crew prior to transport. Patients presented to the crew already immobilized should be reassessed using the clinical criteria provided. The crew may remove any previously applied spinal motion restriction devices that are not indicated, and should additionally remove any rigid immobilization device prior to transport.
Most causes of broken and avulsed teeth are: falls, assaults, sports, multiple trauma.

- **Universal Patient Assessment**
  - Control bleeding with pressure
  - Tooth avulsion?
    - Yes: Reassess and monitor
    - No: Save all avulsed teeth in 0.9 NS moistened gauze or a jar of 0.9 NS
  - Assess for pain
  - Reassess and monitor

Protect the airway. Make every attempt to salvage any lost teeth. Reassure patient. Inspect surrounding area of soft tissue. Check for other fractured, chipped, or deformities of teeth.
Universal Patient Assessment

Wound Care

Severe Bleeding
Control Bleeding by:
1. Direct Pressure with QuickClot Combat Gauze
2. Apply pressure dressing
3. If not successful; Tourniquet

Life Threatening
Hemorrhage
Major Crush Injury Syndrome
Severe Open Fracture
Proximal Amputations
Multiple Fractures

Limb Threatening
Vascular Emergency
Compartment Syndrome
Open Fracture
Crush Injury
Major Dislocation

Limb Threatening
Vascular Emergency
Compartment Syndrome
Open Fracture
Crush Injury
Major Dislocation

Unstable or Multiple Trauma
Patient, transport to closest trauma facility.

Adult amputations are to be transported to Riverside Methodist or OSU Wexner Medical Center Hospitals if they are stable.

Incomplete Amputation
1. Splint
2. Apply pressure dressing
3. Surround with ice.

Distal Injuries:
Finger & Toes

Complex Injuries
Severed tendons and nerves
1. Control bleeding with pressure

Complex forearm fracture
1. Splint and apply pressure dressing

Ring Avulsion
1. Wrap with moist gauze and surround with ice.

Bleeding easily controlled

Aspirin
324 mg PO (4 baby aspirin)

Life Threatening
Hemorrhage
Major Crush Injury Syndrome
Severe Open Fracture
Proximal Amputations
Multiple Fractures

Limb Threatening
Vascular Emergency
Compartment Syndrome
Open Fracture
Crush Injury
Major Dislocation

Unstable or Multiple Trauma
Patient, transport to closest trauma facility.

Adult amputations are to be transported to Riverside Methodist or OSU Wexner Medical Center Hospitals if they are stable.

Incomplete Amputation
1. Splint
2. Apply pressure dressing
3. Surround with ice.

Distal Injuries:
Finger & Toes

Complex Injuries
Severed tendons and nerves
1. Control bleeding with pressure

Complex forearm fracture
1. Splint and apply pressure dressing

Ring Avulsion
1. Wrap with moist gauze and surround with ice.

Bleeding easily controlled

Aspirin
324 mg PO (4 baby aspirin)

Life Threatening
Hemorrhage
Major Crush Injury Syndrome
Severe Open Fracture
Proximal Amputations
Multiple Fractures

Limb Threatening
Vascular Emergency
Compartment Syndrome
Open Fracture
Crush Injury
Major Dislocation

Unstable or Multiple Trauma
Patient, transport to closest trauma facility.

Adult amputations are to be transported to Riverside Methodist or OSU Wexner Medical Center Hospitals if they are stable.
Multiple Trauma

Multiple trauma is injury of two or more parts of the body. Obtain Glasgow Coma Score prior to calling trauma center.

Assume cervical spine injuries on all unconscious patients with known or suspected trauma and on all patients with multiple trauma.

Fluid Therapy
If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma). **Infuse fluid until return of radial pulse or maximum of 2 liters.**

- **NS Fluid Bolus**: 20 ml/kg
  - See Fluid Therapy above

- **Reassess Adult Airway Protocol**

- **Pain Control** Protocol for acute pain due to fractures, burns, or other types of trauma.

- **Suspected internal injuries and long bone fractures require 2 IV's. This Should not delay transport.**

- **Transport as quickly as possible. Provide continuous monitoring and re-evaluation.**

- **Ongoing assessment**

- **Appropriate Protocol based on patient symptoms**

- **If Respiratory Compromise, See: Rapid Sequence Intubation (RSI)** Procedure

**Splinting**
Immobilize, splint and restrain as appropriate and as time allows.

**Tranexamic Acid (TXA)**
1 gram/100 ml over 10 minutes IV Infusion (16 years and older)

**Rapid Trauma Assessment**

- **Consider rapid / air transport**

**Adult Airway Protocol**

- **Spinal Injury Assessment**

**Wound Care** (control active bleeding)

**Cardiac Monitor**

**Vital Signs / perfusion?**

- Normal
- Abnormal
Types of Head Trauma: Concussion, Skull fracture (Linear, Depressed & Basilar), Intracranial (Subdural, Epidural, Subarachnoid).

**Universal Patient Assessment**

Isolated head trauma?

No

Yes

**Spinal Injury Assessment**

Control Severe bleeding

Wound Care

**Adult IV/IO**

Observe spine injured patients for neurogenic shock, i.e. hypotension with bradycardia. If signs of inadequate perfusion:

- **NS Fluid Bolus**: 20 ml/kg

For obvious spinal shock with no response to the above therapy:

- **Epinephrine Drip**: 2 - 10 mcg/min

For combative patients with head injuries, refer to the:

- **Rapid Sequence Intubation (RSI) Procedure**

Load and Go in patients with either:

A. Unilaterally dilated pupil
B. Deteriorating mental status

If confirmed head injury with impaired level of consciousness, assist patient with positive pressure ventilation using a bag-valve-mask. Intubate as needed. In the head injured patient with signs of shock, look for the other sources of bleeding (i.e. chest, abdomen, pelvis, and femurs).

**Fluid Therapy**

If systolic BP < 90 mmHg, Absence of radial pulse, or decreased mental status secondary to hypoperfusion (not head trauma).

Infuse fluid until return of radial pulse or maximum of 2 liters.

**Tranexamic Acid (TXA)**

1 gram

Anticoagulants increase the risk of intracranial bleeding, even with minor head injury. Patients on anticoagulants with head injury should be offered transport to the ED. Commonly used anticoagulants include:

**ORAL**
- Coumadin (warfarin), Eliquis (apixaban), Xarelto (revaroxaban), Pradaxa (dabigatran), Savasa (edoxaban)

**INJECTABLE**
- Lovenox (enoxaparin), Arixtra (fondaparinux)

**ORAL ANTIPLATELET**
- Plavix (clopidogrel), Effient (prasugrel), Brilinta (ticagrelor)

Responsoft EMS Protocols
The eye is well protected by a series of facial bones. Patient’s sight may be threatened if their is loss of aqueous or vitreous humor fluid, usually caused by penetrating trauma. Blunt trauma can cause a hemorrhage which can also cause a loss of vision.

Embedded or impaled objects should not be removed, but should be stabilized securely for transport.

1. Stabilize impaled objects, cover both eyes and transport.
2. If the object has pierced the globe, transport in supine position.
3. Use metal eye shield if possible.
4. Cover BOTH eyes using folded 4x4’s.
5. Transport in position of comfort.

If needed:

**Tetracaine** 1 - 2 drops, may be instilled into the eye(s) prior to the Morgan Eye Lens.

If available

Insert **Morgan Eye Lens** connect to the I.V. tubing and immediately flush with one liter of 0.9NS per eye.
Pregnant patients suffering from major trauma are more susceptible to life-threatening injury than non-pregnant patients. Any pregnant patient who has suffered trauma should be transported to the hospital for evaluation.

For patients that are 6 months pregnant or more:
1) Tilt backboard to the left side or elevate right buttock and push uterus to the left.

Note: Shock is not always obvious in the pregnant patient because of an increase in circulating blood volume. The pregnant female will show signs of hypovolemia later in the course of the trauma event. Treat hypovolemia aggressively.

If hypovolemic, treat aggressively. Initiate two large bore IV's.
Scene Size-up:
Don appropriate level of Body Substance Isolation (BSI) precautions
Assess the scene for dangers to the rescuer. Consider the number of patients, mechanism of injury or nature of the illness. Request additional help if necessary
Clinical Indications: All Levels
- Any child that can be measured with the Broselow-Luten Resuscitation Tape.

1. Scene size-up, including universal precautions, scene safety, environmental hazards assessment, need for additional resources, by-stander safety, and patient/caregiver interaction. Consider the number of patients, mechanism of injury or nature of the illness. Request additional help if necessary.

2. Priorities of management are established on a life-threatening basis. Begin an A.B.C. approach to the patient to form a general impression and establish the presence of a life threatening injury or illness. Obtain and record the chief complaint of the patient. Quickly assess level of consciousness using the A.V.P.U. method:
   - A - Alert - eyes open
   - V - Verbal - responds to vocal stimuli
   - P - Pain - responds only to pain
   - U - Unresponsive - no response to Verbal or Pain.

3. Evaluate for the presence of increased intracranial pressure (ICP). In the infant, increased ICP may be manifested by a full or bulging anterior fontanel, a weak, shrill or irritable cry, and poor muscle tone. Pupillary responses, level of consciousness, recognition of parents, and Glasgow Coma Score (GCS) should also be documented.

4. Assess the airway (protect c-spine if uncertain)
   - When establishing an airway, remember the differences between the adult and pediatric airway. The young child has a disproportionately large tongue, which can easily occlude the airway. A small amount of blood or vomitus can also obstruct the airway. Deciduous, or “baby teeth”, are poorly anchored and easily dislodged.
     a. Responsive - no intervention needed, proceed to step 3.
     b. If unresponsive - use the appropriate medical or trauma maneuver to open the airway if airway remains partially or totally obstructed, continue attempts to clear the airway (refer to airway emergencies).

5. Assess adequacy of breathing
   a. If patient is not breathing, ventilate patient via bag valve mask (BVM).
   b. Observe chest rise and fall; auscultate breath sounds anteriorly, posteriorly and peripherally. (see Respiratory Distress Protocol) observe for signs of distress - use of secondary muscles, nasal flaring, and tripod position. If oxygen is indicated and the child has a patent airway and good respiratory effort, administer Oxygen to maintain SpO2 >94%. Do not hesitate to administer oxygen to the pediatric patient.
   c. If the child requires ventilatory assistance, administer 100% Oxygen via BVM. The neonatal size ventilation bag is not recommended equipment for field use.
   d. When possible, monitor oxygen saturation with continuous pulse oximetry and document findings every 5-10 minutes.

6. Assess the circulation / perfusion
   a. Assess rate and quality of pulses - peripheral and central pulses. Early signs and symptoms of shock in children include a rapid heart and respiratory rate (again, remember age-dependent vital signs), agitation, and poor peripheral perfusion (capillary refill > 2 seconds). Hypotension is a LATE and ominous finding. Document vital signs (including temperature and blood pressure if appropriate) and peripheral perfusion.
   b. Stop any active bleeding, assess skin color, temperature, and obtain blood pressure.
   c. If there is no palpable pulse or rate is too slow to maintain cerebral blood flow, begin CPR.

Further Assessments, Go to: 
- Pediatric Assessment-Medical 
- Pediatric Assessment-Trauma
Clinical Indications:

If patient unresponsive, go to Rapid Assessment. History of Present illness including but not limited to below:

Focused History and Physical Exam Non-Priority Medical Patients

1. History of Present illness including but not limited to:
   - O-Onset of the problem
   - P Provocation
   - Q Quality – "Crushing, Pressure, Stabbing"
   - R Radiating
   - S Severity "1 - 10 Scale" and Duration
   - T Time since this onset of this episode

2. Provide appropriate interventions as per protocols. Splint injured, painful or swollen extremities. Apply dressings and bandage all wounds. Consult MCP with any questions, further treatments or omission of interventions as written.

Priority Medical Patients Rapid Assessment

1. Rapidly assess the patient “head to toe”. (1 - 1 1/2 minutes total)
   Head, Ears, Eyes, Nose, Throat
   The head should be examined for signs of abnormality. The ears should be examined for presence of fluid and foreign bodies. The pupils should be checked for symmetry and response to light. The nose should be examined for presence of fluid and patency. Examine the throat for signs of obstruction, redness and patency. The neck should be examined for pain, stiffness or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence of neck injury, employ cervical spine precautions. Assess for any signs of trauma.

2. Chest, and Abdomen
   The chest should be examined for signs of visible injury. Assess for breath sounds as well as chest movement, symmetry, and effort. The chest should be palpated for pain. The abdomen should be assessed for signs of injury, pain, tenderness, rigidity, and guarding. The pelvis should be palpated for stability if any history of trauma.

3. Extremities and Back
   The lower as well as the upper extremities should be examined and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist. The back should be examined for signs of pain. For patients with possible spinal injury, assess the back during the log roll procedure.

4. A SAMPLE history should also be obtained if possible. This should include:
   - S - Signs and Symptoms
   - A - Allergies
   - M - Medications
   - P - Past illnesses
   - L - Last meal
   - E - Events of the injury or illness
   - A. Obtain baseline vital signs and prepare the patient for transport.
Clinical Indications:
Rapid Assessment should be performed on all priority transport patients after the Initial Assessment. Patient with a mechanism or nature of illness consistent with the possibility of spinal trauma should first have manual spinal control and after the rapid assessment be fully spinal immobilized.

Non-Priority Trauma Patients

1. Assess injuries based on chief complaint.
   a. Obtain Vital Signs
   b. Provide care based on signs and symptoms.
   c. Continue with Detailed Assessment as appropriate

Priority Trauma Patients Rapid Trauma Assessment

1. Rapidly assess the patient “head to toe”. (1 - 1 1/2 minutes total)
   Head, Ears, Eyes, Nose, Throat
   The head should be examined for signs of abnormality. The ears should be examined for presence of fluid and foreign bodies. The pupils should be checked for symmetry and response to light. The nose should be examined for presence of fluid and patency. Examine the throat for signs of obstruction, redness and patency. The neck should be examined for pain, stiffness or injury. The neck veins should be assessed for signs of extreme distention. If there is any evidence of neck injury, employ cervical spine precautions. Assess for any signs of trauma.

2. Chest, and Abdomen
   The chest should be examined for signs of visible injury. Assess for breath sounds as well as chest movement, symmetry, and effort. The chest should be palpated for pain. The abdomen should be assessed for signs of injury, pain, tenderness, rigidity, and guarding. The pelvis should be palpated for stability if any history of trauma.

3. Extremities and Back
   The lower as well as the upper extremities should be examined -and assessed for presence of pulses, sensation, and motor function. Note if edematous or signs of poor perfusion exist. The back should be examined for signs of pain. For patients with possible spinal injury, assess the back during the log roll procedure.

4. Neurological Survey
   If not already done, a neurological evaluation including GCS as well as a history should be obtained. The pupils should be assessed for equality and reaction to light. The level of consciousness should be assessed using the AVPU method:
   A – Alert
   V – Verbal
   P – Pain
   U - Unresponsive

5. A SAMPLE history should also be obtained if possible. This should include:
   S - Signs and Symptoms
   A - Allergies
   M - Medications
   P - Past illnesses
   L - Last meal
   E - Events of the injury or illness

6. Exposure
   A thorough exam cannot be accomplished without properly exposing a patient. Passive warming
Pediatric Bradycardia

Stabilize the patient with special attention to ABC’s. Continue monitoring patient after treatment and treat underlying cause.

Universal Pediatric Assessment

Pediatric Airway Protocol

Cardiac Monitor

Poor perfusion
Decreased blood pressure
Respiratory insufficiency

No

Monitor and reassess

Yes

Pediatric IV/IO

Heart rate < 60 child? / Heart rate < 60 Infant?
Ensure adequate airway

CPR

Epinephrine 1:10,000
0.1 ml/kg
IVP, IO
Maximum 10 ml
Repeat every 3 - 5 minutes

Epinephrine 1:1,000
ET dose
0.1 ml/kg
Maximum 1 ml

Atropine
0.02 mg/kg
IVP, IO
Minimum dose 0.1 mg / Maximum single dose 0.5 mg

No Pulse

Reassess

Pediatric Pulseless Arrest Protocol

Pulse

Consider
Normal Saline Bolus
20 ml/kg

for sedation
Midazolam (Versed)
0.1 mg/kg
IVP, IO, IN
Maximum 2 mg per dose

Consider
External Transcutaneous Pacing-Physio
External Transcutaneous Pacing-Zoll

Most common cause of bradycardia is respiratory insufficiency, failure. Give oxygen early.

Consider use of:
Broselow™ Pediatric Emergency Tape

Pediatric Cardiovascular

Pediatric Bradycardia

Pediatric Cardiovascular

General

EMT

AEMT

Paramedic
attempt defibrillation early. perform CPR immediately after defibrillation. consider use of: Broselow™ Pediatric Emergency Tape

Universal Pediatric Assessment

CPR x 2 minutes
(CPR should be continued for 2 minutes after every defibrillation)

Cardiac Monitor

V-Fib / Pulseless V-Tach

Defibrillation
2 joules/kg

CPR x 2 min.

Pediatric IV/IO

Epinephrine 1:10,000
0.1 ml/kg IVP, IO
Repeat every 3 - 5 minutes
Maximum 10 ml

Defibrillation
4 joules/kg

CPR x 2 min.

Amiodarone
5 mg/kg IVP, IO
Maximum 300 mg
May repeat x 1 Maximum 150 mg

Defibrillation
4 joules/kg

CPR x 2 min.

Sodium Bicarbonate 8.4%
1 mEq/kg IVP, IO

Possible Causes of Asystole / PEA:
- Hypoxemia
- Hypothermia
- Hypoglycemia
- Hypokalemia
- Hyperkalemia
- Acidosis
- Volume Depletion
- Tension Pneumothorax

Sodium Bicarbonate not indicated in children < 5 kg (11 lbs.)

Continue CPR, Epinephrine, Defibrillation

Zoll Defibrillation settings. Follow PALS Guidelines

Asystole / PEA

Pediatric IV/IO

Epinephrine 1:10,000
0.1 ml/kg IVP, IO
Repeat every 3 - 5 minutes
Maximum 10 ml (per dose)

Epinephrine 1:1,000
ET dose 0.1 ml/kg
Maximum 1 ml

Sodium Bicarbonate 8.4%
1 mEq/kg IVP, IO

Defibrillation
2 joules/kg

CPR x 2 min.

Pediatric IV/IO

V-Fib / Pulseless V-Tach

Defibrillation
2 joules/kg

CPR x 2 min.

Pediatric IV/IO

Asystole / PEA

Pediatric IV/IO

Epinephrine 1:10,000
0.1 ml/kg IVP, IO
Repeat every 3 - 5 minutes
Maximum 10 ml (per dose)

Identify Cause:
- Hypoglycemia: Dextrose 10%
5 ml/kg IVP, IO
boluses until patient awake &/or follow up blood sugar > 60 mg/dl
Maximum 100 ml
- Hypovolemia:
NS Fluid Bolus 20 ml/kg
- Hypoxia:
Oxygenation, ventilation
- Hypothermia:
- Tension Pneumothorax: Chest Decompression

Responsoft EMS Protocols
Dysrhythmias in children are uncommon. Causes are usually not cardiac related. Watch for signs of decreased cardiac output.

If history of heart (cardiac) problems and rate is greater than 220 bpm for infants or 180 bpm for children, then Supraventricular Tachycardia should be considered. Confirm that the child is unstable as indicated by hypotension and poor perfusion.

**Universal Pediatric Assessment**

Continuous **Cardiac Monitor**

Attempt to identify Cause

**Zoll Cardioversion settings. Follow PALS Guidelines**

Stable

Continue to reassess / Transport

Unstable

**Pediatric IV/IO**

May attempt **Valsalva Maneuver**

initially and after each drug administration if indicated

Perform continuous cardiac monitoring and print strip

**Adenosine**

0.1 mg/kg IVP, IO

Maximum 6 mg

2nd dose if needed 0.2 mg/kg IVP, IO

Maximum 12 mg

Pre-arrest

(No palpable BP, Altered mental status)

**Pediatric IV/IO**

for sedation

Midazolam (Versed)

0.1 mg/kg IVP, IO, IN

Maximum 2 mg per dose

**Cardioversion**

0.5 - 1 joules/kg

Repeat **Cardioversion**

2 joules/kg

If rhythm changes

Go to **Appropriate Protocol**

**Pediatric Tachycardia**
A Brief Resolved Unexplained Event (BRUE) is an episode occurring in a patient < 1 year of age that is frightening to the caretaker and includes one or more of the following features:

1. Apnea or change in breathing
2. Color change (blue, gray or red)
3. Change in muscle tone
4. Change in breathing and altered level of consciousness

In some instances, the caretakers may have administered rescue breaths or chest compressions.

Major risk factors associated with BRUE include:

1. Apnea
2. Pallor
3. Cyanosis
4. Feeding difficulties
5. Recent upper respiratory infections

The etiology of BRUE is varied. Causes range from mild illnesses to severe, life threatening diseases.

Focus history gathering on the following:

1. Complete medical history
2. Severity, nature and duration of the episode
3. Interventions provided by caretakers

Treat identifiable causes as appropriate

If BRUE is suspected, transport all patients to Nationwide Children’s Hospital.

1. If caretakers refuse transport, contact EMS Supervisor.
2. Please refer to Refusal of Treatment or Transport.

Previously named: Pediatric Acute Life Threatening Event (ALTE)
If patient is sedated, use **Capnography**

**Causes of Excited Delirium**
- Drug related: Cocaine, Amphetamines, Club Drugs
- Hallucinogens, Adverse Drug Reaction, Drug Withdrawal, Head Trauma, Hypoxia, Hypoventilation, Shock, Psychiatric, New drug, Off Drugs, Other Medical Delirium, Infection, Dementia

**Scene Safety**
- Treat suspected medical or trauma problems per appropriate protocol
  - Pediatric Unconscious/
  - Hypoglycemic
  - Pediatric Toxic Overdose
  - Pediatric Head Trauma

**Universal Pediatric Assessment**
- Attempt to remove patient from stressful environment
- Verbal techniques (reassurance, calm, establish rapport)
- Explain all movements and procedures. Look for a possible cause.

**Agitated & Combative**
- Patient Restraint
  - Do not attempt to subdue or restrain unless adequate personnel are present and law enforcement is on the scene. Evacuate if they are not.

**Patient Restraint**

**Ketamine**
- 1 mg/kg IVP, IO
- 3 mg/kg IM

If patient is 12 years or older, co-administer Midazolam (Versed).

**Agitated**
- Patient Restraint (if necessary)

**Patient Restraint**

**Midazolam (Versed)**
- 0.1 mg/kg IVP, IO, IM
  - Maximum 2 mg
- 5 mg IN

An alternative to Ketamine is: Midazolam. Midazolam should be used in patients in which Ketamine is contraindicated or ineffective or if there is suspicion that the agitation may be related to underlying seizure activity.
Fever in children is most often caused by viral infections (URI, bronchiolitis, some cases of pneumonia or meningitis), some are caused by bacterial infections (strep, otitis media, life-threatening pneumonia or meningitis, UTI).

Obtain history: Feeding, Previous illnesses, Degree of temperature, Medications or therapies administered, Immunizations.

**Universal Pediatric Assessment**

Strongly encourage transport for all patients under 6 months of age.

**Appropriate Protocol by Complaint**

Temperature greater than 100.4 F

**Children 6 months of age or older**

Ibuprofen 10 mg/kg PO

Maximum 600 mg
Delay in recognizing and quickly treating a state of shock results in a progression from compensated reversible shock to widespread multiple system organ failure to death.

Obtain history. If vomiting, diarrhea, or fever present, assess for hypovolemic shock secondary to dehydration. Remember, early signs of hypovolemia in children include the following:
- Tachycardia
- Tachypnea
- Agitation, restlessness
- Poor peripheral perfusion (capillary refill > 2 seconds, mottled cool skin)
- Hypotension is a LATE and ominous sign

Pediatric Multiple Trauma Protocol

Universal Pediatric Assessment

Cardiac Monitor

Pediatric IV/IO

Evidence or history of trauma?

Yes

Blood Glucose

< 60 mg/dl

Dextrose 10% 5 ml/kg IVP, IO boluses until patient awake &/or follow up blood sugar > 60 mg/dl Maximum 100 ml

> 60 mg/dl

Normal Saline Bolus 20 ml/kg (May repeat x 3 maximum)

No
**Universal Pediatric Assessment**

**IV Therapy**
Assess need for IV
Emergent or potentially emergent medical or trauma condition
0.9% NS for all infusions
NEVER use D5W.

Two (2) IV attempts in 90 seconds then IO
If unstable go directly to IO

Unsuccessful

Intraosseous
**Intraosseous Infusion EZ-IO (Proximal Tibia)**
**Intraosseous Infusion EZ-IO (Humerus)**
**Intraosseous Infusion EZ-IO (Distal Tibia)**
for life-threatening event for life-threatening event

Monitor infusion

---

Always be honest. Tell the child that the IV stick will hurt, but only for a short time. Do not promise there will only be 1 stick, or say that it won't hurt.

Common IV sites are: Hand, foot, scalp, forearm & antecubital sites. Hand: try not to use child’s dominant hand or hand child uses for sucking thumb. Consider immobilizing arm prior to initiating IV.

20 ml/kg as a bolus - may repeat twice. Consider administer via stopcock or IVP.
Pain assessment should be frequently evaluated using:
**FLACC-Revised Scale**

**Universal Pediatric Assessment**

Patient care according to Protocol based on Specific Complaint

Assess Pain severity

**Pediatric IV/IO**

If necessary

Contraindication to sedation?

Yes

Patient may have additional Fentanyl in 100 mcg doses to total additional Maximum of 200 mcg.

In case of major trauma, major thermal injuries and intubated patients, Maximum cumulative total dose of fentanyl permitted is 400 mcg.

100 mcg per bolus dose for all cases except first dose for RSI.

**Fentanyl** 1 mcg/kg IVP, IO

Maximum single dose 100 mcg

1.5 mcg/kg IN

May repeat original dose every 3 – 5 minutes

Maximum total 200 mcg

Monitor and reassess

No

Pulse Oximetry

May offer IN fentanyl earlier, for treatment of pain in appropriate patients. See below.

For severe / excruciating / painful discomfort caused from a fracture / dislocation / subluxation

Consider, if Fentanyl is not sufficient or ineffective:

**Ketamine** 0.2 mg/kg IVP, IO

Monitor and reassess
Scene Safety & BSI (body substance isolation)

**Pediatric Primary Assessment**
- **Pediatric Assessment-Medical**
- **Pediatric Assessment-Trauma**
  Consider use of the: Broselow™ Pediatric Emergency Tape

**Pediatric Airway**

**Spinal Injury Assessment**

**Documentation of Vitals Signs**
- per guideline
- (Temperature if appropriate)

Consider
- **Pulse Oximetry** & **Capnography**

**Nausea & Vomiting**
- Ondansetron (Zofran) ODT (oral)
  12 – 17 years of age >40 kg (88 lbs.) 4 mg
  No dosage for <40 kg
  Maximum 8 mg

Consider administering Zofran en route to hospital to avoid refusal of transport

**Appropriate Protocol**
Taking care of a neonate appears complicated due to the many steps needed. However, upon study of this algorithm, the steps are simple and can be carried out in a timely manner.

**Universal Patient Assessment**
(for mother)

- Dry infant and keep warm
- Bulb syringe suction mouth / nose

**Stimulate infant and note APGAR Score**

**Respirations present?**

- Yes
  - Cardiac Monitor / Heart rate
    - HR < 100
      - Go to “TOOLS” for APGAR Score
    - HR > 100
      - Reassess heart rate and APGAR Score
      - Give report to receiving Hospital

- No
  - BVM 30 seconds at 40-60 breaths per minute with 100% Oxygen

**Heart rate**

- HR < 60
  - Pediatric Airway / CPR
  - Pediatric IV/IO
  - Appropriate Dysrhythmia Protocol

- HR 60 - 100
  - Pediatric Airway Protocol
  - Reassess heart rate
  - HR 60 - 100
    - Continue Oxygen

- HR > 100
  - Monitor and reassess
  - HR > 100
    - Continue Oxygen

Newborns are 28 days or less
Seizures can be largely classified into 2 types, generalized and partial seizures. Generalized seizures involve both cerebral hemispheres, while partial seizures involve only one cerebral hemisphere.

Possible causes for seizures in children include:
- Noncompliance with medication(s) for treating epilepsy
- Febrile seizure
- Hypoglycemia
- Anoxia
- Meningitis or encephalitis
- Lead intoxication
- Poisoning or overdose
- Brain tumor
- Head trauma
- Reyes Syndrome

Responsoft EMS Protocols
Page 103
01/01/2019
Universal Pediatric Assessment

Spinal Injury Assessment

Cardiac Monitor

Pediatric IV/IO

Blood Glucose

Glucose < 60 mg/dl

Dextrose 10% IVP, IO
5 ml/kg
Maximum 100 ml

Until patient awake &/or glucose 60 mg/dl

Glucose 60 - 250 mg/dl

Naloxone (Narcan)
0.1 mg/kg IVP, IO, ET
0.2 mg/kg IN
Maximum 2 mg

Glucose > 250 mg/dl

Consider other causes:
Head injury, Overdose
Hypoxia

No Glucose > 250 mg/dl

Blood Glucose

No Glucose > 250 mg/dl

Normal Saline bolus
20 ml/kg

No Glucose < 60 mg/dl

Glucose < 60 mg/dl

Glucagon
25 mcg/kg IM, IN
Maximum 1 mg

Yes Reassess and monitor

View surroundings for reason patient is unconscious. Look for medication bottles, cleaning supplies, alcohol, etc. consider also possibilities due to fever, seizure, trauma, headache, etc. Obtain any previous medical history also.

Consider other causes:
Head injury, Overdose
Hypoxia

Yes Return to baseline?
Assessment is the same evaluating ABC’s including respiratory rate, and effort. Breath sounds and levels of respiratory distress if noticed. Infants and children can easily obstruct the upper airway due to causes including foreign bodies, croup, or epiglottitis, or EMS interventions. Crying can also increase work of breathing.

Assess ABC’s, respiratory rate, effort, & adequacy

Inadequate

Pulse Oximetry & Capnography

Adequate

Oxygen

Cardiac Monitor

Basic airway maneuvers:
Ventilate with bag mask device.
If airway needs controlled continue below:

Assess breath sounds bilaterally
If necessary suction

Obstructed airway per AHA guidelines
Direct laryngoscopy

Obstruction

Supplemental Oxygen

Positive respirations positive gag reflex

Oxygenate, Ventilate, Position, Reassess

Obstructed airway per AHA guidelines

Facial Trauma or swelling?
(Avoid cricothyrotomy if possible, with most medical patients)

Cricothyrotomy-Needle (Pediatric)
Patients < 10 years old

Unsuccessful

Supraglottic Airway

Pulseless & Apenic

Supraglottic Airway

Pulseless & Apenic

Intubation-Pediatric Oral (2 attempts only)

Intubation-Pediatric Oral (2 attempts only)

NOTE: Be aware of the differences between the infant, child and the adult patients. In the pediatric patient, the larynx is located more anterior and cephalad. The angle formed between the epiglottis and vocal cords is more acute in the infant and child. The tongue is relatively larger. Care must be taken not to hyper-ex tend the neck as the trachea can collapse during intubation. The occiput (back of the head) in children is larger and this will affect airway management and C-spine control. Padding under the shoulders will help with airway control and not compromise the C-spine. Also, baby teeth are poorly anchored and are easily dislodged.

NOTE: Be aware of the differences between the infant, child and the adult patients. In the pediatric patient, the larynx is located more anterior and cephalad. The angle formed between the epiglottis and vocal cords is more acute in the infant and child. The tongue is relatively larger. Care must be taken not to hyper-exten the neck as the trachea can collapse during intubation. The occiput (back of the head) in children is larger and this will affect airway management and C-spine control. Padding under the shoulders will help with airway control and not compromise the C-spine. Also, baby teeth are poorly anchored and are easily dislodged.
Pediatric Allergic Reaction

Allergic reaction can occur quickly in children due to the small size of the airway. Causes of an allergic reaction can include food, medications, insect stings, pollens and molds.

### Universal Pediatric Assessment

**Pediatric Airway Protocol**

**Epinephrine 1:1,000**

0.01 ml/kg IM

Maximum 0.3 ml

**Diphenhydramine**

1 mg/kg SLOWLY IVP, IO, IM, PO

Maximum 25 mg

PO Maximum 50 mg

**Dexamethasone**

0.6 mg/kg IVP, IO, IM, PO

Maximum 10 mg

May repeat in 10 minutes

Consider:

- **Epinephrine 1:1,000**
  - 0.01 ml/kg IM
  - Maximum 0.3 ml

- **Diphenhydramine (Benadryl)**
  - 1 mg/kg SLOWLY IVP, IO, IM, PO
  - Maximum 25 mg
  - PO Maximum 50 mg

- **Albuterol / Ipratropium (Atrovent)**
  - 2.5 mg & 0.5 mg / 5.5 ml saline
  - Nebulized. May repeat x 2
  - (Only administer if airway symptoms)

If wheezing:

- **Albuterol / Ipratropium (Atrovent)**
  - 2.5 mg & 0.5 mg / 5.5 ml saline
  - Nebulized. May repeat x 2

### Signs & Symptoms

- **Hives, rash, itching, nasal congestion, sneezing, throat tightness, hoarseness, coughing, nausea/vomiting, dizziness, tachycardia.**

- **Severe Reaction (Anaphylaxis)**
  - Shortness of breath, chest pain, stridor, syncope, hypotension, unconsciousness, death.

- **Respiratory Distress**
  - No respiratory component.
  - No tongue, lip, facial swelling, or hives

- **Mild/Moderate**
  - Rash only.
  - No respiratory component.

Reassess patient:

- **Pediatric Hypovolemic Shock**
  - Protocol

- **Cardiac Monitor**

- **Dysrhythmia**

- **Appropriate Cardiac Protocol**

- **Pediatric Respiratory Distress (Lower Airway)**

- **Hypotension**

- **Respiratory Distress**

- **Assist with Pt's prescribed Epinephrine Auto-Injector**
Lower Airway includes the trachea below the vocal cords, lungs and bronchioles.

**Universal Pediatric Assessment**

**Cardiac Monitor**

**Respiratory insufficiency**

No

**Position of patient comfort**

Yes

**Respiratory Distress (Wheezing)**

**Albuterol**
2.5 mg in 3 ml Saline
Mixed with
**Ipratropium**
0.5 mg 2.5 ml Saline
May repeat in 10 minutes

**Dexamethasone**
0.6 mg/kg
IVP, IO, IM, PO
Maximum 10 mg

If unresponsive to **Albuterol / Ipratropium**

**Epinephrine 1:1,000**
0.01 ml/kg IM
Maximum 0.3 ml
If given ET 0.1 mg/kg Max. 0.3 ml

If unresponsive to Epinephrine

**0.9 NS Fluid Bolus**
20 ml/kg

**Magnesium Sulfate**
50 mg/kg in 100 ml NS over 20 minutes, IV Infusion. Maximum 2 grams

EPINEPHRINE should be withheld in the following situations:
1. No previous history of Wheezing
2. Pulse rate greater than 180

For further reference see:
**Pediatric Lower Airway Disorders**

If received nebulized medications within previous 1 hour.

Epinephrine and MgSO4 can be given concurrent with EMS nebulized medications.
Universal Pediatric Assessment

Cardiac Monitor

Respiratory insufficiency
Decreased Level of consciousness

Yes

Pediatric Airway Protocol

Position of patient comfort
Suction nose if necessary

Cause of upper airway known?
Is child CALM?

No

Normal Saline Aerosol
3 ml Saline

Croup

Racemic Epinephrine 2.25%
0.5 ml nebulized
In 3 ml saline
May repeat once
Must be transported

Dexamethasone
0.6 mg/kg IVP, IO, IM, PO
Maximum 10 mg

Isolate

Epiglottitis

Site of Obstruction
Above vocal cords

Cause
Bacterial Infection

Age range
Generally older child (>2 yrs) but can occur at any age

Onset
Sudden (6-24 hours), fever may be first sign

Toxicity
Child appears very ill; often has high fever

Drooling
Common

Cough
Common

Croup

Site of Obstruction
Below vocal cords

Cause
Viral infection

Age range
Younger child (6 months-3 years)

Onset
24-72 hours

Toxicity
Mild to moderate, low-grade fever

Drooling
Infrequent

Cough
Rare “barky” or “seal-like”

Foreign Body

Site of Obstruction
Varies

Cause
Varies

Age range
Any (usually under 5 years and in adult years)

Onset
Sudden if upper airway

Toxicity
Not ill appearing, no fever

Drooling
May be present

Cough
Common, distinctive, choking, gagging

Upper Airway includes the oral and nasal cavities, pharynx, and trachea.
Perform scene size-up and ensure crew safety. Be careful of potential violent situation and be aware of biohazards.

**Universal Pediatric Assessment**

**Pediatric Airway** Protocol

**Pediatric IV/IO**

**Cardiac Monitor**

**Blood Glucose**

**Respiratory depression?**

**Smoke Inhalation / CO Poisoning**

Cyanide toxicity, closed space fire, smoke inhalation with decreased LOC and inadequate response to oxygen therapy?

**Carboxyhemoglobin Monitor**

RAD-57™

**Hypotension, Seizures, Ventricular dysrhythmias, or Mental status changes?**

**Appropriate Protocol**

**Dextrose 10%** IVP, IO

- 5 ml/kg
- Maximum 100 ml

Until patient awake &/or glucose 60 mg/dl

**Naloxone** 0.1 mg/kg IVP, IO, 0.2 mg/kg IN

- Maximum 2 mg

EMT may administer via IN only

**Naloxone** 0.2 mg/kg IN Max. 2 mg

**2 Indications:**

1. Suspected Cyanide Poisoning
2. **Smoke Inhalation** with 3 criteria met.
   a. Confined space smoke exposure
   b. Altered LOC
   c. Nasal/oral sooting or burns or **Suspected Cyanide Poisoning**

**Cyanokit**

- 70 mg/kg IVP, IO
- Infuse over 15 minutes

Make every effort to contact Poison Control if you feel that the patient does not need to transported. Note the instructions of Poison Control on the run sheet.

Contact Poison Control for information as needed.

**POISON CONTROL**

228-1323 or 1-800-222-1222

ENCODE NUMBER – 101 9 POISON
Burns many times are not life-threatening, but cause a significant amount of pain. Some types of burns are flame, scalds, steam, electrical, flash, tar and chemical burns. Consider transporting patient to burn center.

If burn < 10% body surface area (Lund-Browder) Cool down the wound with Normal Saline

Cover burn area with dry dressings. May cover body part with wet dressings if burn is limited to small area (<10%BSA) Consider transport for patients with burns involving the hands, face and genitalia (critical burns).

Flush area with water or Normal Saline for 10-15 minutes

For sedation Consider Midazolam (Versed)

0.1 mg/kg IVP, IO, IN

Maximum 2 mg per dose

for sedation due to significant 2nd and 3rd degree burns.
**Injury Signs & Symptoms**

**Tension Pneumothorax**
Severe respiratory distress, hypotension, tachycardia, decreased level of consciousness (LOC), cyanosis, absent breath sounds on affected side, distended external jugular veins

**Open Pneumothorax**
Respiratory distress, sucking wound

**Hemothorax**
Profound hypovolemic shock, decreased LOC, pallor, flat external jugular veins, respiratory distress

**Flail segment**
Severe respiratory distress, unequal chest movement, cyanosis, decreased LOC

---

**Universal Pediatric Assessment**

**Pediatric Airway Protocol**

**Oxygen** should be administered to maintain SpO2 >94%

**Spinal Injury Assessment**

**Vital Signs / Perfusion**

**Pediatric IV/IO**

---

**Signs & Symptoms of Hypovolemic Shock**

**Normal Saline Bolus**
20 ml/kg
Repeat as needed

Children presenting with significant chest trauma should, ideally, be transported directly to a Level I Pediatric Trauma facility.

---

**Rapid Transport**

Evaluate chest for the following injuries

**Tension pneumothorax**

**Hemothorax**

**Flail segment**

**Open pneumothorax**

---

**Focused history and physical exam**

**Transport**

---

**Do not remove any impaled or foreign object. Stabilize impaled object for transport. Carefully assess for and treat a life-threatening thoracic injury.**

---

**Reassess Pediatric Airway Protocol**

---

**Tension pneumothorax?**

**Chest Decompression**
Universal Pediatric Assessment

Spinal Injury Assessment
If indicated

Remove the child from the scene as soon as possible. Avoid pressing for detailed history of the event.

If patient’s condition allows, do not leave until Police arrive. EMS should report even if taken to Nationwide Children's Hospital.

Law enforcement should be called to the scene if the parents or other caregiver refuse transport after it has been deemed necessary by the Medic crew.

See: Child Abuse Clinical Standards

Report and carefully document ALL suspected cases of child abuse. Documentation should include size, shape, color, degree of healing, and location of each injury.

If indicated
Pediatric IV/IO

(Treat per appropriate protocol)

If indicated
Pediatric Airway Protocol

Identify individual county resources for child protective services.

These children should be transported to Nationwide Children's Hospital if at all possible. If the child is unstable due to injury, transport to the closest appropriate hospital.

Child abuse should be suspected when any of the following exist:
- History is inconsistent with the extent of injury or developmental age.
- The injury reflects an outline of an object or mode of infliction.
- There is a delay in seeking medical attention.
- There are other unexplained injuries in various stages of healing.
- The explanation seems vague or confused.

Children's Services should be notified on all cases of suspected abuse.

See: Phone Numbers

Child abuse should be suspected when any of the following exist:
- History is inconsistent with the extent of injury or developmental age.
- The injury reflects an outline of an object or mode of infliction.
- There is a delay in seeking medical attention.
- There are other unexplained injuries in various stages of healing.
- The explanation seems vague or confused.
Children are more likely to experience head injuries, because their heads are proportionally larger, and heavier, in comparison to the rest of their bodies.

Younger children frequently fall and injure their face, because of being clumsy when they first start walking. Older children suffer dental injuries from bike and skateboard accidents. Spinal injuries are not as common in children, but because of their larger head, are vulnerable to c-spine injury.

Indications for transport include loss of consciousness, change in state of consciousness, profuse vomiting, children under 2 years of age with large hematomas, gait disturbances, seizures, and pupillary changes.

Monitor and reassess
Perform a trauma assessment. Expose patient. Attempt to keep scene time to a minimum. Treat life threatening injuries as priority.

**REMEMBER**, shock in children is primarily recognized by:
- **TACHYCARDIA** - anxiety, restlessness
- **POOR PERIPHERAL PERFUSION** (cool, clammy skin with slow capillary refill, weak pulses)

If no improvement or vital signs deteriorate, repeat bolus as necessary. Inform hospital of responses to treatment and re-communicate any change.

For fractures, burns, etc.

**Universal Pediatric Assessment**

**Pediatric Airway Protocol**

**Spinal Injury Assessment**

**Pediatric IV/IO**

**NS Fluid Bolus**

If blood pressure is less than expected or shock symptoms present

20 ml/kg

Assess for tension pneumothorax or flail chest. Evaluate for neurological deficit. Do not restrict fluids in a child that has an inadequate BP or shock symptoms.

**Cardiac Monitor**

**Pediatric Pain Control Protocol**

For fractures, burns, etc.

For Sedation Consider

**Midazolam (Versed)**

0.1 mg/kg IVP, IO, IN

Maximum 2 mg per dose

See:

**Mucosal Atomizer Device (MAD)**

for IN dose

May repeat in 10 minutes For sedation with severe burns or fractures.
May be rarely associated with ventricular fibrillation. The effects of adenosine are antagonized by methylxanthines such as caffeine and theophylline. In their presence, larger doses may be required or adenosine may not be effective. Adenosine typically causes arrhythmias at the time of cardioversion. Generally these will last a few seconds or less and may include PVC’s, PAC’s, bradycardia, tachycardia, various degrees of AV block or transient asystole. Also, use with caution in patients with asthma as it may cause bronchospasm.
**Afrin (Oxymetazoline)**

**Indications**

**Epistaxis-Nosebleed**

- 0.05% - 2 - 3 puffs/nares on side of bleeding. Alternate dosing of impregnating cotton ball and packing into nose.

**Contraindications**

- Penetrating injury to eye or extrusion of scleral contents

**Adverse Reactions**

- Presence of uncontrolled hypertension.

**Precautions**

- Individual nasal spray containers. NOT TO BE REUSED!

**Medical Considerations**

- None
**Albuterol (Proventil, Ventolin)**

**Action:** Bronchodilator

**Advanced EMT can Administer Medication**

**Onset:** improvement within 5 min. Peak effect 2 hours

**Indications**

- Allergic Reaction/Anaphylactic Shock
- Respiratory Distress
- Toxic Exposure
- Pediatric Allergic Reaction
- Pediatric Respiratory Distress (Lower Airway)

**Contraindications**

- Hypersensitivity
- Use caution in patient’s with tachydysrhythmias and cardiovascular disorders

**Adult Dose**

2.5 mg in 3 ml Normal Saline, via nebulizer @ 6 L/M O₂

May Repeat twice.

**Pediatric Dose**

2.5 mg in 3 ml Normal Saline, via nebulizer @ 6 L/M O₂

May Repeat twice.

**Adverse Reactions**

- Cardiovascular: Tachycardia, Hypertension
- Central Nervous System: Tremors, Dizziness, Nervousness, Headache, Insomnia
- Ear, Nose, and Throat: Pharyngitis, Nasal Congestion
- Gastrointestinal: Nausea, Dyspepsia
- Respiratory: Bronchospasm, Cough, Bronchitis, Wheezing

**Precautions**

Should be used with caution in patients with cardiovascular disorders, especially coronary insufficiency, cardiac arrhythmias and hypertension, in patients with convulsive disorders, hyperthyroidism or diabetes mellitus.

**Medical Considerations**

Use of mouth piece is most effective route if patient is cooperative.
**Amiodarone (Cordarone)**

**Action:** Antiarrhythmic

**Onset:** Immediate

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**Indications**
- Chest Pain/MI | Post Resuscitation
- Premature Ventricular Contractions (PVC's)
- V-Fib/Pulseless V-Tach
- Wide Complex Tachycardia (V-Tach w/Pulse)
- Overdose
- Pediatric Pulseless Arrest

**Pharmacology**

**Amiodarone (Cordarone)**

**Contraindications**
- Hypersensitivity
- Patients with cardiogenic shock
- Marked sinus bradycardia
- 2nd or 3rd degree AV block unless functioning pacemaker is available

**Precautions**

**Body as a Whole:** Fever

**Cardiovascular:** Hypotension, Asystole/Cardiac Arrest/EMD, Cardiogenic Shock, CHF, Bradycardia, Ventricular Tachycardia, A-V Block

**Digestive System:** Nausea

**Adverse Reactions**

Like all antiarrhythmic agents, may cause a worsening of existing arrhythmias or precipitate a new arrhythmia. 2% of patients were reported to have respiratory distress syndrome (ARDS).

**Dosage**

**Adult Dose**

- **V-Fib / Pulseless V-Tach:** 300 mg Rapid IVP, IO
  - May repeat 150 mg
  - Life-Threatening Arrhythmias
  - Mix 150 mg in 100 ml of 0.9 NS over 10 minutes 15 mg/min.
  - IV Infusion

**Pediatric Dose**

- **5 mg/kg**
  - May repeat x 2 for refractory V-Fib.
  - Maximum single dose 300 mg
  - Maximum additional dose 150 mg

**Use large needle when drawing drug into syringe, and draw slowly. This will help prevent foaming.**
**Aspirin**

**Indications**
- Chest Pain/MI
- Extremity Trauma

**Action:** Blood modifier
**Onset:** Peak effect: 15 minutes to 2 hours

**Adverse Reactions**
- GI bleeding, stomach pain, nausea, vomiting, bronchospasm

**Contraindications**
- Ulcers, GI disorders, other bleeding disorders, allergy / hypersensitivity, Renal failure, decreased LOC

**Precautions**
- None

**Adult Dose**
- 324 mg chewable, PO (4 tablets)

**Pediatric Dose**
- None

Emphasis on EMT can Administer Medication.
**Action:** Anticholinergic
Increases heart rate

**Onset:** Immediate

**Indications**
- **Cardiac:** 0.5 - 1 mg IVP, IO Maximum 3 mg
  2 - 2.5 mg ET, repeat every 5 minutes Maximum 3 mg
  **Poisoning:** 2 - 5 mg IV, IO May repeat every 15 minutes

**Dosage**
- **Pediatric Dose**
  - 0.02 mg/kg IVP, IO
  - Minimum dose 0.1 mg,
  - Maximum single dose: 0.5 mg
  - Maximum total dose: Child 1 mg, Adolescent 3 mg

**Contraindications**
- Hypersensitivity, Glaucoma, Tachycardia; unstable cardiovascular status in acute hemorrhage, Obstructive disease

**Adverse Reactions**
- **Cardiovascular:** Palpitations, bradycardia (following low doses of atropine) Tachycardia (after higher doses)
  - **CNS:** Headache, Flushing, Nervousness, drowsiness, weakness, dizziness, fever,
  - Elderly may exhibit mental confusion or excitement to even small doses, larger doses,
  - Restlessness, Tremor
  - **Gastrointestinal:** Nausea, Vomiting, Heartburn

**Precautions**
- May produce drowsiness, dizziness or blurred vision. Use cautiously in patients with asthma or allergies. Use caution in Coronary artery disease, CHF, Cardiac arrhythmias, Tachycardia, Hypertension, Infants, small children, Debilitated patients with chronic lung disease

**Medical Considerations**
Use caution in patients with asthma, allergies
CAD, CHF, HTN, infants, small children, & persons with Down's syndrome
**Action:** Anesthetic for pre-intubation.

**Onset:** 30 - 60 seconds and lasts 30 - 60 minutes

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**Indications**

**Tooth Avulsion** (Tactical Protocol)

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**Adult Dose**

**Topical spray for one second**

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**Pediatric Dose**

**Topical spray for one second**

**Age 8 and older**

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**Contraindications**

Not suitable and should never be used for injection. Avoid eyes and inflamed tissue. Do not use if patient has allergies to Benzocaine or Tetracaine.

---

**Adverse Reactions**

Localized allergic reaction. Discontinue use if this happens.

---

**Precautions**

Try not to exceed a two second spray. Observe patient for any cyanosis and/or decreased pulse ox saturation indicating this condition. Refer to the Methemoglobinemia Protocol.

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**Medical Considerations**

None
**Calcium Chloride**

**Action**: Acts as activator in the transmission of nerve impulses and contraction of cardiac, skeletal, and smooth muscle.

**Onset**: Immediate

**Indications**

**Dialysis Patients in Cardiac Arrest**: 1 gm IVP, IO

**Overdose**: 0.5 gm IVP, IO every 3 - 5 minutes as needed for significant bradycardia

**Contraindications**

Patients with the risk of existing digitalis toxicity

**Adverse Reactions**

Rapid injection may cause tingling sensations, a calcium taste, or heat wave. Peripheral vasodilatation, local burning, or moderate fall in BP. If infiltration occurs, IV administration at the site should be discontinued at once.

**Precautions**

Injections should be made slowly through a small needle into a large vein to minimize venous irritation and avoid undesirable reactions.
**Indications**

**Toxic Exposure**

**Pediatric Toxic Overdose**

**Adult Dose**

5 grams in 200 ml 0.9% NS over 15 minutes
Infuse Wide Open

**Pediatric Dose**

Dose of 70 mg/kg
(Concentration after reconstitution is 25 mg/ml.)
Maximum 5 grams

**Contraindications**

Pregnancy-consult medical control, allergies to hydroxocobalamin or cyanocobalamin B-12

**Precautions**

None

**Adverse Reactions**

∅
**Indications**
- Allergic Reaction/Anaphylactic Shock
- Respiratory Distress
- Pediatric Allergic Reaction
- Pediatric Respiratory Distress (Lower Airway)
- Pediatric Respiratory Distress (Upper Airway)

**Dosage**

**Adult Dose**
- 10 mg IVP, IO, IM PO

**Pediatric Dose**
- 0.6 mg/kg IVP, IO, IM, PO
  - Maximum 10 mg

**Contraindications**
- Hypersensitivity, AIDS, TB

**Adverse Reactions**
- Cardiovascular: Myocardial rupture following recent M.I.
- Fluid & Electrolyte Disturbances: Fluid Retention, CHF, Potassium Loss, Hypokalemic Alkalosis, Hypertension
- Gastrointestinal: Peptic Ulcer, Perforation of the small and Large Bowel, Pancreatitis
- CNS: Convulsions, Vertigo, Headache, Psychic Disturbances
- Musculoskeletal: Muscle Weakness
- Other: Nausea, Hiccups

**Precautions**
- Psychic derangements may appear when used. Avoid injection into an infected site. The slower rate of absorption by intramuscular administration should be recognized. Possible aggravation of Diabetic Mellitus.

**Medical Considerations**
- None

**Action:** Anti-inflammatory

**Onset:** Peak effect 1 - 2 hours
**Dextrose (D10)**

**Action:** Natural sugar

**Onset:** Onset: 1 - 2 minutes

**Indications**
- Hyperglycemia/Hypoglycemia
- CVA/Unconscious
- Seizure
- Pediatric Pulseless Arrest
- Pediatric Hypovolemic Shock
- Pediatric Seizures
- Pediatric Unconscious/Hypoglycemic
- Pediatric Toxic Overdose

**Adverse Reactions**
Febrile response, Infection at injection site, Tissue necrosis, Venous thrombosis or phlebitis, Extravasation, Hypovolemia, Dehydration, Mental Confusion or unconsciousness. May produce allergic reactions in corn-sensitive persons. Use the largest available peripheral vein. Rapid infusion may cause a generalized flush.

**Medical Considerations**
- Do not use Dextrose if IV site is questionable.
- Perform blood glucose analysis prior to administration and 5-15 minutes after initial analysis.

**Dosage**

- **Adult Dose:**
  - **100 ml boluses until patient awake &/or**
  - follow up blood sugar > 60 mg/dl

- **Pediatric Dosage:**
  - **5 ml/kg** to boluses until patient awake &/or glucose > 60 mg/dl
  - Maximum 100 ml

**Precautions**
Inject slowly so that extravasation does not occur. If thrombosis occurs, injection should be stopped.

**Contraindications**
- Sub Q & IM injections, Intercerebral bleeding, Hemorrhagic CVA, cerebral edema, Delirium Tremors if patient dehydrated

**Advanced EMT can Administer Medication**
**Indications**

- Hyperglycemia/Hypoglycemia
- CVA/Unconscious
- Unconscious/Unknown
- Seizure
- Pediatric Pulseless Arrest
- Pediatric Hypovolemic Shock
- Pediatric Seizures
- Pediatric Unconscious/Hypoglycemic
- Pediatric Toxic Overdose

**Actions**

- Adult Dose: 25 g (50 ml of 50%) IVP, IO SLOWLY, Repeat as needed based on mental status and serial finger sticks
- Pediatric Dose: 1 ml/kg IVP, IO 25% (ages under 8 years)
  
  1 ml/kg IVP, IO 50% (8 years and over)

- Single dose Maximum 50 ml
  
  Repeat as needed based on mental status and serial finger sticks

**Contraindications**

- Sub Q & IM injections, Intercerebral bleeding, Hemorrhagic CVA, cerebral edema, Delirium Tremors if patient dehydrated, Diabetic coma while blood sugar is excessively high

**Adverse Reactions**

- Febrile response, Infection at injection site, Tissue necrosis, Venous thrombosis or phlebitis, Extravasation, Hypovolemia, Dehydration, Mental Confusion or unconsciousness.

- May produce allergic reactions in corn-sensitive persons. Use the largest available peripheral vein. Rapid infusion may cause a generalized flush.

- Inject slowly so that extravasation does not occur. If thrombosis occurs, injection should be stopped. Determine glucose level before administering the medication.

**Precautions**

- Use Dextrose 50% in place of Dextrose 10% during shortages

- Do not use Dextrose if IV site is questionable.

- Perform blood glucose analysis prior to administration and 5-15 minutes after initial analysis.

- Onset: 1 - 2 minutes
Although seizures may be brought under control promptly with a single 10 mg dose, a significant proportion of patients may experience a return to seizure activity. It may become necessary to re-administer the drug. The cumulative maximum dose should not exceed 30 mg. The interval between doses should be no less than 10 minutes.

**Toxic Exposure**
(Nerve Agent / Organophosphate Poisoning)

**Adult Dose**
10 mg IM by auto injector

**Pediatric Dose**
∅

IV administration of Diazepam with the Auto Injector.
Hypersensitivity to drug, Acute narrow angle glaucoma and open angle glaucoma.

**Most Common**: Drowsiness, fatigue and ataxia (Uncoordinated movement is due to a muscle control problem). Venous thrombosis and phlebitis at site of injection. **Less Frequent**: CNS: confusion, depression, dysarthria, headache, slurred speech, syncope, tremor, vertigo. GI: nausea **Cardiovascular**: bradycardia, cardiovascular collapse, hypotension **EENT**: blurred vision **Skin**: urticaria, skin rash **Other**: hiccups

**Precautions**

**Contraindications**
Hypersensitivity to drug, Acute narrow angle glaucoma and open angle glaucoma.

**Indications**

**Adverse Reactions**

**Medical Considerations**

Extreme caution must be exercised with individuals with COPD or unstable cardiovascular status.
A significant proportion of patients experience a return to seizure activity, due to short-lived effect of drug. Hypotension or weakness has occurred in some patients particularly when used with narcotics, barbiturates, or alcohol. Lower doses should be used for elderly and debilitated patients.

### Precautions

- According to the American Academy of Pediatrics, use of midazolam should be avoided in children younger than 12 months of age, as it has not been adequately studied in this age group.

### Adverse Reactions

- **CNS:** Confusion, headache, slurred speech, syncope, tremor, vertigo
- **Gastrointestinal:** Nausea
- **Cardiovascular:** Bradycardia, cardiovascular collapse, hypotension
- **EENT:** Blurred vision **Skin:** Urticaria, skin rash **Other:** Hiccups, anxiety, hallucinations, increased muscle spasticity, rage

### Use Valium in place of Midazolam (Versed) during shortages

### Contraindications

- Hypersensitivity, glaucoma

### Contraindications

- Bradycardia
- Narrow Complex Tachycardia (PSVT)
- Wide Complex Tachycardia (V-Tach w/Pulse)
- Behavioral Seizure
- Obstetric Emergencies-Eclampsia
- Pediatric Bradycardia
- Pediatric Tachycardia
- Pediatric Pain Control
- Pediatric Febrile Seizures
- Pediatric Seizures
- Pediatric Burns
- Pediatric Multiple Trauma
- Intubation-Pediatric Oral
- Rapid Sequence Intubation (RSI)

### Adult Dose

- 5 mg IVP, IO Slowly  Maximum 20 mg

### Pediatric Dose

- $0.2 \text{ mg/kg} \ IV, IO \ Slowly  
  Maximum 10 mg

### Action

- Anticonvulsant
- Sedative

### Advanced-EMT can Administer Medication

### Onset

- Onset: 1 – 5 minutes
- Peak effect: 1 – 2 hours
**Diphenhydramine (Benadryl)**

**Action:** Antihistamine

**Onset:** < 15 min.  
Peak effect 1 - 4 hours

---

**Indications**

- **Adult Dose:**
  - 50 mg IVP, IM, IO, PO
  - Over 1 – 2 minutes watch for signs of hypotension  
  - No repeat dose

- **Pediatric Dose:**
  - 1 mg/kg Slow IVP, IO, IM  
  - Maximum 25 mg
  - 1 mg/kg PO  
  - Maximum 50 mg

---

**Contraindications**

- Hypersensitivity, Nursing mothers

---

**Adverse Reactions**

- Cardiovascular: Hypotension, Headache, Palpitations, Tachycardia, extrasystoles
- CNS: Sedation, Sleepiness, Dizziness, Fatigue, Confusion, Restlessness, Excitation, Nervousness, Tremor, Irritability, Blurred Vision, Vertigo, Tinnitus, Convulsions
- Gastrointestinal: Nausea, Vomiting, Diarrhea
- Respiratory: Thickening of Bronchial Secretions, Tightness of Chest and Wheezing, Nasal Stuffyness

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**Precautions**

- Has Atropine-like action and should be used with caution in patients with a history of bronchial asthma, increased intraocular pressure, cardiovascular disease or hypertension. Use caution in patients with lower respiratory disease, including asthma

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**Medical Considerations**

- None
Protect from exposure to light. DO not use if discolored or contains precipitate. Use EPINEPHRINE with caution in any patient who has used an aerosol bronchodilator within the past 4 hours. Do not use EPINEPHRINE in any patient who has repeatedly used an aerosol bronchodilator within the past 4 hours. Use EPINEPHRINE with caution in males over the age of 35 or in those patients with known history of hypertension, thyroid disease, and angina.
**Indications**
- Asystole/PEA
- V-Fib/Pulseless V-Tach
- Allergic Reaction/Anaphylactic Shock
- Pediatric Bradycardia
- Pediatric Pulseless Arrest

**Contraindications**
- Known Hypersensitivity

**Adverse Reactions**
- Cardiac Arrhythmias and excessive rise in blood pressure.
- **Other**: Cerebral Hemorrhage, Hemiplegia, Subarachnoid Hemorrhage, Anginal Pain

**Precautions**
- Protect from light. Do not use if discolored or contains precipitate.

**Onset**: < 5 minutes

**Pharmacology**

**Cardiovascular**
- 1 mg IVP, IO every 3 - 5 min. (2 - 2.5 mg ET every 3 - 5 min.)
- Maximum of 5 doses (5 mg) total
- **Anaphylaxis**: 0.5 mg (5 ml) IVP, IO

**Pediatric Dose**
- Cardiovascular: 0.1 ml/kg IVP, IO
- Maximum 10 ml (per dose)
- Repeat every 3 - 5 minutes

**Medical Considerations**
- Be sure to flush IV tubing well before and/or after use of Sodium Bicarbonate

**Responsoft EMS Protocols**

Page 135

01/01/2019
**Epinephrine 1:1,000**

**Action:** Sympathomimetic & Cardiac stimulant

**Onset:** Immediate

**Indications:**
- Bradycardia
- Post Resuscitation
- Non-Traumatic Shock/Dehydration
- Sepsis
- Allergic Reaction-Severe/Anaphylactic Shock
- Pulmonary Edema/CHF
- Neurological Trauma (Head)

**Contraindications:**
- Known Hypersensitivity, Glaucoma

**Precautions**:
- Protect from exposure to light. DO not use if discolored or contains precipitate.

**Adult Dose**:

**Epinephrine Drip:** 1 mg/100 ml 2 – 10 mcg/min.

**Pediatric Dose**:

- None

**Adverse Reactions**:
- Anxiety, Headache, Fear, and Palpitations. Repeated injections can result in necrosis at injection sites

**Medical Considerations**:

- None
**Etomidate (Amidate)**

**Action:** Non-barbiturate, hypnotic agent. No analgesia

**Onset:** 30 - 60 seconds

**Duration:** 10 - 15 minutes

**Indications:**
- Rapid Sequence Intubation (RSI)

**Contraindications:**
- Known hypersensitivity

**Adverse Reactions:**
- Transient Venous Pain, Myoclonus, Trimus (clenched jaw)
- Cardiovascular: Hypertension, Hypotension, Tachycardia, Bradycardia, and Other Arrhythmias
- Respiratory: Hyperventilation, Hypoventilation, Apnea for Short Duration, Laryngospasm, Hiccups and Snoring
- Gastrointestinal: Nausea, Vomiting

**Precautions:**
- Not recommended for use for children under the age of 10 years.
- Not recommended in obstetrics

**Advantages:**
- Does not affect BP
- Decreases intracerebral pressure
- Minimal respiratory depression

**Dosage:**
- **Adult Dose:**
  - 0.3 mg/kg IVP, IO SLOWLY (over 30 - 60 seconds)
  - Maximum 20 mg

- **Pediatric Dose:**
  - 0.3 mg/kg IVP, IO SLOWLY (over 30 - 60 seconds)
  - Do not use in children age 8 or younger

**Use Etomidate in place of Ketamine (Ketalar) during shortages**
**Fentanyl (Sublimaze)**

**Action:** Narcotic analgesic

**Indications**
- Chest Pain/MI
- Pain Control
- Pulmonary Edema/CHF
- Pediatric Pain Control
- Rapid Sequence Intubation (RSI)

**Precautions**
- Use caution in patients with head injuries and elevated ICP. Use caution with bradycardia, COPD and decreased respiratory reserve patients. Also patients using narcotics. Fentanyl should be reduced in elderly and debilitated patients. Also, patients with elevated BP with or without pre-existing hypertension. Fentanyl in high doses (> 2-3 mcg/kg) can result in "stiff chest" with inability to ventilate patient. Stiff chest is treated with IV succinylcholine and intubation.

**Medical Considerations**
- Use caution when administering Fentanyl to elderly and debilitated patients, or patients with limited pulmonary reserve.

**Contraindications**
- Known intolerance to drug.

**Respiratory:**
- Respiratory Depression
- Apnea
- Laryngospasm

**Cardiovascular:**
- Bradycardia
- Hypertension
- Hypotension

**CNS:**
- Dizziness
- Blurred vision

**Gastrointestinal:**
- Nausea & Vomiting

**Other:**
- Rigidity
- Diaphoresis

**Dosage Guide**

**Adult Dose**
- Pain: 1 mcg/kg IVP, IO every 3 - 5 minutes for pain
- 100 mcg Maximum per dose, Maximum Total 200 mcg
- RSI: Sedation for Transportation: 2 mcg/kg

**Pediatric Dose**
- Pain: 1 mcg/kg IVP, IO every 3 - 5 minutes for pain
- 100 mcg Maximum per dose, Maximum Total 200 mcg
- RSI: Sedation for Transportation: 2 mcg/kg

**Preparation**
- See Pain Control & Pediatric Pain Control for additional dosing

**Contraindications**
- Use caution when administering Fentanyl to elderly and debilitated patients, or patients with limited pulmonary reserve.

**Pharmacology**
- Fentanyl (Sublimaze)

**Onset:** Almost immediate
- Maximal analgesic & respiratory effect may take several minutes.

**Advanced EMT can Administer Medication (Pain control only)**
**Indications**

Hyperglycemia/Hypoglycemia
- CVA/Unconscious
- Seizure
- Esophageal Foreign Body
- Pediatric Unconscious/Hypoglycemic

**Adult Dose**

**Hypoglycemia**: 1 mg IM (Slowly), IN
(reassess blood glucose in 10 minutes < 60 repeat)

**Esophageal Foreign Body**: 1 mg IVP

**Pediatric Dose**

25 mcg/kg IM, IN
Maximum 1 mg (1,000 mcg)

**Contraindications**

Hypersensitivity, Hyperglycemia, allergies to beef or porcine proteins, insulinoma

**Adverse Reactions**

Nausea, Vomiting, especially with doses above 1 mg or rapid injection. Increase in Blood Pressure and Pulse Rate May Occur. This May Require Therapy for Patients with History of Coronary Artery Disease. Allergic Reactions May Occur in Rare Cases

Caution should be observed in diabetic patients or in elderly patients with known cardiac disease to inhibit gastrointestinal motility

**Precautions**

Do not mix with saline

**Onset**: Patient should respond within 15 minutes

Advanced EMT can Administer Medication
Behavioral Emergencies

**Indications**

- 5 mg IM
- Age > 16 years old

**Adult Dose**

**Pediatric Dose**

**Contraindications**

- Hypersensitivity to the drug, Seizures, Hemodynamic instability, Parkinson's

**Adverse Reactions**

- CNS: Extrapyramidal reactions, restlessness, anxiety, agitation, lethargy, fatigue, weakness, tremor, headache, confusion, vertigo, grand mal seizures
- Cardiovascular: Tachycardia, ECG changes, hypotension
- GI: Dry mouth, nausea & vomiting, diarrhea
- Other: Blurred vision

**Precautions**

- Patient with arrhythmia or seizures

**Use Haldol in place of Ketamine (Ketalar) during shortages**

**Onset:** 20 – 30 minutes IM

**Pharmacology**

- Blocks CNS dopamine receptors

**Action:**

- CNS: Extrapyramidal reactions, restlessness, anxiety, agitation, lethargy, fatigue, weakness, tremor, headache, confusion, vertigo, grand mal seizures
- Cardiovascular: Tachycardia, ECG changes, hypotension
- GI: Dry mouth, nausea & vomiting, diarrhea
- Other: Blurred vision
**Ibuprofen (Motrin, Advil)**

**Action:** Inhibits prostaglandin synthesis

**Onset:** 0.5 – 2.5 hours

**Indications**

**Pediatric Fever**

**Adult Dose**

- Children 6 months of age or older
  - 10 mg/kg PO
  - Maximum 600 mg

**Pediatric Dose**

**Contraindications**

- Hypersensitivity: Patients who have experienced asthma, urticaria, or other allergic-type reactions after taking aspirin or other NSAIDs.

**Adverse Reactions**

- Cardiovascular: Edema, fluid retention
- CNS: Dizziness, headache, nervousness
- Skin: Rash, pruritus
- Gastrointestinal: Epigastric pain, nausea/vomiting, abdominal cramps or pain, indigestion

**Precautions**

None

**Responssoft EMS Protocols**

Page 141

01/01/2019
**Ipratropium (Atrovent)**

**Action:** Bronchodilator

**Advanced EMT can Administer Medication**

**Onset:** 1 – 3 minutes

**Peak effect:** 1.5 - 2 hours

**Indications**

- Allergic Reaction/Anaphylactic Shock
- Respiratory Distress
- Toxic Exposure
- Pediatric Allergic Reaction
- Pediatric Respiratory Distress (Lower Airway)

**Contraindications**

- Hypersensitive to any other components of the drug product or to atropine or its derivatives

**Adverse Reactions**

- **Cardiovascular:** Palpitations CNS: Nervousness, Dizziness, Headache
- **Gastrointestinal:** Nausea, Vomiting, Gastrointestinal Distress **Musculoskeletal:** Tremor
- **Ocular:** Blurred Vision
- **Oral:** Dry Mouth
- **Respiratory:** Cough, Exacerbation of Symptoms

**Pediatric**

- 0.5 mg / 2.5 ml Normal Saline, via nebulizer @ 6 L/M O₂
- mix with dose of Albuterol May repeat x 2 (Ipratropium may be used alone, if patient’s Albuterol inhaler has been used multiple times)

**Precautions**

- Narrow-Angle Glaucoma

**Medical Considerations**

- None
Resuscitative equipment should be ready for use. IV dose should be administered over 1 minute. More rapid administration may result in respiratory depression or apnea and enhanced pressor response. Use caution in the chronic alcoholic and the acutely alcohol-intoxicated patient.

**Cardiovascular:** BP and pulse rate are frequently elevated following administration. Hypotension and bradycardia have been observed. Arrhythmia has also occurred.

**Gastrointestinal:** Nausea / vomiting; increased salivation

**Neurological:** Enhanced skeletal muscle tone may be manifested by tonic and clonic movements sometimes resembling seizures.

**Respiratory:** Although respiration is frequently stimulated, severe depression of the respiration or apnea may occur following rapid IV administration of high doses. Laryngospasms and other forms of airway obstruction have occurred.

Those whom a significant elevation of blood pressure would constitute a serious hazard and in those who have shown hypersensitivity to the drug.

**Indications**

**Behavioral Pain Control**

**Rapid Sequence Intubation (RSI)**

**Pediatric Behavioral Emergencies**

**Pediatric Pain Control**

**Action:** Non-barbiturate anesthetic

**Onset:** IV 30 seconds – 2 minutes

**IM 3 – 4 minutes**

**Adult Dose**

**Pain Control:**

\[
0.2 \text{ mg/kg IVP, IO}
\]

**Combative Patient:**

\[
1 \text{ mg/kg IVP, IO or } 3 \text{ mg/kg IM}
\]

**MUST CO-ADMINISTER MIDAZOLAM 2 mg IVP, IO, IM**

**RSI:**

\[
1 \text{ mg/kg IVP, IO}
\]

Ketamine reduces bronchospasm

**Pediatric Dose**

**Pain Control:**

\[
0.2 \text{ mg/kg IVP, IO}
\]

**Combative Patient:**

\[
1 \text{ mg/kg IVP, IO or } 3 \text{ mg/kg IM}
\]

**For patients 12 years and older must co-administer Midazolam (Versed) 0.1 mg/kg IV/IO/IM to Maximum of 2 mg.**

**RSI:**

\[
1 \text{ mg/kg IVP, IO}
\]

Ketamine reduces bronchospasm

**Contraindications**

Monitor vital signs frequently.

Use caution with elderly and pediatric patients and use low end of dosing range.

**Precautions**

Resuscitative equipment should be ready for use. IV dose should be administered over 1 minute. More rapid administration may result in respiratory depression or apnea and enhanced pressor response. Use caution in the chronic alcoholic and the acutely alcohol-intoxicated patient.

**Pharmacology**

Ketamine (Ketalar) is a non-barbiturate anesthetic with rapid onset and a short duration of action. It is often used for rapid sequence intubation (RSI) and pain control. Ketamine reduces bronchospasm.

**Indications**

- **Behavioral Pain Control**
- **Rapid Sequence Intubation (RSI)**
- **Pediatric Behavioral Emergencies**
- **Pediatric Pain Control**

**Dosage**

- **Adult Dose**
  - **Pain Control:** 0.2 mg/kg IVP, IO
  - **Combative Patient:** 1 mg/kg IVP, IO or 3 mg/kg IM
  - **MUST CO-ADMINISTER MIDAZOLAM 2 mg IVP, IO, IM**
  - **RSI:** 1 mg/kg IVP, IO
  - Ketamine reduces bronchospasm

- **Pediatric Dose**
  - **Pain Control:** 0.2 mg/kg IVP, IO
  - **Combative Patient:** 1 mg/kg IVP, IO or 3 mg/kg IM
  - **For patients 12 years and older must co-administer Midazolam (Versed) 0.1 mg/kg IV/IO/IM to Maximum of 2 mg.**
  - **RSI:** 1 mg/kg IVP, IO
  - Ketamine reduces bronchospasm

**Adverse Reactions**

**Cardiovascular:** BP and pulse rate are frequently elevated following administration. Hypotension and bradycardia have been observed. Arrhythmia has also occurred.

**Gastrointestinal:** Nausea / vomiting; increased salivation

**Neurological:** Enhanced skeletal muscle tone may be manifested by tonic and clonic movements sometimes resembling seizures.

**Respiratory:** Although respiration is frequently stimulated, severe depression of the respiration or apnea may occur following rapid IV administration of high doses. Laryngospasms and other forms of airway obstruction have occurred.

**Contraindications**

Those whom a significant elevation of blood pressure would constitute a serious hazard and in those who have shown hypersensitivity to the drug.

**Precautions**

- Resuscitative equipment should be ready for use. IV dose should be administered over 1 minute. More rapid administration may result in respiratory depression or apnea and enhanced pressor response. Use caution in the chronic alcoholic and the acutely alcohol-intoxicated patient.

**Medical Considerations**

Monitor vital signs frequently.

Use caution with elderly and pediatric patients and use low end of dosing range.
Lidocaine (Xylocaine)

**Action:** Antiarrhythmic

**Onset:** 30 - 90 seconds

**Use Lidocaine in place of Amiodarone during shortages**

### Indications
- Intraosseous (Humerus)
- Intraosseous (Distal Tibia)
- Intraosseous (Proximal Tibia)
- Intubation-Pediatric Oral

### Adverse Reactions
- Cardiovascular: Bradycardia, Hypotension, and Cardiovascular Collapse Which May Lead to Cardiac Arrest
- CNS: Lightheadedness, Nervousness, Apprehension, Euphoria, Confusion, Dizziness, Drowsiness, Tinnitus, Blurred or Double Vision, Vomiting, Sensations of Heat, Cold or Numbness, Twitching, Tremors, Convulsions, Unconsciousness, Respiratory Depression, and Arrest.
- Other: Allergic Reactions as a Result of Sensitivity to Lidocaine are Extremely Rare. There have been cases of Permanent Injury to Extraocular Muscles Requiring Surgical Repair

### Precautions
- Use caution in patients with severe liver or kidney disease because accumulation of the drug or metabolites may occur. Use caution in patients with hypovolemia, severe CHF, shock and all forms of heart block. Elimination of ventricular ectopic beats without prior acceleration in heart rate may promote more frequent ventricular arrhythmias or complete heart block. Dosage for pediatric and debilitated and/or elderly patients should be reduced.

**Known hypersensitivity, Stokes-Adams Syndrome, Wolff-Parkinson-White Syndrome, or severe degrees of sinoatrial, atrioventricular or intraventricular block in the absence of an artificial pacemaker**

### Adult Dosage
- Intraosseous (Adult): 50 mg IO
  - (For awake patient before any fluids or medications administered)
  - When replacing Amiodarone: 1 - 1.5 mg/kg IVP, IO
  - May repeat 0.5 - 0.75 mg/kg repeat in 5 - 10 minutes 3 mg/kg total
  - Maintenance Infusion: 1 g 250 ml 1 – 4 mg/min

### Pediatric Dosage
- Intraosseous (Pediatric): 0.5 mg/kg Maximum 20 mg
  - When replacing Amiodarone: 1 mg/kg IVP, IO
  - May repeat in 15 minutes

### Intraosseous (Proximal Tibia)

### Intubation-Pediatric Oral

### Contraindications
- Known hypersensitivity, Stokes-Adams Syndrome, Wolff-Parkinson-White Syndrome, or severe degrees of sinoatrial, atrioventricular or intraventricular block in the absence of an artificial pacemaker

### Medical Considerations
- **Observe closely for drug toxicity**
- Signs include:
  - Dizziness, confusion, delirium, seizures

**Responsoft EMS Protocols**

Page 144

01/01/2019
**Action**: Electrolyte replenished

**Onset**: Immediate

Lasts about 30 minutes

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**Indications**:

- **Cardiac**: 2 grams IVP, IO
- **Asthma**: 2 grams/100 ml NS IV Infusion over 20 minutes
- **OB Emergencies-Eclampsia**: 4 grams
  - IV Infusion over 20 – 30 minutes

**Pediatric Dose**:

- **Asthma**: 50 mg/kg /100 ml NS IV Infusion over 20 minutes
  - Maximum 2 grams

**Contraindications**:

- Heart block or myocardial damage
- Known hypersensitivity or dialysis patients

**Adverse Reactions**:

- Flushing, Sweating, Lowered Blood Pressure, Hypothermia, Stupor and Respiratory Depression. Hypocalcemia, Circulatory Collapse, Cardiac/and CNS depression

**Medical Considerations**:

- Not compatible with Sodium Bicarbonate.
- When given for eclampsia watch respirations closely.

**Precautions**:

- Use caution on renal impairment patients because drug is solely removed by the kidneys. Clinical indications of a safe dosage regimen include the presence of the patellar reflex (knee jerk) and absence of respiratory depression. When barbiturates, narcotics, or other hypnotics are given in conjunction with Magnesium, their dosage should be adjusted because of the additive central depressive effects.

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**Pharmacology**

**Responsoft EMS Protocols**

Page 145

01/01/2019
Methylprednisolone (Solu-Medrol)

**Action:** Anti-inflammatory steroid

**Onset:** Onset: 1 – 2 hours

**Use Solu-Medrol in place of Dexamethasone (Decadron) during shortages**

- **Indications**
  - Respiratory Distress
  - Pediatric Allergic Reaction
  - Pediatric Respiratory Distress (Lower Airway)
  - Pediatric Respiratory Distress (Upper Airway)

- **Adult Dose**
  - 125 mg IVP, IO Slowly

- **Pediatric Dose**
  - 2 mg/kg IVP, IO
  - Maximum 125 mg

- **Contraindications**
  - Hypersensitivity, GI Bleed, Severe Infection

- **Adverse Reactions**
  - **Fluid & Electrolyte Disturbances:** CHF in susceptible patients, HTN
  - **Musculoskeletal:** Weakness
  - **Neurological:** Convulsions, headache, vertigo
  - **Metabolic:** Nausea & vomiting
  - **Cardiovascular:** Arrhythmias, hypotension **Skin:** Sweating

- **Precautions**
  - Nonspecific ulcerative colitis, impending perforation or abscess or other infection. Peptic ulcer, renal insufficiency, hypertension, osteoporosis, myasthenia gravis (weakness of muscles)

**Medical Considerations**

None

Responsoft EMS Protocols

Page 146

01/01/2019
**Midazolam (Versed)**

**Action:** Sedative, Amnesic, Short acting benzodiazepine CNS depressant

**Advanced EMT can Administer Medication**

**Onset:** 2 - 5 minutes

**Indications**
- Bradycardia
- Narrow Complex Tachycardia (PSVT)
- Wide Complex Tachycardia (V-Tach w/Pulse)
- Behavioral
- Seizure
- Obstetric Emergencies-Eclampsia
- Pulmonary Edema/CHF
- Pediatric Bradycardia
- Pediatric SVT
- Pediatric Behavioral Emergencies
- Pediatric Seizures
- Pediatric Burns
- Pediatric Multiple Trauma
- Intubation-Pediatric Oral
- Rapid Sequence Intubation (RSI)

**Sedation:** 2 mg IVP, IO or 5 mg IN

**Seizure:** 2 mg IVP, IO or 10 mg IN (5 mg per nostril)

**Behavioral:** 2 mg IVP or 5 mg IN, or 2 mg IM

**RSI:** 2 mg post intubation Maximum 2 mg IVP, IO

May repeat every 20 minutes x 2 as needed to maintain sedation.

**Seizure, Sedation:** 0.1 mg/kg IVP, IO, (See: MAD for IN dosing)

**RSI:** 0.1 mg/kg IVP, IO post intubation Maximum 2 mg

May repeat every 20 minutes x 2 if needed to maintain sedation.

**Adult Dose**

**Pediatric Dose**

Hypersensitivity, Benzodiazepines are contraindicated in patients with acute narrow-angle glaucoma.

**Adverse Reactions**
- Fluctuations in Vital Signs were most Frequently seen. Decreased Tidal Volume and/or Respiratory Rate, Apnea, Variations in Blood Pressure

**Contraindications**
- Consider reducing the dose on elderly & debilitated patients. These patients may take longer to recover from drug. Monitor Respiratory status.

**Precautions**
- IV doses should be decreased for elderly and debilitated patients. Midazolam does not protect against increase in intracranial pressure or against heart rate rise and/or blood pressure rise associated with endotracheal intubation under light general anesthesia.

**Indications**
- Advanced EMT can Administer Medication

**Seizure:** 2 mg IVP, IO or 5 mg IN (5 mg per nostril)

**Behavioral:** 2 mg IVP or 5 mg IN, or 2 mg IM

**RSI:** 2 mg post intubation Maximum 2 mg IVP, IO

May repeat every 20 minutes x 2 as needed to maintain sedation.

**Seizure, Sedation:** 0.1 mg/kg IVP, IO, (See: MAD for IN dosing)

**RSI:** 0.1 mg/kg IVP, IO post intubation Maximum 2 mg

May repeat every 20 minutes x 2 if needed to maintain sedation.

**Contraindications**
- Hypersensitivity, Benzodiazepines are contraindicated in patients with acute narrow-angle glaucoma.

**Adverse Reactions**
- Fluctuations in Vital Signs were most Frequently seen. Decreased Tidal Volume and/or Respiratory Rate, Apnea, Variations in Blood Pressure

**Precautions**
- IV doses should be decreased for elderly and debilitated patients. Midazolam does not protect against increase in intracranial pressure or against heart rate rise and/or blood pressure rise associated with endotracheal intubation under light general anesthesia.
**Morphine**

**Action:** Narcotic analgesic

**Onset:** Onset: 2 - 3 minutes

**Advanced EMT can Administer Medication**
(Pain control only)

**Use Morphine in place of Fentanyl (Sublimaze) during shortages**

**Indications**
- Chest Pain/MI
- Pain Control
- Pulmonary Edema/CHF
- Pediatric Pain Control
- Rapid Sequence Intubation (RSI)

**Adult Dose**
- 2 - 4 mg IVP, IO
- every 3 - 5 minutes until desired affect
- **RSI:** 0.2 mg/kg IVP, IO
- Maximum 10 mg

**Pediatric Dose**
- 0.1 mg/kg IV, IO
- Maximum 10 mg

**Contraindications**
- Hypersensitivity, acute abdominal conditions, head injury, convulsive disorders, hypovolemia, Do not use if patient having active asthma episode

**Adverse Reactions**
- **Major hazards** are Respiratory Depression and lesser degree circulatory depression. Respiratory Arrest, Shock and Cardiac Arrest have occurred, particularly with overdose or rapid IV administration.
- **Cardiovascular:** Tachycardia, Bradycardia, Palpitation, Faintness, Syncope, and Orthostatic Hypotension
- **CNS:** Euphoria, Dysphoria, Weakness, Headache, Agitation, Tremor, Uncoordinated muscle movements, Hallucinations and Disorientation, visual Disturbances
- **Allergic:** Reactions to Opiates, Urticaria, Anaphylactoid Reactions
- **Other:** Face Sweating, Local Tissue Irritation and pain

**Precautions**
- Administer with caution and the initial dose should be reduced in patients with convulsive disorders, significant hepatic or renal impairment, fever, hypothyroidism, Addison’s disease, ulcerative colitis, prostatic hypertrophy, recent gastrointestinal or urinary surgery, and in the very young or elderly or debilitated patients. May obscure findings if used in patients with acute abdominal conditions. Use caution in patients with Supraventricular Tachycardias. May aggravate patients with preexisting convulsive disorders, may occur in patients without convulsive disorders.
Several instances of Hypotension, Hypertension, Ventricular Tachycardia and Fibrillation, and Pulmonary Edema have been reported. Most of whom had pre-existing cardiac disease.

Naloxone has short half-life and may relapse. All patients should be encouraged to accept transportation to the emergency department.
Severe hypotension and shock can occur even with smaller doses. Use caution with volume depleted patients. Hypotension induced by Nitroglycerin can be accompanied by hypotension and increased angina pectoris.

**Indications**
- Chest Pain/MI
- Pulmonary Edema/CHF

**Spray / Tablet:** 0.4 mg SL every 5 minutes until pain relieved. May repeat NTG x 2 (3 doses total)
**Paste:** 1 inch (Apply concurrent with 1st SL NTG)
May be applied to the patient’s left chest or the triceps area of either arm after sublingual nitroglycerine spray/tablet has been given X 3

**Adverse Reactions**
Most are dose related to results from Nitroglycerin’s activity as a vasodilator. Headache most common. Transient episodes of lightheadedness, sometimes related to hypotension. Hypotension infrequent but may be severe in some patient’s. Syncope, crescendo angina and rebound hypertension, but uncommon

**Contraindications**
- Known Hypersensitivity,
- Pericardial tamponade, Restrictive Cardiomyopathy, Constrictive pericarditis
- Do not administer the following medications until after hours stated

**Drug** | **Hours**
--- | ---
Cialis | 48
Levitra | 24
Viagra | 24+

**Precautions**
Severe hypotension and shock can occur even with smaller doses. Use caution with volume depleted patients. Hypotension induced by Nitroglycerin can be accompanied by hypotension and increased angina pectoris.
**Action:** Nonpyrogenic solution for fluid and electrolyte replacement

**0.9% Normal Saline (NS)**

**Indications**
KVO (unless below conditions exist)

**Adult Dose**
- **Fluid Bolus:** 20 ml/kg For hypotension due to fluid or blood loss
- **Fluid Bolus:** 300 - 500 ml When provider determines patient would benefit from fluid bolus (e.g. fever with tachycardia, adverse effect of nitroglycerin).

**Maximum 2,000 ml**

**Pediatric Dose**
- **Fluid Bolus:** 20 ml/kg

**Maximum 2,000 ml**

**Contraindications**
None known

**Adverse Reactions**
Reactions which may occur because of the solution or the technique of administration include febrile response, infection at the site of injection, venous thrombosis or phlebitis extending from the site of injection, extravasation, and hypervolemia. If adverse reaction does occur, discontinue infusion.

**Precautions**
Geriatric use: In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or drug therapy. Do not administer unless solution is clear and seal is intact.
**Ondansetron (Zofran)**

**Action:** Antiemetic

**Indications**

**Universal Patient Assessment for Nausea & Vomiting**

**Esophageal Foreign Body**

**Universal Pediatric Assessment for Nausea & Vomiting**

**Pediatric Dose**

- **IVP, IO:** 0.1 mg/kg
- **IVP Maximum 4 mg**
- **Ondansetron 4 mg ODT (oral)**
- **12 – 17 years of age >40 kg (88 lbs.) 4 mg**
- **No dosage for <40 kg**

**Contraindications**

- Hypersensitivity

**Adverse Reactions**

- **Cardiovascular:** Angina, Electrocardiographic Alterations, Hypotension, Tachycardia, Syncope, Palpitations
- **Neurological:** Extrapyramidal reactions, Grand Mal Seizure, Dizziness, Lightheadness
- **General:** Flushing
- **Local Reactions:** Pain, Redness, Burning at site of injection
- **Other:** Hypokalemia, Hiccups

**Precautions**

- Not a drug that stimulates gastric or intestinal peristalsis. Transient ECG changes including, QT interval prolongation.

**Medical Considerations**

- **Advanced EMT can Administer Medication (oral route only)**
- **Onset:** Rapid
  **Peak effect:** 15 – 30 minutes

**Off-Label Use**

- **Pediatric Dosage**
  - **12 – 17 years of age >40 kg (88 lbs.) 4 mg**
  - **No dosage for <40 kg**

**DS**

- Universal Patient Assessment
- Universal Pediatric Assessment

**Responsoft EMS Protocols**

Page 152

01/01/2019
Indications: Hyperglycemia/Hypoglycemia

**Adult Dose**

15 Grams PO (37.5 ounce tube)
If no response within 15 minutes may repeat same dose

**Pediatric Dose**

15 Grams PO
Do not use for children under 2 years of age

Contraindications:

DO NOT ADMINISTER TO UNCONSCIOUS PERSON OR UNABLE TO SWALLOW OR A PATIENT WITHOUT PROTECTIVE REFLEXES (I.E. GAG REFLEX)

Adverse Reactions:

∅

Precautions:

∅

None

Action: Natural sugar

Onset: 1 - 2 minutes

EMT can Administer Medication

Pharmacology

Oral Glucose (Glutose 15 Insta-Glucose)

Responsoft EMS Protocols

Page 153

01/01/2019
**Action:** Universal

**Adult Airway**
As needed to maintain SaO2 > 94%
pre/peri-intubation,
flood oxygen to maintain sat of 100% if possible

**Pediatric Airway**
As needed to maintain SaO2 > 94%
pre/peri-intubation,
flood oxygen to maintain sat of 100% if possible

**Indications**

**Contraindications**

∅

**Adverse Reactions**
Toxicity, depressed hyper carbonic drive

**Precautions**

∅

**Medical Considerations**
None
**Pralidoxime (2-PAM)**

**Action:** Antidote to cholinesterase  
Antidote to organophosphates

**Toxic Exposure**

**Indications**

**Adult Dose**

- **600 mg IVP, IO, IM**
- May be repeated every 15 minutes x 2, until signs of flushing, dry mouth, and dilated pupils appear.

**Pediatric Dose**

∅

∅

∅

**Contraindications**

∅

**Adverse Reactions**

Tachycardia, muscle rigidity, dizziness, headache, nervousness, hyperventilation

∅

∅

∅

**Precautions**

None

**Medical Considerations**

None
Use Compazine in place of Ondansetron (Zofran) during shortages.

**Indications**

**Universal Patient Assessment**

**Adult Dose**

5 mg slow IVP

**Pediatric Dose**

∅

**Contra-indications**

Hypotension, Decreased LOC

**Adverse Reactions**

Extended use may cause tardive dyskinesia – involuntary muscle spasms or twitching of face and body

Drowsiness

Hypotension

**Precautions**

Use cautiously in patients with cardiac insufficiency.
**Indications**

**Pediatric Respiratory Distress (Upper Airway)**

**Adult Dose**

∅

**Pediatric Dose**

0.5 ml of 2.25% in 3 ml saline via aerosol, may repeat once

**Contraindications**

Epiglottitis, Hypersensitivity

**Adverse Reactions**

In excessive dosage, epinephrine may cause bronchial edema and inflammation, palpitation, precordial ache or anginal pain, tremor, nervousness, restlessness, sleeplessness, dizziness, headache, nausea and sweating.

**Precautions**

Vital signs should be constantly monitored. Do not use concurrently with other bronchodilators

**Medical Considerations**

Will increase heart rate.

**Action**: Bronchodilator

**Onset**: Lasts 90 – 120 minutes

**Racemic Epinephrine 2.25%**
Rocuronium (Zemuron)

**Action**
- Neuromuscular blocking agent

**Indications**
- Rapid Sequence Intubation (RSI)

**Adult Dose**
- 1 mg/kg IVP, IO

**Pediatric Dose**
- For ages 12 and up: 1 mg/kg IVP, IO
- Under 12 years of age, only upon verbal order of MCP at the receiving hospital

**Contraindications**
- Hypersensitivity

**Adverse Reactions**
- **Cardiovascular:** arrhythmia, abnormal electrocardiogram, tachycardia
- **Digestive:** nausea, vomiting
- **Respiratory:** asthma (bronchospasm, wheezing, or rhonchi), hiccup
- **Skin and Appendages:** rash, injection site edema, pruritus

**Precautions**
- Severe anaphylaxis has been reported. Consider cross-reactivity among neuromuscular blocking agents.

**Medical Considerations**

**Advantages**
- No effect on serum potassium
- No muscle fasciculation's
- No bradycardia
- Longer lasting effect than Succinylcholine

**Precautions**
- Patient must be monitored with capnography while paralyzed.

**Onset:**
- Less than 2 minutes

**Duration of action:**
- 30 – 60 minutes.

Use of Rocuronium will be a 6 month phase out to permit existing stock to be used up. Off protocol effective July 1, 2019.
Sodium Bicarbonate

**Indications**
- Asystole/PEA
- Dialysis Patients in Cardiac Arrest
- V-Fib/Pulseless V-Tach
- Overdose
- Crush Syndrome
- Pediatric Pulseless Arrest

**Cardiac Arrest:**
- 1 mEq/kg IVP, IO 8.4%
- repeat 0.5 mEq/kg IVP, IO every 10 minutes as needed

**Dialysis Patients in Cardiac Arrest:**
- 100 mEq IVP, IO

**Overdose:**
- 1 mEq/kg IVP, IO

**Crush Syndrome:**
- Begin IV Infusion: 2 liters over 1 hour 50 mEq/liter

**Adult Dose**
- 1 mEq/kg IVP, IO 8.4%
- repeat 0.5 mEq/kg IVP, IO every 10 minutes as needed

**Pediatric Dose**
- Not indicated in children < 5 kg

**Contraindications**
- Patients losing chloride by vomiting or continuous gastrointestinal suction, Metabolic and respiratory alkalosis

**Adverse Reactions**
- Alkalosis and/or Hypokalemia, Extravasation of IV, Tissue Necrosis, Ulceration or Sloughing at site

**Precautions**
- Over dosage and alkalosis should be avoided, may cause vascular irritation or sloughing if given extravascularly. Avoid scalp vein use. Risks of over dosage and alkalosis should be avoided. Use caution in patient with CHF or other edematous or sodium-retaining states

**Onset:** Immediate

**Action:** Reverses blood PH
- Reverses metabolic acidosis

**Medical Considerations**
- Flush IV tubing before and after administration.

Responsoft EMS Protocols

Page 159

01/01/2019
**Action:** Depolarizing paralytic – will cause muscle spasm as it takes effect. Fastest onset of action of paralytics.

**Onset:** Within 45 seconds
Duration: 5 - 20 minutes

**Indications**

**Rapid Sequence Intubation (RSI)**

**Adult Dose**

1 mg/kg IVP, IO

**Pediatric Dose**

1 mg/kg IVP, IO

**Contraindications**

Family hx. of malignant hyperthermia, Hypersensitivity, After acute phase of: Major burns, multiple trauma, major crush injury, spinal cord injury, or abdominal sepsis. (over 24 hours), Use caution in patients with: Penetrating eye injury & closed head injuries, Glaucoma

**Precautions**

Patients with fractures or muscle spasm because of muscle fasciculation's, may cause additional trauma. May cause a transient increase in intracranial pressure. May cause intragastric pressure, which could result in regurgitation and possible aspiration. Neuromuscular blockade may be prolonged in patients with hypokalemia or hypocalcemia.

**Adverse Reactions**

Profound muscle relaxation, respiratory depression & apnea-profound, causes hyperkalemia, cardiac arrest, malignant hyperthermia, arrhythmias, bradycardia, tachycardia, hypertension, hypotension, muscle fasciculation's, jaw rigidity, excessive salivation, and rash. Increases ICP pre-treat with Lidocaine. Also blunted by Etomidate.

Bradyarrhythmia – pre-treat children with atropine

Increases intraocular pressure – use with caution in penetrating eye injury. Effect blunted by Etomidate

May increase serum potassium

**Medical Considerations**

Causes visible fasciculation's, or disorganized muscle contractions.

**Pharmacology**

Succinylcholine (Anectine)

**Pharmacology**

1 mg/kg IVP, IO

Rapid Sequence Intubation (RSI)
**Action:** Ophthalmic anesthetic

**Onset:** Should take effect in 30 seconds and last for up to 15 minutes.

**Indications**
- Ocular Trauma
- Eye Irrigation
- Morgan Eye Lens

**Adult Dose**
- 0.5% solution: 1 - 2 drops in affected eye

**Pediatric Dose**

**Contraindications**
- Penetrating injury to eye or extrusion of scleral contents

**Adverse Reactions**
- CNS: Dizziness, Drowsiness, sweating, muscle twitching, trembling
- Cardiovascular: irregular heart rate
- Respiratory: Shortness of breath
- Gastrointestinal: Nausea & Vomiting
- General: Unusual excitement, Nervousness, Restlessness
- Less common occurrences: Burning, Stinging, Redness
- Rare occurrences: Itching, Pain, Swelling of eye or eyelid, watering of eyes

**Precautions**
- Do not rub or wipe eye until anesthetic has worn off and feeling in eye returns. To do so may cause injury or damage to the eye.
**Tranexamic Acid (TXA)**

**Action:** Antifibrinolytic hemostatic

**Indications**
- **Extremity Trauma**
- **Multiple Trauma**
- **Neurological Trauma (Head)**

Trauma with “moderate to severe” or “suspected” hemorrhage or hemorrhagic shock

**Adult Dose**

1 gram/100 ml over 10 minutes, IV Infusion (16 years and older)

**Pediatric Dose**

∅

**Contraindications**

Isolated traumatic brain injury, **More than 3 hours since injury.**

Do not give to known pregnancy.

**Adverse Reactions**

HTN, increased ICP.

**Precautions**

Monitor for symptoms of severe allergic reaction and changes in vision

**Onset:** 3 hour half life.
In the event of the shortage of a particular medication, the Medical Director permits the following substitutions without prior authorization. Substitutions are permitted only in the event of a drug shortage. Substitutions may not be made because of agency or individual medic preference for the substitute medication.

<table>
<thead>
<tr>
<th>Drug Unavailable</th>
<th>Allowed Substitution or Substitute</th>
<th>Action to be Taken</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amiodarone (Cordarone)</td>
<td>Lidocaine (Xylocaine)</td>
<td>V-Fib/Pulseless V-Tach, V-Tach w/Pulse, Pediatric V-Fib/Pulseless V-Tach</td>
</tr>
<tr>
<td>Atropine</td>
<td>Transcutaneous Pacing (preferred)</td>
<td>Epinephrine Drip 2 - 10 mcg/kg/minute</td>
</tr>
<tr>
<td>Dexamethasone (Decadron)</td>
<td>Methylprednisolone (Solu-Medrol)</td>
<td>Adults: 125 mg, Pediatric: 2 mg/kg, Maximum 125 mg</td>
</tr>
<tr>
<td>D10</td>
<td>D50 50 ml (25 grams) Maximum 100 ml</td>
<td></td>
</tr>
<tr>
<td>Fentanyl (Sublimaze)</td>
<td>Morphine</td>
<td>Adult 5 mg IV/IO May repeat in 10 minutes x 1 Maximum 10 mg, Pediatric 0.2 mg/kg IV/IO Maximum 10 mg</td>
</tr>
<tr>
<td>Ketamine (Ketalar)</td>
<td>Etomidate (Amidate)</td>
<td>– For RSI, 0.3 mg/kg to Maximum of 20 mg</td>
</tr>
<tr>
<td>Magnesium Sulfate</td>
<td>Haloperidol (Haldol)</td>
<td>– Behavioral Emergencies 5 mg IM</td>
</tr>
<tr>
<td></td>
<td>Magnesium Sulfate</td>
<td>No substitution available. Transport patient emergently</td>
</tr>
<tr>
<td>Drug Unavailable</td>
<td>Allowed Substitution or Substitute</td>
<td>Action to be Taken</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>-----------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Midazolam (Versed)</td>
<td><strong>Diazepam (Valium)</strong></td>
<td>Adult 5 mg IV/IO</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pediatric 0.2 mg/kg IV/IO</td>
</tr>
<tr>
<td>Naloxone (Narcan)</td>
<td></td>
<td>No substitution available. Secure airway. Transport emergently</td>
</tr>
<tr>
<td>Ondansetron (Zofran)</td>
<td><strong>Prochlorperazine (Compazine)</strong></td>
<td>50 mg IVP for adults. No Pediatric substitution</td>
</tr>
<tr>
<td>Succinylcholine (Anectine)</td>
<td></td>
<td>No substitution</td>
</tr>
</tbody>
</table>
STANDARD:
When pre-hospital care or resuscitation efforts are no longer appropriate it is every EMS provider's responsibility to assist law enforcement by preserving evidence at potential crime scene. Any scene involving a patient that is pulse-less and apneic is to be considered a crime scene and treated accordingly. In such situations Provider's should also maintain a heightened awareness for the presence of weapons.

PURPOSE:
To establish standard guidelines for conducting patient care on a potential crime scene.

APPLICATION:

General principles of crime scene management:
1. The first arriving Provider on-scene must make patient access to determine whether resuscitative efforts are indicated or not. If law enforcement prevents entry, additional responding units should be reduced to "Signal X" response. All law enforcement refusal of access to patients by Providers will be retrospectively reviewed with law enforcement.
2. A Provider should not handle weapons unless necessary to ensure a safe patient care environment. If weapons must be handled, the Provider must wear gloves, clearly document the items original and new location, and inform on-scene Law Enforcement.
3. Never use anything (phones, sink, bathroom, towels, sheets, blankets, pillows, etc.) from an incident scene.
4. Victims of suspected assault should be strongly discouraged against "cleaning up," washing or showering prior to arrival of Law Enforcement or transport.
5. Providers should not touch anything at the crime scene unless required for patient care activities. Patient demographic information should be obtained from law enforcement when possible.
6. Any ligature(s) involved should be left as intact as possible and should be cut rather than untied. All cuts made should be in an area well away from any knots.
7. Containers of any substance, which may have been ingested by the patient/victim, should be left in the position found unless needed for ongoing patient care. If the container must be touched, use gloved hands and limit handling to a minimum in order to preserve any fingerprints that may be present.
8. Disposable items used during resuscitation efforts are to be left in place on the body. Sharps used during the resuscitation should be stored in an appropriate container and taken away by EMS personnel. Any extraneous trash should be taken away as well.
9. Intravenous/IO lines, airways and all other disposable equipment used are to remain in place on the body.
10. Pronouncement should be made in accordance with the standards outlined in the Termination of Resuscitation Standard. The existence of a possible crime scene should not influence the decision to initiate or terminate resuscitative efforts.
11. Providers may cover a body with a clean sheet or sterile drape, if requested to do so by Law Enforcement. All efforts should be made to protect the dignity of the patient and block the public view of the body.
12. Once a pronouncement time is obtained the body falls under the jurisdiction of the Medical Examiner. It may not be touched or altered in any way without authorization from the Medical Examiner’s Office.
13. It is acceptable to share Patient Care information with appropriate on-scene law enforcement if the patient has been pronounced dead.
Crime scene management where no resuscitation is initiated:
1. Any responder, who is not properly credentialed to seek pronouncements of an obvious death, should immediately leave the area without touching anything via the path of entry.
2. When only pronouncement of death is required, only one properly credentialed provider should make entry into the area.

Crime scene management with unsuccessful resuscitation:
1. Once resuscitation efforts have ceased and a pronouncement has been obtained providers should immediately vacate the area.
2. The medical examiner must be able to differentiate between punctures originating from resuscitation efforts and those present prior to arrival. All unsuccessful IV/IO or pleural decompression attempts should be marked on the body by circling with a marker or pen.

Crime scene management with patient transport:
1. Clothing, jewelry or other objects removed from the patient should be left on-scene. Clearly document any items left and inform local law enforcement of the items original and current locations.
2. When cutting clothes for the purpose of assessment and/or treatment avoid cutting through existing defects in the clothing whenever possible.
3. Notify the receiving facility that all personal effects on the patient are to be considered evidence.
STANDARD:
MEC EMS member agencies will develop and maintain, in concert with local schools, a plan for athletic events where the agency provides on-site medical care. Such a plan should be distributed to on-site providers prior to the event.

PURPOSE:
To develop, maintain and distribute a plan for responding to on-field medical emergencies when providing on-site medical care at school athletic events. Schools maintain emergency action plans for athletic emergencies. This clinical standard requires EMS to:
1. Identify its role in the school’s emergency action plan;
2. To define and communicated EMS’ role and responsibility to on-site providers.

APPLICATION:
1. If a member agency will provide on-site medical care for a sporting event, then representatives of that agency should meet no less than annually (prior to beginning of football season) with representatives of the event’s sponsoring school to discuss EMS’ role in providing on-field medical care.
2. Suggested topics for discussion and agreement include:
   a. School contact(s) and their contact information;
   b. EMS posting/staging location while on-site;
   c. Means to contact/communicate with on-site EMS providers;
   d. Type of on-site medical equipment and its storage location;
   e. How injured athlete will be moved off of playing field (e.g. backboard, gator);
   f. Whether team physician is aware of EMS being on-site & role of EMS;
   g. Agreement on whether or not protective equipment will be removed from the patient prior to transport;
   h. A training schedule for EMS providers on removal of athletic equipment by the school’s athletic trainer(s);
   i. Identification of EMS access point(s) for injured players;

   A worksheet is attached to this standard that may be used to document this discussion and communicate the plan to on-site EMS providers.
3. The Athletics Pre-Planning Checklist should be shared with on-site providers before the event, providing adequate time for EMS providers to review the plan and ask questions before the event begins.
4. Only one plan per event type is needed (e.g. one plan for football season).
<table>
<thead>
<tr>
<th>Meeting Date:</th>
<th>School:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event:</td>
<td></td>
</tr>
<tr>
<td>School Contact</td>
<td></td>
</tr>
<tr>
<td>Name:</td>
<td></td>
</tr>
<tr>
<td>Phone #:</td>
<td></td>
</tr>
<tr>
<td>E-mail:</td>
<td></td>
</tr>
</tbody>
</table>

Assigned event medic staging location is:

Access route to event medic staging is via:

How will EMS crew know they are needed on the field and how will they get there?

### On-Field Equipment

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is AED available at sideline?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, does medic crew know how to use it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
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<tr>
<td>☐ No</td>
<td></td>
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<tr>
<td>If yes, are pads/cable compatible with EMS' defibrillator (or is adaptor available)?</td>
<td></td>
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<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
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<tr>
<td>☐ No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Backboard for player movement off of field?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If Yes, technique is:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Log roll</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ 8 person lift</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is there gator available?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ No</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, who staffs it?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>If yes, how is it equipped?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is team physician aware of EMS' role in treating an injured athlete?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>☐ No</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Player Equipment

Who is responsible for helmet removal?
☐ Athletic trainer(s) ☐ Medic Crew

Will pads be removed prior to patient transport?
☐ Yes ☐ No

What is training schedule for medic crews on faceplate, helmet and padding removal?

What action will indicate hand off of care from athletic trainer(s) to medic crew?

What is training schedule for EMS providers on removing player protective equipment?

What action will indicate hand off of care from athletic trainer(s) to medic crew?

How will this information in this document be communicated to event medics?

General Comments:

Attach a site map with access and staging points identified.
STANDARD:
EMS providers will report all cases of suspected child abuse directly to either their county’s Children’s Services agency or local law enforcement.

Assessment of child abuse is based upon the following principles:
- **Protect** the life of the child from harm, as well as that of the EMS team from liability.
- **Suspect** that the child may be a victim of abuse, especially if the injury/illness is not consistent with the reported history.
- **Respect** the privacy of the child and family.
- **Collect** as much evidence as possible, especially information.
- **Report** suspected abuse to appropriate authorities.

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

APPLICATION:
1. Stabilize and treat all injuries
2. Immediately request law enforcement for assistance. If the patient’s parent or guardian declines patient transportation to a hospital and abuse is suspected, EMS providers should not leave the scene until law enforcement arrives on-scene.
3. With all children, assess for and document psychological characteristics of abuse, including excessively passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, fussy behavior, hyperactivity, or other behavior issues.
4. With all children, assess for and document physical signs of abuse, including any injuries that are inconsistent with the reported mechanism of injury. The back, buttocks, genitals, and face are common sites for abusive behavior.
5. With all children, assess for and document signs and symptoms of neglect, including inappropriate level of clothing for the weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.
6. With all children, assess for and document signs of sexual abuse, including torn, stained, or bloody underclothing, unexplained injuries, pregnancy, or STD’s.
7. Report any suspicious findings to both the receiving hospital (if transported) and to the County’s Children’s Services Agency or law enforcement. Law enforcement or Children’s Services must also be notified of suspected abuse. EMS should not accuse or challenge the suspected abuser. This is a legal requirement to report, not an accusation. In the event of a child fatality, law enforcement and County’s Children’s Services Agency must be notified.
8. If episode of domestic violence and children present or involved, notify County’s Children’s Services Agency.

See: Child Abuse-continued
Family Violence Screening-Pediatric

Determine & treat injuries
Observe home conditions

If GSW, stab wound, significant burn, or other crime of violence, call Law Enforcement

Assessment

Child’s assessment not consistent with indicators of maltreatment

Document findings & completion of Family Violence screen on EMS run report

Transport to hospital

Give Report to RN/MD & Document to whom report was given

Report Concerns to Local Children’s Services Agency as Soon as Possible

Document Findings Clearly on EMS Run Report. Note Law Enforcement Agency & Officer’s Badge Number (if available)

Child’s assessment is suspicious of maltreatment, Child discloses or parent/guardian or other adult expresses concerns of maltreatment

Notify local Law Enforcement and Children’s Services Agency

Make determination to transport to hospital

Parent/Guardian refuses transport to hospital

Avoid confrontation; Activate Law Enforcement. Stay with patient until law enforcement arrives.

Document Completion of Family Violence Screen on EMS Run Report
STANDARD:
An adult or emancipated minor with the capacity to make an informed decision has the right to refuse treatment and/or transport.

PURPOSE:
To create a policy that establishes a patient’s right to the refusal of treatment and/or transport.

APPLICATION:

Right of Consent or Refusal:
All patients who are conscious and oriented to person, place, and situation have the right to give informed consent for treatment and transport, or to refuse treatment and/or transportation.

Patients should be advised by the EMS personnel of his/her diagnostic impression and the course of treatment prescribed by MEC EMS Protocols. This should be explained in terminology understood by the patient.

Implied Consent
In potentially life or limb threatening emergency situations where a patient is unable to give informed consent the law presumes consent for emergency care would be given by the patient if they were able. Consent for emergency care is implied if the patient is:

- Unable to communicate because of illness, injury, unconsciousness and is suffering from what appears to be a life-threatening illness or injury; or
- Suffering from impaired mental capacity (e.g. lacks capacity to make an informed decision); or
- Is a minor who is suffering from what reasonably appears to be a life-threatening injury whose parents, guardian is not present.

Limitations to the Right of Refusal:
All patients who are unconscious or mentally impaired such that they cannot make a proper decision regarding their immediate situation shall be transported to the closest appropriate facility.

Patients are considered to lack the capacity to make an informed decision and unable to refuse care and/or transportation when they are impaired. Patients who may be impaired include:

- Patients who exhibit Suicidal behavior or Ideation
- Patients with Drug, Alcohol or Toxic Exposures (CO)
- Patients with Medical Conditions that may cause impairment (e.g. uncorrected hypoglycemia or hypoxia)

See: Consent, Refusal of Treatment/Transport Part B
Withdrawal of Consent:
A patient with the capacity to make an informed decision may withdraw consent for treatment at any time.
The medic in-charge shall consider the following with making a judgment regarding a patient’s capacity to withdraw consent:
A person may be considered to have the capacity to make an informed decision when (all four must be met):
- Is ≥18 years of age, or a court certified emancipated minor
- Is oriented to time, person, place and situation
- Is capable of understanding the nature and consequences of the proposed treatment with sufficient emotional control, judgment, and discretion to manage his/her own affairs.
- Is not otherwise impaired.

If a patient with the capacity to make an informed decision refuses consent or withdraws consent for treatment, EMS personnel shall document:
- Patient's assessment
- All care provided
- An assessment of the patient's capacity to refuse consent. This should include the patient's summarization of the risks of refusing treatment as originally explained by the EMS provider.
- Advice to the patient to call 911 again at any time if they wish to be transported to the hospital or if their condition changes.

A checklist is attached which may be used to assess the patient's capacity to refuse or withdraw consent for treatment.

A patient who refuses to consent to or withdraws consent for treatment should acknowledge and sign the refusal statement on the electronic patient care report or a paper equivalent. If the patient refuses to sign, then their refusal should be witnessed by at least two people, preferably one being a non-EMS provider.

Minors, developmentally disabled patients, and persons deemed to lack the capacity to make an informed decision by EMS personnel should be treated after consultation with the patient's guardian, parent, spouse, or other responsible caregiver. If the guardian, parent, spouse, or other responsible caregiver is not immediately available, then the patient should be treated as per protocol and transported to the closest most appropriate hospital.
EMS Patient Refusal Checklist

Incident #: ______________________________________

Date: ______________________________________

Check marks in shaded areas require additional consult before patient release

Patient Assessment:
Suspected serious injury or illness based upon patient history, MOI, or physical exam.

18 years of age or older:  Yes  No

Patient Oriented to:  

Person:  Yes  No

Place:  Yes  No

Time:  Yes  No

Event:  Yes  No

Any evidence of:  

Suicide attempt:  Yes  No

Head injury:  Yes  No

Intoxication:  Yes  No

Chest Pain:  Yes  No

Dyspnea:  Yes  No

Syncope:  Yes  No

Vital Signs:

Pulse:  <50bpm or >100bpm

Sys BP:  <100mmHg or >200mmHg

Dia BP:  <50mmHg or >100mmHg

Resp:  <12rpm or >24rpm

Consult Additional Resources If:  

if altered mental status or diabetic (ALS only)

Glucose:  mg/dl

If chest pain, S.O.B. or altered mental status:

SpO2 (if available):  %

Risks explained to patient:

Patient understands clinical situation:  Yes  No

Patient verbalizes understanding of risks:  Yes  No

Patient's plan to seek further medical evaluation:

Patient Outcome:

Patient Refuses treatment or transport against EMS advice

Patient accepts transportation to hospital by EMS but refuses any or all treatment

Patient does not desire transport to hospital by EMS but believes alternative treatment/transport plan is reasonable

If shaded areas are checked, supporting documentation shall be included in the narrative section of the patient care report. In all instances of refusal, both patient capacity and competency must be illustrated in the narrative.

Please submit this completed form to the shift officer after you have completed your PCR.
REFUSAL OF CARE/TREATMENT CHECKLIST:

- Patient is ≥ 18 or emancipated minor
- Patient is not suicidal/homicidal
- Patient demonstrates capacity to make informed decision (see below)
- Patient understands evaluation is incomplete and evaluation in an emergency department is indicated
- Solutions to obstacles to patient refusing transport have been sought
- Patient instructed to seek medical attention
- Patient instructed to call back at any time
- Above documented fully in PCR
- In the following high-risk situations contact with EMS supervisor or Medical Control is recommended:
  - Age greater than 65?
  - Pulse greater than 100 or less than 50?
  - Systolic BP greater than 200 or less than 100?
  - Respirations greater than 24 or less than 12?
  - Blood sugar <60 mg%
  - SaO2 <95%
  - Serious chief complaint (chest pain, SOB, syncope)
  - Significant mechanism of injury or high suspicion of injury?
  - If it is your impression the patient requires hospital evaluation?

CAPACITY CHECKLIST:

- Patient is able to express in their own words:
  - An understanding of the nature of their illness
  - An understanding of the risks of refusal including death
  - An understanding of alternatives to EMS treatment/transport
  - Patient can provide rationale for refusal and debate this rationale

- A patient with any of the following MAY lack decision making capacity and should be carefully assessed for their ability to perform the above.
  - Orientation to person, place or time that differs from baseline
  - History of drug/alcohol ingestion with appreciable impairment such as slurred speech or unsteady gait
  - Head injury with LOC, amnesia, repetitive questioning
  - Medical condition such as hypovolemia, hypoxia, metabolic emergencies (e.g., diabetic issues); hypothermia, hyperthermia, etc.

If any question exists about their capacity contact EMS supervisor or Medical Control
STANDARD:
MEC EMS providers are responsible for providing patient care in accordance with the prescribed MEC EMS protocols, standards and procedures. In cases of multiple agencies providing care to the same patient, the EMS protocol for the EMS provider in charge of that patient is in effect.

PURPOSE:
Establish a clinical hierarchy of authority for on-scene patient care.

APPLICATION:
1. Medical care by all MEC EMS care providers is governed by the MEC EMS medical protocol. This medical protocol is in effect whenever a MEC EMS provider provides medical care regardless of the jurisdiction of that EMS run.
2. The in-charge medic/provider is responsible for that patient’s care. A superior officer is permitted to override the in-charge paramedic when all of the following are in effect:
   a. The officer is on duty for a MEC agency.
   b. The officer has current certification by the Ohio EMS Board that is equal to or greater than that of the in-charge provider.
   c. The officer has attended all applicable MEC EMS protocol updates
Five Exceptions to Mandatory Transport to a Trauma Center

1. It is medically necessary to transport the victim to another hospital for initial assessment and stabilization before transfer to an adult or pediatric trauma center;
2. It is unsafe or medically inappropriate to transport the victim directly to an adult or pediatric trauma center due to adverse weather or ground conditions or excessive transport time;
3. Transporting the victim to an adult or pediatric trauma center would cause a shortage of local emergency medical service resources;
4. No appropriate adult or pediatric trauma center is able to receive and provide adult or pediatric trauma care to the trauma victim without undue delay;
5. Before transport of a patient begins, the patient requests to be taken to a particular hospital that is not a trauma center or, if the patient is less than eighteen years of age or is not able to communicate, such a request is made by an adult member of the patient's family or a legal representative of the patient.

Caveats for the Central Ohio Trauma System

NOTE: Incidents resulting in multi/mass casualties are addressed by specific surge plans or regional guidelines.

NOTE: Transport trauma adult burn patients to the Wexner Medical Center at The Ohio State University (adult); transport pediatric burn trauma patients to Nationwide Children’s Hospital.

NOTE: Transport isolated globe injuries to Grant Medical Center, Mount Carmel West or the Wexner Medical Center at The Ohio State University.

NOTE: Transport upper extremity amputations to designated hand/microvascular centers at Riverside Methodist Hospital, the Wexner Medical Center at The Ohio State University and Nationwide Children’s Hospital.

NOTE: Trauma patient < 16 years who appear or provide history of pregnancy should be transported to an ADULT trauma center.
Adult age 16 - 69

If an injured person has any of the following indicators, they should be transported directly to a trauma center:

- Glasgow Coma Score of 13 or less.
- Loss of consciousness for greater than 5 minutes.
- Failure to localize pain (GCS motor score 4 or less).
- Respiratory rate less than 10 or greater than 29.
- Need for ventilatory support.
- Requires relief of tension pneumothorax.
- Pulse rate greater than 120 with evidence of hemorrhagic shock.
- Systolic blood pressure less than 90 mm Hg.
- Penetrating injury to head, neck or torso.
- Significant penetrating injury to the extremities proximate to the knee or elbow, with neurovascular compromise.
- Visible crush of head, neck or torso.
- Open skull fracture.
- Abdominal tenderness, distention or seat belt sign.
- Flail chest.
- Pelvic fracture (this does not include isolated hip fractures).
- Injuries to the extremities with visible crush or evidence of neurovascular compromise.
- Amputation proximal to the wrist or ankles
- Fracture of 2 or more proximal long bones (humerus or femur).
- Signs and symptoms of spinal cord injury.
- Serious burns – 2nd or 3rd degree burns over more than 10% of total body surface area OR involving face airway, hands feet genitalia.
- Ejected from a vehicle.
- Vehicle telemetry data consistent with high risk of injury
Geriatric age 70 years and older

If an injured person has any of the following indicators, they should be transported directly to a trauma center:

- **Glasgow Coma Score 14 or less with a known or suspected traumatic brain injury**.
- Glasgow Coma Score of 13 or less for any reason.
- **Fall from any height – including standing with evidence of a traumatic brain injury**.
- Loss of consciousness for greater than 5 minutes.
- Failure to localize pain (GCS motor score 4 or less).
- Respiratory rate less than 10 or greater than 29.
- Need for ventilatory support.
- Requires relief of tension pneumothorax.
- Pulse rate greater than 120 with evidence of hemorrhagic shock.
- **Systolic blood pressure less than 100 mm Hg**.
- Penetrating injury to head, neck or torso.
- Significant penetrating injury to the extremities proximate to the knee or elbow, with neurovascular compromise.
- Visible crush of head, neck or torso.
- Open skull fracture.
- Abdominal tenderness, distention or seat belt sign.
- Flail chest.
- Pelvic fracture (this does not include isolated hip fractures).
- Sustained injury in 2 or more body regions.
- Injuries to the extremities with visible crush or evidence of neurovascular compromise.
- Amputation proximal to the wrist or ankles.
- Fracture of 2 or more proximal long bones (humerus or femur).
- Signs and symptoms of spinal cord injury.
- Serious burns – 2nd or 3rd degree burns over more than 10% of total body surface area OR involving face airway, hands feet genitalia.
- **Fracture of 1 or more proximal long bones (humerus or femur) sustained in a motor vehicle crash**.
- **Pedestrian struck**.
- Ejected from a vehicle.
- Vehicle telemetry data consistent with high risk of injury

*Criteria BOLDED, Different from criteria for adults age 16-69*
Pediatric age 0 - 15

If an injured person has any of the following indicators, they should be transported directly to a trauma center:

- Glasgow Coma Score of 13 or less.
- Loss of consciousness for greater than 5 minutes.
- Failure to localize pain (GCS motor score 4 or less).
- Evidence of poor perfusion: Weak distal pulse, pallor, cyanosis, delayed cap refill, or tachycardia.
- Respiratory rate < 20 in infants < 1 yr old.
- Evidence of respiratory distress or failure: Stridor, grunting, retractions, cyanosis, hoarseness, difficulty speaking.
- Need for ventilatory support.
- Penetrating injury to head, neck or torso.
- Significant penetrating injury to the extremities proximate to the knee or elbow, with neurovascular compromise.
- Visible crush of head, neck or torso.
- Open skull fracture.
- Abdominal tenderness, distention or seat belt sign.
- Flail chest.
- Pelvic fracture.
- Injuries to the extremities with visible crush or evidence of neurovascular compromise.
- Amputation proximal to the wrist or ankles.
- Fracture of 2 or more proximal long bones (humerus or femur).
- Signs and symptoms of spinal cord injury.
- Serious burns – 2nd or 3rd degree burns over more than 10% of total body surface area OR involving face airway, hands, feet, genitalia.
- Ejected from a vehicle.
- Vehicle telemetry data consistent with high risk of injury.
STANDARD:
To define set criteria that determines death in the field. Cardiopulmonary resuscitation is to be withheld only if the patient is obviously dead per the criteria below or has a valid DNR in effect. If EMS provider(s) are unsure whether the patient meets criteria, resuscitation is to be performed.

PURPOSE:
Establish clinical criteria that provide a process for determining death in the field.

PROCEDURE:
A patient is considered unsuitable for resuscitation DOA when one or more of the following criteria are met:

1. Patient is found unresponsive, has suffered an unwitnessed cardiac arrest with unknown downtime and cardiac monitor shows asystole. Asystole must be confirmed in two (2) leads.

2. Patient has injuries that are incompatible with life (e.g. decapitation)

3. Decomposition or rigor mortise has set in.

Indications for determining death at the scene must be documented in the patient care report.

The *Termination of Resuscitation* Clinical Standard takes precedence over this Clinical Standard.
Transportation of Patients with a Behavioral Health Complaint to an Alternative Destination

**NOTE:** Utilization of this standard by a MEC EMS member agency is optional and is to be determined by the EMS agency’s fire chief.

**STANDARD:**
Patients with a primary mental health complaint are eligible for transportation to a freestanding mental health facility ("Alternative Destination") rather than an emergency department.

Patients with a primary complaint related to alcohol abuse or addiction are eligible for transportation to a freestanding mental health facility.

Patients with a concurrent history of drug/alcohol abuse or addiction are eligible for transportation to a freestanding mental health facility unless drug/alcohol abuse or addiction is their primary complaint.

Patients with an unstable acute medical condition (as defined by the algorithms in this standard) are not eligible for transportation to a freestanding mental health facility.

**PURPOSE:**
To establish criteria for EMS referral of patients suffering from an acute mental health concern to an alternative destination (location other than an emergency department).

**PROCEDURE:**
1. All patients suffering an acute behavioral emergency shall be evaluated as directed by the MEC EMS protocol. Patients with an acute illness related to their behavioral illness or drug/alcoholism may be a candidate for transportation to a freestanding behavioral health treatment facility.
2. The attached checklist should be used referred to as a tool to determine the patient’s suitability for transportation to an alternative treatment destination. Patients who do not qualify for diversion to an alternative treatment destination must be offered transportation to an emergency department.
3. If the patient qualifies for transportation to an alternative destination the in-charge EMS provider may offer the patient transportation to an alternative destination rather than an emergency department.
4. If the patient accepts transportation to an alternative destination, contact the receiving facility to verify the facility is able to care for the patient.

**Columbus Springs East**
2085 Citygate Drive
Columbus, OH 43219
Intake Phone #: (614) 300-9100
If no answer or automated message call nursing supervisor
Nursing Supervisor Phone #
(614) 917-9125

**SUN Behavioral Health**
900 E. Dublin Granville Road
Columbus, OH 43229
Intake Phone: (614) 706-2786

5. The in-charge provider should document date, time of the call and as well as name of the call taker at the receiving facility.
6. The patient shall at all times be supervised by 1 or more EMS providers. The patient must never be left alone.
7. A copy of the run report and the checklist should be faxed to the receiving facility.
8. If the patient does not qualify for transportation to an alternative destination or declines transportation to an alternative destination transportation to an emergency department should be offered. The offer of transportation to an alternative destination should be documented in the run report.

9. If a patient is determined to be eligible for transportation to an alternative destination, they should be taken to the intake area identified by the receiving facility. After patient handoff at the receiving facility, the transporting crew should stay on site until the facility’s representative acknowledges the patient is medically suitable for admission to the facility. If the patient is found to have a medical condition that disqualifies them for admission to the facility, the patient should be transported to the closest emergency department.

<table>
<thead>
<tr>
<th>Patient is age 18 or older</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient’s primary complaint is related to a psychiatric illness or addiction to alcohol.</td>
</tr>
<tr>
<td>Patient meets <strong>ALL</strong> of the following:</td>
</tr>
<tr>
<td>- Pulse &gt; 50 BPM &amp; &lt; 120 BPM</td>
</tr>
<tr>
<td>- Respiratory Rate &gt; 8 &amp; &lt; 24</td>
</tr>
<tr>
<td>- Blood pressure</td>
</tr>
<tr>
<td>- ≥ 80 mmHg &amp; ≤ 200 mmHg Systolic <strong>AND</strong></td>
</tr>
<tr>
<td>- ≤ 120 mmHg Diastolic</td>
</tr>
<tr>
<td>- SpO₂ &gt; 92% on room air</td>
</tr>
<tr>
<td>- Blood sugar ≥ 60 mg% or ≤ 500 mg% (or glucometer does not read “HIGH”)</td>
</tr>
<tr>
<td>- GCS &gt; 14</td>
</tr>
<tr>
<td>There is no wound requiring closure</td>
</tr>
<tr>
<td>The patient is able to safely walk without assistance</td>
</tr>
<tr>
<td>Patient is not suffering from a known or suspected acute overdose</td>
</tr>
<tr>
<td>Patient has no head injury while on anticoagulants</td>
</tr>
<tr>
<td>Patient has no other acute medical complaint requiring immediate physician assessment</td>
</tr>
<tr>
<td>Patient has no vascular access catheter (e.g. peripheral IV, PICC line, dialysis PermaCath)</td>
</tr>
<tr>
<td>Patient <strong>HAS NOT</strong> received ketamine.</td>
</tr>
<tr>
<td>Patient is insured by private insurance or Medicare</td>
</tr>
<tr>
<td><strong>If all answers are “Yes” patient qualifies for diversion to a psychiatric facility</strong></td>
</tr>
</tbody>
</table>
Policy:
Any patient presenting to any component of the EMS system with the completed State Of Ohio *Do Not Resuscitate Form* (DNR) shall have the form honored.

Purpose:
- To honor the terminal wishes of the patient.
- To prevent the initiation of unwanted resuscitation.
- To be compliant with Ohio Standards.

Definitions:
Cardiac Arrest – Absence of palpable pulse.

Respiratory Arrest – Absence of spontaneous respirations or presence of agonal breathing.

DNR – Do not resuscitate. If patient is in cardiac or respiratory arrest do not provide CPR, insert endotracheal tube/supraglottic airway, defibrillate or give ACLS drugs.

DNR Comfort Care (DNRCC) – A patient receives any care that eases pain and suffering, but no resuscitative measures to save or sustain life. This protocol is activated immediately when a valid DNR order is issued or when a living will requesting no CPR becomes effective.

DNR Comfort Care – Arrest (DNRCC-Arrest) – A patient receives standard medical care until the time he or she experiences a cardiac or respiratory arrest. Standard medical care may include cardiac monitoring or intubation prior to the occurrence of cardiac or respiratory arrest. This protocol is activated when the patient has a cardiac or respiratory arrest.

Procedure:
1. When confronted with a cardiac arrest patient or an unstable patient, one of the following conditions must be met in order to honor a DNR request and withhold CPR and ACLS therapy:

   a. A State of Ohio DNR form with either the DNRCC or DNRCC- Arrest box checked. The form must be signed by the patient or their representative and countersigned by a physician, physician assistant or nurse practitioner. **OR:**

   b. The patient has a DNR armband or wallet card.

      EMS providers are not required to search a patient for DNR identification. However, if DNR identification is discovered, EMS personnel must make a reasonable attempt to verify the patient’s identity. Once the patient’s identity is verified, EMS providers must honor the DNR directive.
2. A DNR request may be overridden by the request of:
   a. The patient
   b. The guardian of the patient
   c. An on-scene Physician
      **NOTE:** If the DNR form is signed by the patient – only the patient may revoke/override the DNR request.

3. If family members or other persons are present and ask that resuscitative efforts be withheld in the absence of an advanced directive, determine their relationship to the patient and the patient’s history. If the patient has an obvious life-limiting illness (terminal cancer, advanced neurological disease, etc.), resuscitative efforts may be withheld. If there is no obvious life-limiting illness, begin resuscitation based on appropriate protocol(s) and contact medical control for further guidance.

4. Living wills or other documents indicating the patient’s desire to withhold CPR or other medical care may be honored only in consultation with the patient’s family.
DNR IDENTIFICATION FORM

☐ DNRCC
(If this box is checked the DNR Comfort Care Protocol is activated immediately.)

☐ DNRCC—Arrest
(If this box is checked, the DNR Comfort Care Protocol is implemented in the event of a cardiac arrest or a respiratory arrest.)

Patient Name: __________________________________________

Address: ________________________________________________

City_________________________ State__________ Zip__________

Birthdate__________________________ Gender ☐ M ☐ F

Signature______________________________________________ (optional)

Certification of DNR Comfort Care Status (to be completed by the physician)*

(Check only one box)

☐ Do-Not-Resuscitate Order—My signature below constitutes and confirms a formal order to emergency medical services and other health care personnel that the person identified above is to be treated under the State of Ohio DNR Protocol. I affirm that this order is not contrary to reasonable medical standards or, to the best of my knowledge, contrary to the wishes of the person or of another person who is lawfully authorized to make informed medical decisions on the person’s behalf. I also affirm that I have documented the grounds for this order in the person’s medical record.

☐ Living Will (Declaration) and Qualifying Condition—The person identified above has a valid Ohio Living will (declaration) and has been certified by two physicians in accordance with Ohio law as being terminal or in a permanent unconscious state, or both.

Printed name of physician*: ________________________________

Signature______________________________________________ Date____________________

Address: ____________________________________________ Phone:____________________

City/State_____________________________________________ Zip:____________________

* A DNR order may be issued by a certified nurse practitioner or clinical nurse specialist when authorized by section 2133.211 of the Ohio Revised Code.

See next page for DNR Protocol
DO NOT RESUSCITATE COMFORT CARE PROTOCOL

After the State of Ohio DNR Protocol has been activated for a specific DNR Comfort Care patient, the Protocol specifies that emergency medical services and other health care workers are to do the following:

**WILL:**
- Suction the airway
- Administer oxygen
- Position for comfort
- Splint or immobilize
- Control bleeding
- Provide pain medication
- Provide emotional support
- Contact other appropriate health care providers such as hospice, home health, attending physician/CNS/CNP

**WILL NOT:**
- Administer chest compressions
- Insert artificial air way
- Administer resuscitative drugs
- Defibrillate or cardiovert
- Provide respiratory assistance (other than that listed above)
- Initiate resuscitative IV
- Initiate cardiac monitoring

If you have responded to an emergency situation by initiating any of the **WILL NOT** actions prior to confirming that the DNR Comfort Care Protocol should be activated, discontinue them when you activate the Protocol. You may continue respiratory assistance, IV medications, etc., that have been part of the patient’s ongoing course of treatment for an underlying disease.
STANDARD:
Every patient encounter by EMS will be documented in the patient care report upon completion of the EMS event (transport or non-transport).

PURPOSE:
To insure appropriate, timely and complete documentation for every patient encounter.

DEFINITION OF A PATIENT:
A patient is any human being having face-to-face contact with an on-duty MEC EMS provider that meets one or more of the following criteria:
- Has a complaint that suggests a potential injury or illness;
- Requests evaluation &/or treatment for a potential illness or injury;
- Has an obvious illness or injury;
- Has experienced an acute event that could reasonably be expected to result in illness or injury (e.g. motor vehicle collision).
- Is in a circumstance or situation that could reasonably result in illness or injury.

APPLICATION:
All patient encounters shall be documented in the patient care report. Minimal documentation shall include:
1. Patient health history pertinent to the patient’s complaint including current injury or illness, past medical history, medication list and allergies.
2. An initial complete set of vital signs:
   a. Pulse rate
   b. Blood pressure
   c. Respiratory rate
   d. Pain / severity (when appropriate to patient complaint)
   e. Glasgow Coma Scale (GCS) for all patients suffering acute injury, regardless of injury severity.
3. Based on the patient’s condition and complaint, vital signs may also include:
   a. Pulse Oximetry
   b. Capnography
   c. Temperature
   d. Blood Glucose
   e. Carbon Monoxide Reading
4. A patient examination appropriate for the patient’s complaint.
5. A complete, timed record of medication administration, procedures, the provider’s interpretation of cardiac monitor or 12-lead ECG tracings and any change in the patient’s clinical condition.
6. A narrative of the patient encounter of adequate depth to substantiate the patient care provided by the EMS crew.
7. Abnormal vital signs should be repeated at least once. Any acutely distressed patients should have vital signs repeated every 5-10 minutes.
8. Any acutely distressed patients should have vital signs repeated every 5-10 minutes.
9. If the patient refuses a complete evaluation, the patient’s mental status and the reason for refusal of evaluation must be documented per the Refusal of Treatment and/or Transport standard. An attempt must be made to obtain vital signs. A patient refusal information form must also be completed.
10. LifePak data must be sent via Bluetooth to the electronic run report.
11. A run report should be sent to the receiving hospital immediately upon completion of the report.

Personal Assists/Lift Assists
A run report will be written for all runs identified as a “Personal Assist” or similar nature. Documentation should include:

1. Reason for call.
2. A brief patient assessment, including vital signs.
3. A finger stick blood sugar on diabetic patients.
5. If indicated by the patient’s condition, a note that transportation to the hospital was offered. If declined, documentation of patient’s capacity to decline transport.
6. A note as to whether a social service agency referral was made (e.g. Adult Protective Services).
STANDARD:
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. Elder abuse is the physical and/or mental injury, sexual abuse, negligent treatment, exploitation, 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, appropriate reporting, and referral of abuse is a critical step to improving patient safety, providing quality health care, and preventing further abuse. For patients <18 years old refer to Child Abuse Recognition and Reporting (< 18 years of age) standard.

PURPOSE:
Assessment of an abuse case is based upon the following principles:
- Protect the patient from harm.
- Suspect that the patient may be a victim of abuse, especially if the injury/illness is not consistent with the reported history.
- Respect the privacy of the patient and family.
- Collect and document as much information as possible.
- Reporting suspected abuse to appropriate authorities.

APPLICATION:
1. Assess all patients for any psychological characteristics of abuse, including excessive passivity, compliant or fearful behavior, excessive aggression, violent tendencies, excessive crying, behavioral disorders, substance abuse, medical non-compliance, or repeated EMS requests. This is typically best done in private with the patient.

2. Assess all patients for any physical signs of abuse, especially any injuries that are inconsistent with the reported mechanism of injury. Defensive injuries (e.g. to forearms), and injuries during pregnancy are also suggestive of abuse. Injuries in different stages of healing may indicate repeated episodes of violence.

3. Assess all patients for signs and symptoms of neglect, including inappropriate level of clothing for weather, inadequate hygiene, absence of attentive caregiver(s), or physical signs of malnutrition.

4. EMS providers are required to immediately report any suspicious findings to the County’s Adult Protective Services (APS) or local law enforcement. This should occur as soon as reasonably possible after leaving the scene (if patient refuses) or at the hospital after patient transfer is completed. Providers may need to request a brief “out of service time” for this process to be completed. Notification of APS or law enforcement should be documented in the patient’s run report. Documentation should include the name of the person (and badge number if law enforcement notified), as well of the time and date of such notification. If the patient is transported the hospital; the RN/MD receiving report should be advised of the conditions/situation the patient was found in.
Family Violence Screening-Adult

Presents To EMS

Determine & treat injuries
Observe home conditions

Inform patient that law enforcement may be notified and screen in private.
(Can be done en route to hospital)

Notify Law Enforcement if:
- Requested by patient
- Felonious act has occurred such as, second or third degree burns, gunshot, stabbing or serious physical injuries (see definition)

Patient identifies self as abused
- Reported incident is consistent with abuse
- Obvious signs or symptoms are consistent with abuse.

Encourage transport to hospital for evaluation

Patient accepts transport to hospital

Provide Community Resource Information

Give report to RN / MD at hospital

Patient declines transport to hospital

If law enforcement notified, stay with patient until their arrival

Provide Community Resource Information

Document screen was done. If unable to complete document reason why. Report suspected abuse to Adult Protective Services.

Patient denies abuse, but abuse is suspected due to:
- Signs and symptoms consistent with family violence (see protocol)

Patient denies abuse:
- No identifying factors

Provide Community Resource Information

Document screen was done
STANDARD:
With regards to diversion, Central Ohio EMS personnel shall utilize the following guidelines as extracted from the Central Ohio Trauma Systems *Emergency Patient Transport Plan, 6th Edition*.

PURPOSE: To promote emergency department access to care for patients when four or more Franklin County hospitals have concurrently declared a diversion status to EMS.

APPLICATION:

Definitions

COTS – Central Ohio Trauma System

FAO – Columbus Division of Fire's Fire Alarm Office

EPTP – COTS Emergency Patient Transport Plan

RTAS – COTS Real-time Activity Status System – used by central Ohio hospitals to advise other hospitals and EMS providers of their patient volume and diversion status.

Day-to-Day Operations

1. EMS shall be trained regarding the components of this plan.
2. EMS will monitor the RTAS System in real-time on an ongoing basis.
3. EMS shall honor a *Divert* status as posted by a hospital in regards to the transport of stable patients.
4. EMS determines the stability of a patient.
5. Unstable patients are transported to the closest appropriate hospital, regardless of a declared diversion status or EPTP activation. Documentation on the pre-hospital record should include findings indicative of a critical or unstable patient.
6. EMS personnel shall not allow themselves to be diverted from the closest, appropriate hospital with a critical or unstable patient.
7. EMS shall transport stable patients recently treated at a hospital after an inpatient stay or emergency department visit back to the respective hospital if the chief complaint relates to the same condition, even if the hospital is in *Divert* status.
8. EMS shall transport patients with chronic medical conditions who consistently receive treatment for a condition by a respective hospital to that hospital, even if the hospital is in *Divert* status. Such patients include but are not limited to those requiring care related to transplant or dialysis services.
9. EMS shall transport patients with specialty needs to hospitals with declared specialty services, even if a respective specialty hospital is in *Divert* status. Such services include but are not limited to hyperbaric and burn services.
During EPTP Activation

1. EMS shall participate in the EPTP when EPTP activation is posted on the RTAS System by the FAO.
2. Prior to loading patients for transport, EMS will contact the FAO Transportation Manager on 9 Transport to receive a hospital assignment.
3. EMS may decline an assignment if one of the four hospitals closest to the scene is not among those offered for assignment. The crew should inform the FAO of their decision to decline the assignment and why, and identify their transport destination. The FAO will appropriately credit the patient to the receiving hospital’s EPTP ratio.
4. Patients with select conditions are transported by EMS to the appropriate hospital regardless of EPTP ratios. These include patients who:
   a. Are critical or unstable, i.e. multi-system trauma, cardiac chest pain or ST-elevation, physiological shock, significant respiratory distress, stroke symptoms, and/or active labor
   b. Were recently treated after an inpatient stay or ED visit if the chief complaint relates to that patient condition.
   c. Have chronic medical conditions treated consistently by a particular hospital, such as transplant or dialysis conditions.
   d. Have specialty needs that are met on a consistent basis by a specialty hospital, such as hyperbaric or burn services.
5. At times, after being informed of a hospital assignment, the patient may choose to make other transportation arrangements.
   a. After the patient makes the final transport decision, EMS will notify the FAO Transportation Manager of the medic’s status.
   b. If they do not transport the patient, EMS will notify the FAO Transportation Manager, and mark them self in-service. If the patient chooses another means of transport, EMS will assist the patient in any way possible.
6. Pre-hospital report occurs per transporting agency SOPs regardless of EPTP activation.
7. EMS will not debate their hospital assignment with the FAO.
8. EMS is expected to use appropriate discretion to provide the best care for their patient, including deviation from this plan when justified. Any disputes or deviations from this plan should be immediately reported to the EMS Supervisor from the EMS providers’ home district.
STANDARD:

MECC EMS providers will not obtain a blood sample for toxicology testing if requested by a law enforcement officer.
Policy:
• To establish policies and procedures for the use of an EMS Branch Officer on Incidents where multiple patients are encountered of a foreseen extended EMS event.

Purpose:
• The EMS Officer’s mission is to assure that all functions exist to support the treatment of patients. This involves triaging patients, treating them in a logical order and transporting them to most appropriate medical facility.

Procedure:
1. Designates group officers as needed, including:
   a. Triage Officer
   b. Treatment Officer
   c. Transportation Officer
2. Ensures coordination and provides support to the group officers
3.Determines amount and type of resources needed to handle the event
4. Ensures notifications of all area hospitals
   a. Contact the Healthcare Incident Liaison (HIL) 855-266-7243 or cotshil@onpage.com who will perform all the necessary hospital notifications
   b. Contact Columbus Fire Alarm Office (FAO) for activation of the Emergency Patient Transport (EPT) Plan to manage all other transports
5. Provides frequent progress reports (CAN reports) to the Incident Commander
6. Maintains incident documentation

Operations:

A. Triage Officer:
1. Determines the location of the triage area
2. Ensures all patients are assessed and sorted according to their injuries
3. Utilize the START triage system and cards – Algorithm attached
4. Determines amount and type of resources needed to handle the event & communicates those needs to the EMS Officer
5. Coordinate movement of patients from triage to treatment area
6. Provides frequent progress reports (CAN reports) to the EMS Officer
7. Maintains incident documentation
A. Treatment Officer:
   1. Determines the location for treatment operations in coordination with the triage officer
      a. Upwind and up hill
      b. Sufficient space for treatment operations – Think BIG!
      c. Unimpeded access for ingress and egress of medics / squads
   2. Determines amount and type of resources needed to handle the event & communicates those needs to the EMS Officer
   3. Coordinates with Triage Officer the movement of patients from triage to treatment
   4. Establish and maintain communications with the Transportation Officer
   5. Directs movement of patients to the medic / squad loading area
   6. Provides frequent progress reports (CAN reports) to the EMS Officer
   7. Maintains incident documentation

B. Transportation Officer:
   1. Establish an adequately sized patient loading area in coordination with the Treatment Officer
   2. Unimpeded access for ingress and egress of medics / squads
   3. Establish communication with hospitals and maintains a list of capacities and capabilities
   4. Designates a medic / squad staging area (if needed)
   5. Determines amount and type of resources needed to handle the event & communicates those needs to the EMS Officer, including ground and air transport units
   6. Direct the transportation of patients in coordination with the Treatment Officer
   7. Provides frequent progress reports (CAN reports) to the EMS Officer
   8. Maintains patient tracking records and other incident documentation as necessary
START Adult Triage

Able to walk?
  Yes → MINOR → SECONDARY TRIAGE
  No → Spontaneous breathing
     No → Position airway → IMMEDIATE
     Yes → Respiratory Rate
        > 30 → APNEA
        ≤ 30 → Perfusion
           Radial pulse absent or capillary refill > 2 sec → IMMEDIATE
           or capillary refill < 2 sec
              Mental status
                 Doesn’t obey commands → IMMEDIATE
                 Obeys commands → DELAYED

Triage Categories

- **EXPECTANT** (Black Triage Tag Color)
  - Victim unlikely to survive given severity of injuries, level of available care, or both
  - Palliative care and pain relief should be provided

- **IMMEDIATE** (Red Triage Tag Color)
  - Victim can be helped by immediate intervention and transport
  - Requires medical attention within minutes for survival (up to 60)
  - Includes compromises to patient’s Airway, Breathing, Circulation

- **DELAYED** (Yellow Triage Tag Color)
  - Victim’s transport can be delayed
  - Includes serious and potentially life-threatening injuries, but status not expected to deteriorate significantly over several hours

- **MINOR** (Green Triage Tag Color)
  - Victim with relatively minor injuries
  - Status unlikely to deteriorate over days
  - May be able to assist in own care: “Walking Wounded”
STANDARD:
In the circumstance of cardiac arrest:
1. Telecommunicator directed CPR is initiated within 90 seconds of call receipt,
2. Resuscitation interventions are performed simultaneously by on-scene providers,
3. On-scene providers work collaboratively to minimize interruptions in chest compressions.

A priority-based methodology is identified in this standard to meet this goal.

PURPOSE:
To improve the outcome of patient cardiac resuscitation efforts via the effective use of available resuscitation resources and predefined provider priorities.

APPLICATION:

Characteristics of High Quality CPR (From Resuscitation Academy toolkit)
1. EMTs own CPR
2. Minimize interruptions in CPR at all times. Goal is compression fraction > 95%
3. Ensure proper depth of compressions (>2 inches)
4. Ensure full chest recoil / decompression
5. Ensure proper chest compression rate (100-120/ minute)
6. Rotate compressors every 2 minutes
7. Minimize peri-shock pause by:
   a. Hovering hands over the chest during shock administration
   b. Charging defibrillator while compressions continue
   c. Resume compression immediately after shock delivered – do not pause for rhythm analysis.
8. Intubate or place advanced airway with ongoing CPR
9. Place IV or IO with ongoing CPR
10. Coordination and teamwork between EMTs and paramedics.

Metrics

Core measures for measuring our performance during patient resuscitation are:

<table>
<thead>
<tr>
<th>Metric</th>
<th>Goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Call to dispatch</td>
<td>60 seconds or less 90% of the time</td>
</tr>
<tr>
<td>All calls</td>
<td></td>
</tr>
<tr>
<td>√ Is patient awake?</td>
<td>100% of calls</td>
</tr>
<tr>
<td>√ Is patient breathing</td>
<td></td>
</tr>
<tr>
<td>If “No” to both-</td>
<td></td>
</tr>
<tr>
<td>Telecommunicator CPR</td>
<td></td>
</tr>
<tr>
<td>Call to initiation of T-CPR</td>
<td>90 seconds or less 90% of the time</td>
</tr>
<tr>
<td>Dispatch to wheels rolling</td>
<td>90 seconds or less 90% of the time</td>
</tr>
<tr>
<td>Peri-Shock Pause**</td>
<td>10 seconds or less</td>
</tr>
<tr>
<td>Compression Fraction**</td>
<td>&gt;95%</td>
</tr>
</tbody>
</table>
**Definitions:**

Peri-Shock Pause
Any interruption in chest compressions before and/or after defibrillatory shock. The optimal pre-shock pause is < 5 seconds, with a maximum of 10 seconds

Compression Fraction:
The percentage of time (in seconds) that chest compressions are performed during resuscitation. Computed using the formula:

\[
\text{Compression Fraction (\%)} = \frac{\text{Resuscitation Time} - \text{Time of Pauses}}{\text{Resuscitation Time}} \times 100
\]

Example: during a cardiac arrest with a time to ROSC of 8 minutes 30 seconds (510 seconds) and a total amount of pauses of 69 seconds.

\[
\text{Compression Fraction} = \frac{510 - 69}{510} = 86\%
\]

**MEC Priority Based CPR**
Resuscitation is based upon the following priorities. Regardless of available resources these priorities do not change. Providers may change roles/responsibilities as resuscitation progresses, however any change should not interrupt CPR.

**Priority 1**
**CPR & Defibrillate**
Right Arm & Left Arm
- Right arm CPR –
  - Assesses patient responsiveness & pulse.
  - Initiates continuous CPR (not 30:2) at 100 compressions/minute
  - To facilitate ventilation with every 10th compression - counts out loud last 4 compression of every 10 compression cycle – “7-8-9-bag”
  - Alternates CPR every 2 minutes with Left Arm
- Left arm –
  - Applies AED/Defibrillator
  - Defibrillates if indicated
  - Alternates CPR every 2 minutes with Right Arm
- Assists with mechanical CPR set up. 4 minutes of manual CPR (400 compressions) before mechanical set up.
- Peripheral IV (if IO inadequate)/manage mechanical CPR at direction of code commander
**Priority 2**
Ventilation
Head
- Opens & clears airway
- Ventilation – No interruption in CPR
- Ventilates between compressions on the 10<sup>th</sup> compression ("7-8-9-bag")
  - BVM
  - Supraglottic airway or Intubation – after 400 compressions
- Applies EtCO2 sensor

**Priority 3**
In-Charge Medic
Left Leg
- "Code Commander" – responsible for running the resuscitation
- Monitor operation and rhythm interpretation
- Directs resuscitation
- Medication cross check
- Communicates needs to Battalion
- Completes resuscitation checklist

**Priority 4**
Intravascular Access & Medication Administration
Right Leg (Left Leg as Alternate)
- IO Access
- Draws up and administers medication
- Medication Cross Check with In-charge Medic

**Priority 5**
Runner
Identified by Code Commander as resuscitation progresses and team settles into routine.
- Assists with airway (2 handed mask seal)
- Mechanical CPR setup (after 400 compressions)
- Equipment retrieval & other duties as assigned by code commander

**Priority 6**
Scene Liaison
Battalion Chief or EMS Coordinator
- Scene safety and scene management
- Logistics – coordinates other resources
- Keeps family updated
- Assists with obtaining patient history and medication list
- Provides family support should resuscitation be terminated
Our Key Principles:

1. High quality CPR is key to resuscitation effectiveness and our primary task. It is the first patient care priority once on-scene.
   - CPR is continuous and not stopped for ventilation, airway insertion or other interventions.
   - 4 minutes (2 cycles) of manual CPR should be administered before a mechanical CPR device applied.
   - Crews should practice applying mechanical CPR device so application during cardiac arrest results in minimal interruption of CPR.
   - Pauses should be 10 seconds or less. Mechanical CPR device should be applied in 20 seconds or less.

2. Unless safety or physical space issues exist, resuscitations are most effectively performed at the location the patient is initially found.

3. The quality of compressions is the responsibility of every member of the team.

4. Rhythm assessment is made every two minutes with defibrillation as indicated with a maximum pause in compressions of 10 seconds.

5. TheALS component builds upon a strong BLS component maintaining an emphasis on minimum interruptions of compression.

6. The use of a resuscitation checklist is highly desirable as a means to ensure completeness and repeatability of resuscitation tasks. Please see sample checklist on the following page.

7. This model is meant to be flexible and each agency should tailor the roles to the resources that they have available.

Teamwork requires practice. Agencies must commit to realistic practice involving first responders, transport resources and ALS providers. Practice should include feedback to the participants on the rate and depth of compressions, duration of pauses and include a calculation of compression fraction.
Example resuscitation checklist:

- Crew positions Identified
- Continuous compression performed at 100 compressions per minute. No interruptions for airway procedures or ventilation.
- Rhythm check every 2 minutes
  - Charge defibrillator at 1 minute 45 seconds
- Compressor rotated every two minutes (every 200 compressions)
- 4 minutes of manual CPR before mechanical device applied
- Mechanical CPR device applied with minimal interruptions
- BVM is attached to oxygen and flowing
- ITD (impedance threshold device) in place w/light activated (if applicable)
- Monitor visible and in **PADDLES** mode
- In-charge medic is identified and positioned at the monitor
- Advanced airway inserted after 4 minutes of resuscitation without interruption of compressions
- IV/IO access obtained
- ETCO2 waveform present and monitored
- Family is receiving care and included in resuscitation process
- Consider Hs and Ts
  - Hypovolemic
  - Hypoxia
  - Hydrogen Ions (acidosis)
  - Hypothermia
  - Hyper/hypokalemia
  - Hypoglycemia
  - Tablets / Toxins
  - Tamponade
  - Tension Pneumothorax
  - Thrombosis (MI)
  - Trauma
Priority 6
Team Leader
Battalion
1. Scene Safety
2. Interface with family
   a. Medication & health Hx.
   b. Advise family
3. Logistical support

Priority 1
CPR & Defibrillate
Right Arm
1. Assess responsiveness and check for pulse
2. Initiates continuous compressions
3. Alternates CPR with right arm every 2 minutes
4. Assists with mechanical CPR set up-after 4 minutes (400 manual compressions)
5. Peripheral IV if directed by In-Charge

Priority 2
Ventilate
Head
1. Open & clear Airway
2. Ventilate without interrupting CPR
   a. BVM
   b. SGA or ET after 4 minutes of CPR
3. Apply EtCO2

Priority 3
In-charge (Code Commander)
Left Leg
1. Monitor operation & rhythm interpretation
2. Directs resuscitation
3. Orders medications & performs medication cross-check
4. Communicates needs to Battalion

Priority 4
Vascular Access
Right Leg
1. IO access
2. Draws up medications, performs medication cross-check & administers Medication as directed by Code Commander
3. Communicates needs to Battalion

Priority 5
Runner
(Identified by code commander as resuscitation progresses & circumstances allow)
Wherever Needed
1. Assists with airway & setup of mechanical CPR
2. Equipment retrieval
3. Other duties as assigned
STANDARD:
In general, MEC EMS providers should only provide interfacility transfers for time-critical conditions, including those who meet specialty designation center criteria who are not already at an appropriate specialty receiving center; e.g. trauma, stroke, STEMI, post-cardiac arrest and pediatrics. For this standard an “interfacility transfer” is defined as transfer from a hospital based emergency department, free standing emergency department or specialty in-patient hospital to another in-patient hospital.

MEC EMS providers shall not transport patients in cardiopulmonary arrest who are actively being resuscitated (CPR in progress).

MEC EMS providers shall transport patients to the closest appropriate facility as defined by the clinical standard on Patient Transport.

MEC EMS agencies that anticipate providing interfacility transfers are expected to comply with the Ohio Board of Emergency, Medical, Fire and Transportation Services (EMFTS) position statements regarding:
1. Interfacility Transport of Patients by EMS providers and the Scope of Practice, October 2013
2. EMS Provider Transport of Patients with Pre-Existing Medical Devices or Drug Administrations, February 2016

PURPOSE:
To provide guidance regarding transporting a patient from a medical facility to another facility when that patient requires Advanced Life Support during transport.

APPLICATION:
1. The transporting paramedic should ensure that all appropriate documentation accompanies the patient.
2. The transporting paramedic should verify the receiving hospital and that the hospital has accepted the patient in transfer.
3. The patient will be transported to the closest appropriate facility as defined by the clinical standard on Patient Transport.
4. All EMS rendered treatments must comply with the MEC EMS protocol in effect at the time of transfer.
5. The transporting paramedic(s) may maintain any infusion or treatment in compliance with the two Ohio EMFTS Board position papers cited above.
6. If the transporting paramedic(s) are not comfortable maintaining medication infusions or treatment provided by the sending facility, then the paramedic(s) may request a registered nurse accompany the patient.
7. When transporting a registered nurse and a patient, both the transport crew and accompanying staff are responsible for patient care.
8. Should a MEC EMS crew be requested to provide interfacility transfer of a non-time-critical patient, the crew should contact their shift officer (e.g. battalion chief) for guidance.
9. Should a patient substantially deteriorate while in route to the receiving facility, the crew may divert to the closest appropriate hospital based emergency department for patient stabilization. The transferring facility should be notified via radio or cellular phone.
<table>
<thead>
<tr>
<th><strong>Transfer From:</strong></th>
<th><strong>Transfer To:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reason for Transfer:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Patient Name:</strong></td>
<td><strong>DOB:</strong></td>
</tr>
<tr>
<td><strong>Allergies:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Past Medical Hx.:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Current Mental Status:</strong></td>
<td>Awake &amp; Oriented</td>
</tr>
<tr>
<td><strong>Current Vitals:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>BP</strong></td>
<td><strong>Pulse:</strong></td>
</tr>
<tr>
<td><strong>Oxygen:</strong></td>
<td>NRB Mask</td>
</tr>
<tr>
<td><strong>Bilateral Lung Sounds Verified:</strong></td>
<td>YES</td>
</tr>
<tr>
<td><strong>IV #1 Verify:</strong></td>
<td>Site</td>
</tr>
<tr>
<td><strong>IV #2 Verify:</strong></td>
<td>Site</td>
</tr>
<tr>
<td><strong>IV #3 Verify:</strong></td>
<td>Site</td>
</tr>
<tr>
<td><strong>Cardiac Monitor/Current Rhythm:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CPR Prior to arrival:</strong></td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Procedures received prior to transport:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Medications received prior to Transport:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Medications to continue during transport:</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Med:</strong></td>
<td><strong>Dose:</strong></td>
</tr>
<tr>
<td><strong>Movement Restrictions:</strong></td>
<td></td>
</tr>
</tbody>
</table>

This form is part of patient’s medical record. Attach this form to the patient’s EMS run report.
The State Board of Emergency Medical, Fire, and Transportation Services ("EMFTS Board") issues the following statement:

Regarding Interfacility Transport of Patients by EMS Providers and the Scope of Practice
June 2018

This statement is an attempt to provide general information about the above issue facing EMS providers. It should not be treated as legal advice or medical direction. For direct advice regarding a particular scenario, please consult with your medical director and legal counsel. Although the following statement represents the EMFTS Board’s general position on the above issue, this statement in no way precludes the EMFTS Board from taking disciplinary action in a particular case if necessary. Any potential complaints brought before the EMFTS Board will be decided on a case-by-case basis.

Introduction:
The State Board of Emergency Medical, Fire, and Transportation Services and the Ohio Department of Public Safety, Division of Emergency Medical Services, have developed a defined scope of practice for all EMS providers. The scope of practice for emergency medical technicians (EMTs), advanced emergency medical technicians (AEMTs), and Paramedics is established respectively in Ohio Administrative Code Chapters 4765-15, 4765-16, and 4765-17. An outline of the Ohio EMS scope of practice is available in a matrix form and is posted on the Ohio Department of Public Safety, Division of EMS’ website as a reference for public access. This scope of practice addresses all levels of EMS providers and has been approved by the EMFTS Board. Updates to the scope of practice are made as necessary and must be approved by the EMFTS Board.

From time to time, during interfacility transport, EMS providers are confronted with medications, interventions, and therapies that are beyond their routine scope of practice and training. In these scenarios, additional training (particularly for the Paramedic) paired with initial and ongoing demonstration or testing of skills, is required. The intent of this position paper is to address the approach of the EMS providers and their medical directors to these situations which are not explicitly covered in the Ohio EMS scope of practice.

Discussion:
The number and type of medications, interventions, and therapies in the medical field currently or potentially encountered by the EMS provider in the interfacility transport setting are extensive and may change frequently. The intent of this position paper is not to provide an inclusive or exclusive list of medications, interventions, and therapies that should be included or excluded from the EMS provider’s scope of practice. Rather, the intention of this document is to frame the discussion around maintenance of patient safety during interfacility transport and provision of patient care that is appropriate to the EMS provider’s level of training, including additional training that has been approved and documented by the medical director and completed well in advance of the transfer.

Additionally, the success of any EMS service requires robust medical direction from an actively involved physician who meets the requirements set forth in Ohio Administrative Code 4765-3-05. This includes, but is not limited to, the initial and ongoing training of EMS providers, as well as an active performance improvement process in which all transports are subject to review for quality assurance.

The scope of this document includes all transports in which the highest level of training of the personnel in the transport vehicle is a Paramedic, including transports that require additional training. A mobile intensive care unit, as legislated in Ohio Revised Code 4766.01, is qualified to transport patients whose conditions require care beyond the scope of practice of a Paramedic. A mobile intensive care unit requires the inclusion of a registered
nurse or other allied health professional as cited in Ohio Administrative Code 4766-4-12 and a transport vehicle that has the vehicle specifications and required equipment cited in Ohio Revised Code 4766.07 and Ohio Administrative Code 4766-4-08.

Conclusion:
All authorized services provided by certified Ohio EMS providers, which are cited in Ohio Revised Code 4765 and Ohio Administrative Code 4765, require a written protocol from the medical director. The EMT, AEMT, and Paramedic certification is limited to the scope of practice that is set forth respectively in Ohio Administrative Code Chapters 4765-15, 4765-16, and 4765-17. Furthermore, this position paper does not provide an inclusive or exclusive list of medications, interventions, and therapies that should be included or excluded from the EMS provider’s scope of practice. Patient care or services provided that are beyond the routine practice of the certified Ohio EMS provider require additional training that has been approved and documented by the medical director. All additional training must be completed well in advance of the patient transfer and should be paired with initial and ongoing demonstration or testing of skills as an adjunct to support competency.

Prior to accepting a patient for interfacility transportation, the EMS provider:

- Shall complete training for all services provided, including the management of medical equipment and devices, well in advance of the patient transfer, and any additional training must be approved and documented by the medical director.
- Shall complete training for all medications administered, including indications, contraindications, pharmacology, and side effects, well in advance of the patient transfer, and any additional training must be approved and documented by the medical director.

In addition, during the interfacility transportation of patients, the EMS provider:

- Shall follow written protocols, which have been developed and signed by the EMS provider’s medical director.
- Shall not initiate the infusion of blood or blood products including the initiation of infusion of additional units. Under the current scope of practice, the Paramedic may only maintain the infusion of blood or blood products.
- Shall not initiate the infusion of intravenous parenteral nutrition including the initiation of infusion of additional units. Under the current scope of practice, the Paramedic may only maintain the infusion of intravenous parenteral nutrition.
- Shall not initiate or continue the infusion of chemotherapeutic agents.
- Should refuse to initiate a transport if the EMS provider feels that adequate training on a specific medication, intervention, or therapy has not been provided well in advance of the transfer as outlined above or if the EMS provider feels uncomfortable with the transport for any reason, including but not exclusive to safety reasons, patient scenario, or any requested parameter of patient care delivery ordered during patient transport.

Concerns or questions regarding specific interfacility transports should be directed to the Ohio Department of Public Safety, Division of Emergency Medical Services.
STANDARD:
Patient safety is paramount. Medication Cross Check, as outlined in this standard, will be completed with each medication before it will be administered to a patient. Medication Cross Check will be documented in the patient care record.

This standard does not apply to the routine administration of supplemental oxygen.

PURPOSE:
This standard outlines the procedure to be followed for administration of all PO, IV, IO, IM or IN medication(s) to a patient.

APPLICATION:
The Medication Cross Check process is as follows on the next pages.

Abbreviations used:

R.C.V. (for IV, IM, IN, IO medications)
- Ready
- Contraindications
- Volume

R.C.Q. (for PO medications)
- Ready
- Contraindications
- Quantity
Provider 1
(Giving the medication)

Med-Check or Safety-Check or Cross-Check

“I am going to give” Dose Drug name Rate Reason

If none state “No Contraindications” Otherwise verbally verify

• State the drug concentration
• State volume to be administered in milliliters (Do not say “amp” or “vial” or state # of tablets
• Show the vial/bottle to provider 2 (if safe to do so)

Concurrence

Provider 2
Remember: “R.C.V.” or “R.C.Q.”)

“Ready”

“Contraindications?”

Concurrence

“Volume?” (or Quantity?“ for PO)

Concurrence & Positive Visual Verification

Sounds good, Give it, Go ahead, etc.

• “Contraindications” include: 1. verification of appropriate vs. 2. known patient allergies and 3. expiration date.
• If a discrepancy, disagreement, or need for clarification is encountered at any step in the process, it must be resolved prior to continuing the cross-check.
• Essentially, only Provider 2 can authorize the administration of the medication.
• The MACC (Medication Administration Cross Check) must be completed prior to the administration of any medication.
• If there is an interruption of change in patient condition of any kind, the process must be re-initiated by Provider 1.
• Avoid ambiguous statements or confirmations like “okay.”

RED RULE of Medication Administration
(A duty to Avoid Causing UNJUSTIFIABLE Harm)

NEVER give the contents of a syringe that is not labeled or without visualizing the vial or ampule from which it was Immediately drawn.
RED FLAGS of Lost Situational Awareness
And Errors in Production

Situational Awareness is the ability to identify, process and comprehend the critical elements of your team’s actions with regard to achieving your team’s goals.

Red flags are signs that you or someone on your team has lost situational awareness and a verification is needed.

- Intuition or a “bad gut feeling”
- Rushing
- Poor Communication
- Disagreement
- Task Saturation
- Trying Something New Under Pressure
- Interruptions
- Ambiguity
- Preoccupation
- Confusion

STOP & VERIFY

Establish a collective awareness by:

- Review the situation out loud (SBAR)
  - Situation
  - Background
  - Assessment
  - Recommendation
- Defer to expertise
- Look it up (i.e. protocols, SOP)
- Contact the Medical director

Be the Voice of the patient!

Slow is Smooth, Smooth is fast!
STANDARD:
Providers are often faced with patient conditions that require immediate intervention** in order to decrease patient risk of disability or death. To reduce patient risk, EMS providers will bring appropriate equipment with them when arriving on-scene.

PURPOSE:
To establish a minimum list of equipment that will be taken to the patient’s side on every call.

APPLICATION:
Responding clinicians should have at the patient’s side and at their immediate access the tools and supplies to provide anticipated interventions, based on the dispatched message, for the following:

- Personal protective equipment (PPE)
- Basic and advanced airway management
- IV access
- Bleeding control
- Cervical spine control
- Oxygen delivery
- Vital sign measuring devices

In addition, based on the dispatched nature or message, responding clinicians should consider having a limited supply of medications and delivery devices and the tools with them to include but not limited to:

- Oral glucose
- D10-250ml for infusion
- Naloxone
- Epi 1:1000
- Albuterol and Atrovent
- Cardiac Monitor (AED for first responders)

**Interventions are most commonly associated with:

- Obstructed or compromised airway
- Ineffective ventilation
- Ineffective circulation
- Removal from impending, active or ongoing physical harm
STANDARD:
Patients with acute pain will be provided appropriate interventions to assist in controlling their pain.

PURPOSE:
To make our patients as comfortable as possible during transport to an appropriate facility.

PROCEDURE:
1. Injuries/Illnesses sustained by patients or procedures performed by personnel may produce acute pain.
2. It is the desire of MEC EMS that all transports are as comfortable as possible for the patient.
3. Interventions for pain control include extremity immobilization, application of ice packs and administration of medications as identified elsewhere in the MEC EMS protocol.
4. Pre-hospital narcotics are not indicated for all EMS patients with the complaint of pain. Pain control by EMS providers is limited to severe acute pain (not stable chronic pain) that is of readily identifiable source (e.g. multiple trauma, severe burns, extremity fracture with deformity) or of acute onset with readily apparent patient discomfort (e.g. kidney stones, myocardial infarction).
5. Sedation and pain control medications may interfere with the physician's ability to properly assess the patient on arrival to the Emergency Department. There is a balance between decreasing pain and anxiety and interfering with the physician's assessment of the patient.
6. Patients that have sedatives or narcotics administered must be transported. They are unable to decline transport.
7. The Medication Administration Cross-Check standard must be followed.
STANDARD:
Use of restraints is permitted when necessary to:
- Control a patient that is exhibiting violent behavior due to acute medical condition and restraints are necessary to protect patient or EMS crew.
- Prevent a patient from interfering with medical care such as pulling out an endotracheal tube or IV.

PURPOSE:
To identify appropriate means to effectively restrain a violent patient while assuring patient and crew safety.

APPLICATION:
Patient restraint may be necessary for the safety of the patient or EMS crew. Restraint can be chemical (IV or IM midazolam, ketamine) or physical (wrist/ankle straps or Posey vest).

Restraint use by EMS is not permitted if restraint use is solely part of a law enforcement action. This restriction does not apply if the medic is part of tactical EMS crew acting in the “Hot Zone”.

**Chemical restraint is preferred over physical.** Refer to Versed and Ketamine Drug Card for sedation information.

When restraint is used, the patient must be supine with head elevated 30 degrees or on left side in recovery position. Restraining patient face down, with hands behind back or hands and legs behind back (hog-tied) is prohibited.

If the patient is in police custody and in handcuffs then a police officer must ride in the back of the medic vehicle with the patient.

The use of physical or chemical restraint must be documented in the run report. Documentation should include reason for restraint (violent behavior or interruption of medical care) and the position of the patient while in restraints.

If restraint is used then a patient must be transported to an emergency department. When giving the radio report to the ED, the EMS provider should advise the call taker of the use of chemical or physical restraint and request for security to be present upon their arrival.
STANDARD:

Patients will be offered transportation an appropriate local hospital. Patients will be appropriately restrained during transport to assure their safety. Patient monitoring will be provided as indicated by the patient’s clinical condition. Such monitoring will continue until patient handoff at the receiving hospital is completed. This includes maintaining monitoring while off-loading patient at receiving hospital. Certain clinical conditions dictate specific transport decisions as directed in this standard.

PURPOSE:

This standard establishes a uniform protocol for the transportation of the sick and injured.

APPLICATION:

All sick and injured persons requesting transport shall be transported without delay to an appropriate local hospital of the patient’s preference. If the patient has no preference, the patient will be taken to the closest appropriate hospital based upon the patient’s medical history and clinical condition. Unstable patients will be taken to the closest appropriate hospital. Conditions requiring transportation to hospitals with specialty services are outlined as part of this standard.

Safe Patient Transport

Patients are at risk of injury when transported by EMS. EMS must provide appropriate stabilization and protection to all patients during transport.

1. All patients shall receive a minimum assessment as outlined in the Adult and Pediatric Universal Patient Assessment protocols.

2. Patients with any of the following will be moved to the transporting vehicle via cot or wheelchair (not self ambulated):
   a. Chest pain
   b. Dyspnea
   c. Altered level of consciousness
   d. Unstable vital signs
      i. Systolic BP < 90
      ii. Heart rate < 50 or >120 BPM
      iii. SaO2 < 94%
      iv. Respiratory rate >30 respirations per minute
   e. Clinical condition requiring treatment with bronchodilators or IV fluid bolus
   f. Severe pain
   g. Any other illness or injury that prevents the patient from ambulating without assistance.

3. Patients will be secured to the vehicle’s transport cot with seatbelts.
4. Drive cautiously at safe speeds observing traffic laws.
5. Tightly secure all monitoring devices and other equipment.
6. Insure that all pediatric patients less than 40 lbs. are restrained with an approved child restraint device and secured as per the manufacturer’s instructions.
7. Insure that all EMS personnel use the available restraint systems during the transport.
8. Do not allow the parents, caregivers or other passengers to be unrestrained during transport.
9. Do not allow the parent or caregiver to hold a pediatric patient during transport.
Load & Go Situations
Any of the following patient conditions will be considered a “load & go”. There is an expected scene time of 15 minutes or less.

1. Airway obstruction that does not respond to standard maneuvers (can’t intubate, can’t ventilate).
2. Traumatic cardio-respiratory arrest. (Unless termination required by Termination of Resuscitation Protocol.)
3. Pericardial tamponade.
4. Major chest injury (i.e. tension pneumothorax, massive hemothorax, sucking chest wound, penetrating wounds with shock, flail chest).
5. Head injury with decreasing level of consciousness and/or unilateral dilated pupil.
6. Any other patient with unstable vital signs
7. STEMI patients.
8. CVA patients with 911 call of < 5 hours since symptom onset.

The only field treatment to be instituted prior to or during transport (and only if specifically needed) are as follows:

1. Airway management with C-spine control, including adequate positive pressure ventilation in head injured patients.
2. Chest wound management (i.e. tension pneumothorax, sucking chest wound, flail chest stabilization). See specific protocol.
3. IV or IO vascular access if placed during extrication or during transport.
4. C-collar and backboard when appropriate.
5. Cardiac monitor.
6. Hemorrhage management.

Transport to Hospital of Record
Patients who have been treated and released from a local hospital within the previous 30 days and are suffering from a recurrence, exacerbation or complication of the condition resulting in that admission will be transported to that hospital.

Patients with chronic medical conditions who consistently receive treatment for a condition by a hospital will be transported to that hospital, even if the hospital is on DIVERT status. Such patients include but are not limited to those requiring care related to transplant or dialysis services.

The requirements of this section do not apply if the patient is unstable. An unstable patient will be transported to the closest appropriate hospital.
Specialty Transport Destinations

**Trauma**
Trauma patients shall be transported in accordance with Ohio’s Trauma Triage Protocol (Adult and Pediatric Trauma Triage) to a Level I & Level II Trauma Centers. Pregnant trauma patients should not be taken to Nationwide Children’s Hospital, regardless of age.

- Grant Medical Center – Level I
- OSU Wexner Medical Center – Level I
- Nationwide Children’s Hospital – Level I
- Riverside Methodist Hospital - Level II
- Mt Carmel East - Level II
- OSU-East – Level III

**Acute ST Elevation Myocardial Infarction**
Patients with an acute ST Elevation MI will be transported to the closest hospital with ability to provide emergent cardiac catheterization. These hospitals are:

- Mount Carmel East Hospital
- Mount Carmel St. Ann’s Hospital
- Grant Medical Center
- OSU Wexner Medical Center
- Riverside Methodist Hospital
- Licking Memorial Hospital
- Fairfield Medical Center
- Doctors West Hospital

**Acute Stroke**
Patients with LAMS Scores of 1 - 3 points and last know normal is less than 4.5 hours, should be transported to the closest hospital as listed below:

**LAMS 1-3**

- Mount Carmel East Hospital
- Mount Carmel St. Ann’s Hospital
- Grant Medical Center
- OSU East Hospital
- Riverside Methodist Hospital
- OSU Wexner Medical Center
- Diley Ridge Medical Center

**LAMS 4-5**
Patients with LAMS of 4 - 5 points OR last known well greater than 4.5 but less than 24 hours (regardless of LAMS score) should be transported to the closest Comprehensive Stroke Center unless bypassing a primary stroke center results in an incremental increase in transportation time greater than 15 minutes. Comprehensive stroke centers are:

- Mount Carmel East Hospital
- Riverside Medical Center
- OSU Wexner Medical Center

Last known well and greater than 24 hours transport to closest hospital.

**Amputations**

- Riverside Methodist Hospital
- The Ohio State University Wexner Medical Center
- Nationwide Children’s Hospital
Specialty Transport Destinations-continued

Environmental Emergencies
Burns
- The Ohio State University Wexner Medical Center
- Nationwide Children's Hospital
Carbon monoxide Exposure
- The Ohio State University Wexner Medical Center

Psychiatric Patients: May divert to freestanding psychiatric hospital if qualifies as identified in Clinical Standard on Diversion of Psychiatric Patients.
- Adult Patients - transport to closest facility
- Pediatric Patients
  - Age 15 & up – transport to OSU Wexner Medical Center
  - Age 14 & below – transport to Nationwide Children’s Hospital
  - Any age & pregnant – transport to OSU Wexner Medical Center

Left Ventricular Assist Devices
Any patient with a left ventricular assist device (LVAD) will be transported to OSU Wexner Medical Center, or Riverside Methodist Hospital, regardless of the nature of their complaint.

Inter-Facility Transfers (Hospital-to-Hospital)
Inter-facility transfers are those where EMS is called by one medical facility for the purpose of emergently transporting a patient to an emergency department of a hospital more fitting to the patient’s specific needs. MEC EMS providers only transport patients to another emergency department or labor & delivery. See Interfacility Transfers clinical standard.

In situations where a patient calls 911 from a hospital emergency department lobby and who has already been triaged, the EMS crew shall notify the EMS Supervisor or Battalion Chief on duty and the triage nurse prior to making any patient disposition decisions.

MEC EMS does not provide routine inter-facility transfers in situations where no emergent medical condition exists, i.e.: inpatient hospital transfers or transporting patients from a nursing home to scheduled appointments.
Patient Handoff in Triage
Emergency depart volume may dictate that some EMS patients be taken to triage rather than an open bed. Patients that can be safely evaluated in triage are those who present with and maintain stable vital signs in the pre-hospital setting, and whose chief medical complaint is one that may not represent an immediate life threat.

The decision regarding a triage handoff of care rests with the receiving facility. EMS providers should not determine whether a patient is suitable for triage.

The following patients are not candidates for transport to triage:
1. Patients transported to Nationwide Children’s Hospital
2. Adults over age 70
3. Residents of nursing homes or extended care facilities
4. Patients who are intoxicated
5. Patients with acute psychiatric disorders
6. Patients who have had a recent seizure
7. Patients in police custody
8. Patients who are unstable, non-ambulatory or who have IV/IM/intranasal or aerosolized medications administered prior to arrival at the ED.

Transport to Urgent Care Center
Patients with a minor illness or injury may be offered transportation to a local urgent care center.

Transportation to an urgent care center shall only occur if:

1. Patient consents to transportation to urgent care center.
2. Before transporting the patient the in-charge medic contacts urgent care center and verifies center is capable of managing the patient’s condition and is a participating provider for the patient’s insurance plan.

Note: Nationwide Children’s Hospital Closer to Home and urgent care centers will not accept EMS patients
STANDARD:
The medical direction of pre-hospital care at the scene of an emergency is the responsibility of those most appropriately trained in providing such care. All care should be provided within the rules and regulations of the state of Ohio.

PURPOSE:
With the exception that a physician, from time to time, may accompany MEC EMS providers as they perform their duties in the field, or otherwise be involved as a Good Samaritan, the following statement of policy is provided in order to clarify the role of the physician to the scene of an emergency. Obviously, a physician may be present at the scene under a variety of circumstances. For example, he/she may be:

1. A physician of undetermined training and background who happens upon the scene and then acts in the capacity of a Good Samaritan.
2. An industrial physician who is present on an industrial site injury/illness.
3. A physician who is present in his office and has requested emergency medical services (EMS).

In case of the "Physician as the Good Samaritan", the medic/squad shall perform its duties in the usual manner under the direction of accepted protocols. Any participation by the Good Samaritan physician shall be courteously declined, unless first approved by the ranking officer. In the event the Good Samaritan assumes responsibility, it must continue at the scene, in transit, and until relieved by another physician in the emergency department to which the patient is delivered.

In the case of the "industrial physician," if the medic/squad is called in a life or limb threatening illness/injury where an industrial physician is in attendance, the physician will assume full responsibility for the management of the patient and will supervise the EMS providers.

Ohio’s Scope of Practice including position statements from the Ohio Emergency Medical, Fire and Transportation Services Board permit EMS providers to continue medications or interventions initiated prior to EMS arrival. This includes blood products. EMS may not initiate additional blood products while in route to the hospital. EMS is not permitted to continue chemotherapeutic agents during transport. Hence the ordering physician does not need to accompany the patient during transport but should be identified in the patient care report as the ordering physician.

APPLICATION:
When called to the scene by a physician in his office, the medic/squad shall perform its duties in the usual manner under the direction of written protocol. The physician in his office may elect to take charge and supervise the management of the patient. An EMT-A, Advanced EMT-A, or EMT-P is protected by civil immunity when following the direction of a physician unless the actions of the EMT-A, Advanced EMT-A, or EMT-P can be characterized as willful and wanton misconduct. A fully licensed physician who wishes to assume control of the emergency medical care of the patient must agree to the following:
1. Provide the EMT-A, Advanced EMT-A, EMT-P with satisfactory proof that he/she is a physician. The State Medical Board License card is preferred.
2. Recognize the following:
   a. EMT-A, EMT-A Advanced, or EMT-P can function only within the scope of his/her training and statutory authority.
   b. Any orders given beyond the training and/or authority of the EMT-A, EMT-A Advanced, or EMT-P, or conflicting with his/her training or authority requires the physician responsible for assuring adequate supervision and transport. This means the physician will accompany the patient to the hospital unless it is a multiple-casualty incident or disaster situation and he/she deems it necessary to stay at the scene.

A "Cooperating Physician" may be a physician at the scene of a medical emergency who can control/supervise the activities of the EMT-P within the scope of the EMT-P training and authority. The physician who has assumed control at the scene is responsible for assuring adequate supervision over the activities of the EMT-P until supervision/control is transferred to the receiving hospital personnel. If a level of care beyond the training and/or authority of the EMT-P has been established, the physician assumes responsibility for medical care during transport. When an EMT-P is operating by written standing orders prepared by a medical advisor or advisory board, a physician at the scene can assume control of the EMT-P and may supersede the written orders and require the cooperation and assistance of the EMT-P.

After assuming control, the physician can transfer care of the patient back to the EMT-P, if the care has not gone beyond the EMT-P level of training and/or authority. If the level of care goes beyond the EMT-P's scope of training and/or authority, the physician who assumes control is responsible for assuring the adequate supervision of the medical care during transport until supervision/control is transferred to the receiving hospital personnel.
The State Board of Emergency Medical, Fire, and Transportation Services ("EMFTS Board") issues the following statement:

Regarding EMS Provider Prehospital Transport of Patients with Pre-Existing Medical Devices or Drug Administrations
February 2018

This statement is an attempt to provide general information about the above issue facing EMS providers. It should not be treated as legal advice or medical direction. For direct advice regarding a particular scenario, please consult with your medical director and legal counsel. Although the following statement represents the EMFTS Board’s general position on the above issue, this statement in no way precludes the EMFTS Board from taking disciplinary action in a particular case if necessary. Any potential complaints brought before the EMFTS Board will be decided on a case-by-case basis.

Introduction:
The EMFTS Board and the Ohio Department of Public Safety, Division of Emergency Medical Services, has developed a defined scope of practice for EMS providers. It is maintained in matrix form and available online as a reference for public access. This scope of practice addresses all levels of EMS providers and has been approved by the EMFTS Board. Updates to the scope of practice are made as necessary and after approval by the EMFTS Board.

From time to time, EMS providers are confronted on-scene with patients with preexisting medical situations not included or addressed in their respective EMFTS Board approved scope of practice. Specifically, patients with pre-existing medical devices and drug administrations requiring prehospital EMS service are becoming more commonplace. The intent of this position paper is to address the EMS provider’s approach to that prehospital patient with a pre-existing physician-ordered medical device or drug administration ("MDDA") not covered in the provider’s scope of practice.

Discussion:
In general, the EMS provider should maintain the pre-existing MDDA and transport the patient to the appropriate facility. There is no expectation that the EMS provider will initiate, adjust, or discontinue the pre-existing MDDA. This implies that the EMS provider will maintain and continue care so that the patient can be transported.

The EMS provider is expected to follow local protocols regarding the overall evaluation, treatment, and transportation of this type of prehospital patient requiring EMS service. It applies to EMS provider situations where alternative transportation and care is not available or practical (prehospital or "911 scene response"). It implies that the most appropriate and available level of EMS provider will respond to the request for prehospital EMS service. It also implies that the patient requires the pre-existing MDDA and it is not feasible or appropriate to transport the patient without the pre-existing MDDA.

The number and type of pre-existing MDDAs currently or potentially encountered by the EMS provider in the community setting is extensive and may change frequently. The intent of this position paper is not to provide an inclusive list of pre-existing MDDAs. However, as a guideline for the EMS provider, current pre-existing MDDAs may include ventilatory adjuncts (CPAP, BiPAP), continuous or intermittent IV medication infusions.
(analgesics, antibiotics, chemotherapeutic agents, vasopressors, cardiac drugs), continuous gastric or parenteral infusion of nutrition, and nontraditional out-of-hospital drug infusion routes (subcutaneous infusaports, central venous access lines, direct subcutaneous infusions, self-contained implanted pumps).

Conclusion:
In conclusion, the EMS provider confronted with a prehospital patient with a pre-existing physician-ordered medical device or drug administration not covered in the EMS provider’s respective scope of practice should provide usual care and transportation while maintaining the pre-existing MDDA, if applicable. Concerns or questions regarding real-time events associated with a pre-existing MDDA should be directed to the relevant physician providing medical direction. Concerns or questions regarding previous, recurrent, or future prehospital transportations with a pre-existing MDDA should be directed to the appropriate EMS medical director and legal counsel.
STANDARD:
The MEC EMS protocol will be reviewed, revised and updated every 2 (two) years and implemented January 1<sup>st</sup> of even years.

The MEC EMS medical director may revise the protocol at any time as necessary to:
1. Comply with changes in legal or regulatory standards, or
2. Comply with changes in the EMS providers’ scope of practice as defined by the Ohio Emergency Medical, Fire & Transportation Services Board (EMFTS Board), or
3. Adapt to changes in EMS patient care standards, or
4. Add/delete equipment or medications.

PURPOSE:
This standard outlines the process for MEC EMS protocol to be revised and updated.

APPLICATION:
1. The medical director, associate medical directors and the MEC EMS Protocol & Education Committee are responsible for MEC EMS protocol maintenance.
2. The protocol will undergo full review and revision during odd years. Revisions to the protocol must be completed and distributed by September 30<sup>th</sup> of odd years.
3. Protocol training is provided to MEC EMS providers during the last 3 months of odd years.
4. The medical director may make specific protocol changes at anytime as identified in paragraph 2 of this standard.
STANDARD:
Effective January 1, 2019 all new EMS providers of MEC EMS member agencies will be credentialed by the MEC EMS medical director within 90 days of employment by the agency. Effective January 1, 2019 all existing EMS providers of MEC EMS member agencies will be credentialed by the medical director annually.

DEFINITIONS:

Certification: Authorization by the State of Ohio as a regulatory body to legally practice in Ohio. The provider is minimally proficient to perform emergency prehospital care commensurate with their level of certification (EMR, EMT, AEMT, Paramedic).

Credentialed to Practice: Approval by the MEC EMS medical director as having demonstrated competency to practice at a specific level of prehospital care as defined by the MEC EMS protocol.

Authorization to Practice: A credentialed provider is automatically authorized by the medical director to practice under the MEC EMS protocol commensurate with the provider’s level of certification.

Provisional Authorization to Practice: Temporary, limited authorization by the medical director for the provider to practice under the MEC EMS protocol as outlined in this document.

Special Qualifications: An EMS provider has received additional training and maintains additional clinical skills over and above the knowledge, training and skill set required to qualify for their Ohio certificate. These providers are approved by the MEC EMS medical director to practice under additional or expanded medical protocols (over and above the MEC EMS protocol). Examples are TEMS medics and community paramedics.

NOTE: At no time may a provider be credentialed or authorized to practice outside the scope of practice established by the Ohio Emergency Medical Fire and Transportation Services (EMFTS) Board.

PURPOSE:
To assure each MEC EMS provider is competent to care for patients as part of the MEC EMS system of care. An individual is “Credentialed to Practice” when he/she successfully meets and maintains the credentialing requirements outlined in this clinical standard.

APPLICATION:
1. Effective January 1, 2019 a MEC EMS providers may practice under the MEC EMS protocol only after the medical director has received written affirmation that the clinician is familiar with and proficient at performing all skill sets found under the protocol.
   a. Existing MEC EMS providers are credentialed annually to practice under the MEC EMS protocol, commensurate with their level of certification.
   b. Newly hired EMS providers are granted provisional authorization to practice under the MEC EMS protocol by the medical director that is in effect for 90 days after the provider’s start date with the department. They must complete the credentialing process before the end of their provisional period. During this provisional period new providers shall not provide patient care unless directly supervised by a fully credentialed provider of similar or higher level of certification.
2. Before a new provider is granted provisional authorization to practice under the MEC EMS protocol the medical director must receive a letter or email from the agency’s chief indicating:
   a. Provider name and level of certification (EMR, EMT, AEMT, Paramedic)
   b. Providers date of birth
   c. Provider’s anticipated start date
   d. Provider’s employment status (part-time, full-time)
   e. Documentation that the agency has verified the new provider has an unrestricted certificate to practice in Ohio.
   f. Identification of any other MEC EMS member agency(ies) for which the provider currently works.

   Once the medical director receives notice from the chief he/she will send notice of provisional credentialing to the chief within 10 days.

3. New part-time providers have a provisional period of 180 days. If the new part-time provider is offered full-time employment by a member agency, then he/she must complete the credentialing process within the lesser of:
   a. The initial 180 period; or
   b. Within 90 days of beginning full-time employment.

4. Providers who are employed by more than one MEC EMS member agency are credentialed once by the medical director and re-credentialed as discussed in paragraph 1. If the provider is employed on a full-time basis by a member agency, the credentialing/re-credentialing burden falls on that agency. If the provider is employed on a part-time basis by multiple member agencies, the credentialing/re-credentialing burden falls on the agency that first hired the provider.

5. Credentialing Process
   a. New hires:
      i. Receive provisional credentialing as outlined in paragraph 2.
      ii. Complete training as outlined in Attachment A and document is submitted to the medical director by the chief or his/her designee. Each member agency may elect to provide additional training however this should not be submitted to the medical director.
   b. Providers seeking re-credentialing must submit their re-credentialing application, Attachment B, within 45 days prior to the end of the year.

6. Providers who do not meet the credentialing/re-credentialing guidelines will be referred to their respective department(s) for training, re-training or discipline.

7. It is the responsibility of the provider’s employing EMS agency to maintain all documentation supporting the provider’s credentialing application. All such documentation must be made available to the medical director upon request.
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**Submitter**

**Submission Date (mm/dd/yyyy)**

**Submitted by**
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## MEC EMS 2019 Provider Recredentialing Request

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<th>Provider has completed 8 or more CPR training 2018 MEC Minutes</th>
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<td>Completed annual training on EpiPen use</td>
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Policy:
To establish policies and procedures for the use and dispatch of the Rescue Task Force on Active Aggressor calls.

Purpose:
1. The Rescue Task Force (RTF) is a set of teams deployed to provide wound care to victims where there is an on-going ballistic or explosive threat. These teams treat, stabilize, and remove the injured patients while wearing Ballistic Protective Equipment (BPE) in a rapid manner under the protection of Law Enforcement. Where possible, it is best practice to utilize RTF trained personnel for warm zone operations. This response can be deployed to work in, but not limited to, the following:
   a. Active aggressor in a school, business, mall, conference gathering, special event, etc.
   b. Any other scene that is, or has, the possibility of an on-going ballistic or explosive threat.

Procedure:
1. The Law Enforcement Agency having jurisdiction will be the lead agency, and will establish a Unified Command with the Fire Department personnel to rapidly deploy RTF teams into established zones.
2. Prior to deploying an RTF team, threat zones must be identified:
   a. Hot Zone: Areas where there is known hazard or life threat that is direct and immediate. An example of this would be any uncontrolled area where the active shooter could directly engage an RTF team. RTF teams will deploy, with security, to treat victims.
   b. Warm Zone (also known as the area of indirect threat): Areas that Law Enforcement has either cleared or isolated the threat where there is minimal or mitigated risk.
   c. Cold Zone: Areas where there is little or no threat, either by geography to the threat or after the area has been secured by Police (i.e., Triage and Transport area). An area where fire departments personnel will stage to triage, treat, and transport victims once removed from the warm zone.
3. Depending on the size of the incident and location, injured victims may need to be placed in a Causality Collection Point (CCP) before transition to the Cold Zone. This will be determined by initial units, secured by Law Enforcement (LEO), and relayed to the RTF teams through Unified Command. As this area will be secured, it may be considered a Cold Zone and may be staffed with non-RTF Fire/EMS personnel.
Operations:
RTF Dispatch:

When the Emergency Communication Center (MECC/Fire Control) receives a call for a shooting, the original dispatch will be for a “SHOOTING-EMS” call type. This will generate a response dictated by each agencies standard intervention plan (run card).

If there is an indication that the incident involves an active shooter or active aggressor, the Emergency Communication Center will initiate an “ACTIVE SHOOTER-EMS” call type. This will generate a response dictated by each agencies standard intervention plan (run card).

If it is determined the call is an active shooter incident then a 2nd or 3rd alarm may be initiated by the Incident Commander and the following companies will be dispatched. This will generate a response dictated by each agencies standard intervention plan (run card).

Additional Units that should be considered:

- Activate the Emergency Transport Plan
- Bomb Disposal Team
- Medical Care Support Unit (COTA)
- MCI Alarm (1-3 alarms)
- Hazardous Materials Team
- Air Medical unit
Set-up procedure:

1. The first arriving unit should identify a staging area for all initial units. Consider an area out of the line of sight of the incident, in line of approach to location, or possible predetermined area from pre-plans.

2. The first arriving unit(s) should:
   a. Establish command for the Fire Department units.
   b. Meet with LEO to establish Unified Command.
   c. Work with LEO to identify the RTF working zones.
   d. Consider adding additional EMS resources for patient treatment and transport.
   e. Consider moving primary staging to a larger or safer area if needed.
   f. Create RTF teams from deployed units.
   g. Once Unified Command has declared the working zones, RTF teams must be informed of their working limits.
      i. Ideally a chief/officer should be assigned to manage the RTF Sector.
   h. Use the command boards to label and keep track of RTF teams.
   i. Establish Causality Collection Point(s) (CCP)
   j. Designate an EMS Branch Officer (ie. Second Chief/Officer).

3. Second arriving Chief/Officer (EMS Branch Officer):
   a. Triage Unit
   b. Treatment Unit
   c. Transportation Group
   d. An EMS Staging Officer and a Transport Officer may need to be considered for larger amounts of patients.
   e. The Emergency Communication Center needs to be contacted early for patient transport needs (Emergency Transport Plan).
   f. Establish a resupply for extended RTF operations.

4. First arriving Engine:
   a. Stage- pending assignment from command.
   b. Rescue Task Force Entry Officer and crew should report to command for Rescue Task Force Assignment.

5. Second and Third Engine:
   a. Report to Command/Staging
   b. Establish a Staging and Triage area
   c. Consider multiple Staging areas for large scale operations
   d. Assist first due engine

6. First five (5) arriving Medic Units:
   a. First arriving medic is to report to or establish Triage area.
   b. All other medic units stage pending assignment.
   c. Be mindful of radio discipline. The entry team will work on a different radio channel than Command or EMS Branch. Fire Department IC may need to request an additional company to assist with radio communications and monitoring at the command post.
   d. Report to Medical Group to be paired with police officers to form Rescue Task Force Teams (RTF). Each RTF is comprised of a minimum of two (2) police officers for protection and two (2) EMS Providers (one must be ALS) to provide combat casualty care to wounded patients. RTF size and configuration will be determined by Unified Command. RTF members will not work in less than two person teams.
Equipment:

The equipment needed for the individual RTF members are located on individual medic vehicles. Each bag contains enough equipment to treat approximately eight victims, depending on injuries, and the mass casualty box has enough equipment to treat an additional sixteen (16) victims.

1. Each RTF member should equip themselves with a minimum of body armor, radio, and exam gloves.

Minimum RTF bag contents include:
- (8) Tourniquets
- (8) Occlusive dressings (chest seals)
- (8) Nasopharyngeal Airways
- (1) Roll of Duct tape (or equivalent)
- (8) Combat Gauze (or bulky dressings)
- (1) Set of trauma sheers
- (3) Glow-sticks
- (2) Door chalks

Deployment:

Once Unified Command has agreed to RTF deployment, teams will deploy to the warm zone to begin victim care.

1. Command will dispatch RTF teams by Team Number assignment (ie. RTF 1, RTF 2 ect). RTF Teams are not to deploy unless they have personnel from LEO as security. **Do Not** self-deploy into the warm zone.
2. The first RTF team to make entry should notify the EMS Branch through the Entry Control Officer of possible number of injured and approximate locations. The Entry Control Officer will relay the appropriate information to Unified Command.
3. When teams make entry, they will treat the injured using Tactical Emergency Casualty Care Guidelines (TECC). The first two (2) RTF teams will enter the area and treat as many patients as possible until they run out of equipment to use or all accessible victims have been treated. Once this point has been reached, communicate further needs to command, and coordinate the evacuation of the injured with the Rescue Task Force Entry Officer. Additional RTF teams that enter the area should be primarily task with extrication of the victims treated by the initial teams or to other areas with accessible victims.
4. When the RTF is operating in the Warm Zone, no triage will be conducted. All patients encountered by the RTF teams will be treated as they are accessed. Any patients who can ambulate without assistance will be directed by the team to self-extricate down the cleared corridor under police direction. Any patient who is dead will be visibly marked to allow for rapid identification and to avoid repeated evaluations by additional RTF teams.
5. To coordinate RTF teams inside a warm zone, a single Fire Department officer may deploy into the warm zone under LEO security.
6. RTF can be deployed for the following reasons:
   b. Victim removal from warm to cold zones.
   c. Movement of supplies from cold to warm zone.
   d. Any other duties deemed necessary to accomplish the mission.
7. RTF teams will work within their security at all times.
STANDARD:
All diabetic patients who suffer an episode of hypoglycemia should be offered transportation to an emergency department. Patients who have the capacity to refuse transport (see Refusal of Treatment and/or Transport standard) may refuse transportation to an emergency department if they meet the additional parameters identified below.

Patients who suffer a second episode of hypoglycemia within 24 hours will be transported to an emergency department.

PURPOSE:
This standard outlines a process for a diabetic patient to safely decline transportation to an emergency department after suffering an episode of hypoglycemia.

APPLICATION:
In order for a diabetic patient with suffering from a hypoglycemic episode to decline transportation to an emergency department he/she must:
1. Have a history of insulin dependent diabetes
2. Return to normal mental state within
   a. 10 minutes of IV Dextrose administration, or
   b. 15 minutes of IV/IM Glucagon or oral glucose administration
3. Have pretreatment glucose < 60 mg/dl
4. Have post treatment glucose > 80 mg/dl
5. Tolerate food by mouth
6. Have no other complicating factors or comorbid conditions such as fever, symptoms of stroke
7. Agree to follow up with primary care physician
8. Not currently use sulfonylureas. Examples include:
<table>
<thead>
<tr>
<th>Generic Name</th>
<th>Brand Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>chlorpropamide</td>
<td>Diabinase</td>
</tr>
<tr>
<td>glimepiride</td>
<td>Amaryl</td>
</tr>
<tr>
<td>glipizide</td>
<td>Glucotrol, Glucotrol, XL</td>
</tr>
<tr>
<td>glyburide</td>
<td>DiaBeta, Glynase, PresTab, Mictonase</td>
</tr>
<tr>
<td>tolazamide</td>
<td></td>
</tr>
<tr>
<td>tolbutamide</td>
<td></td>
</tr>
</tbody>
</table>
9. Have normal vital signs
Patients with Special Circumstances/Special Health Care Needs

STANDARD:
This standard is established to provide quality patient care and EMS services to patients with special health care needs. It is also important for the EMS providers to understand the need to communicate with the patients, family and caregivers regarding health care needs and devices that EMS may not have experience with.

PURPOSE:
Medical technology, changes in the health care industry, and increased home health capabilities have created a special population of patients that interface with the EMS system. It is important for EMS to understand and provide quality care to patients with special health care needs.

APPLICATION:
Emergencies involving special needs patients may involve equipment (e.g. LVAD or vagus nerve stimulation device, WoundVac etc.) that is unfamiliar to the provider. To familiarize themselves with the equipment providers may:
- Ask the family, caregiver or patient for any documentation or specific information regarding the condition and/or device;
- Utilize just-in-time training aides/information regarding devices where available;
- Contact the patient’s physician for assistance with specific conditions or devices or for advice regarding appropriate treatment and/or transport specific to the patient’s condition.

Transportation will be to the hospital appropriate for the specific condition of the patient. In some cases this may involve bypassing the closest facility for a more distant yet more medically appropriate destination. In the case of device failure (e.g. LVAD) the patient’s family member trained in the device should accompany patient.
STANDARD:
The Surgical Emergency Response Team (SERT) is a resource that may be called upon by EMS personnel when they encounter a person who cannot be extricated and transported to a trauma facility within a reasonable period of time. These may include someone who is trapped and requires an emergency amputation, blood loss from trauma that cannot be controlled by conventional means at the scene, or situations where emergency administration of blood products is required as the patient is being extricated.

If the SERT is in route and the patient is extricated before the SERT’s arrival, the on-scene crew will initiate patient transport and not wait for the SERT to arrive.

Once on-scene the SERT is in charge of the patient’s care. On-scene MEC EMS crews should assist in patient care as directed by the SERT surgeon.

PURPOSE:
To identify a process to access on-scene surgical care in the rare instance that a victim of trauma is pinned/trapped and cannot be promptly extricated.

APPLICATION:

1. Patients who might benefit from a SERT response are those that are pinned and have an anticipated extrication time of 60 or more minutes or who cannot be safely extricated unless they undergo a field amputation.

2. Grant Medical Center and Ohio State University Wexner Medical Center maintain SERT teams. They are only available via ground transportation that is coordinated by the Columbus Division of Fire. The anticipated response time for the SERT is 30-60 minutes to mobilize the team plus the drive time to the scene. On-scene crews should consider the time necessary to mobilize and transport the SERT to the scene before requesting a SERT response.

3. If a SERT response is indicated, the on-scene officer in charge should request their dispatcher to contact the Columbus Division of Fire’s alarm office (614.462.2399) and request a SERT response.

4. Once on-scene the SERT surgeon is responsible for directing patient care. On-scene crews should provide care as directed by the surgeon.

5. If procedures outside the scope of the MEC EMS protocol or Ohio’s EMS scope of practice are required, the SERT surgeon is responsible for performing them.

6. The SERT surgeon will determine to which trauma center the patient is to be transported.

7. In order to assure a prompt response to a SERT request this standard should be shared with each MEC EMS agency’s dispatching center.
Policy STANDARD:
Unsuccessful cardiopulmonary resuscitation (CPR) and other advanced life support (ALS) interventions may be discontinued prior to transport or arrival at the hospital when this policy is followed.

This standard does not apply to patients who are not suitable for resuscitation as defined in the Criteria for Death and Withholding Resuscitation Standard.

This standard applies only to those EMS providers approved to function as paramedics by the Medical Director of the MEC EMS member agency.

PURPOSE:
This standard outlines when a MEC EMS provider may initiate the policy to terminate resuscitation efforts. The purpose of this policy is to:
Allow for discontinuation of pre-hospital resuscitation efforts after the delivery of adequate and appropriate ALS advanced life support (TOR) therapy.
• These Termination of Resuscitation guidelines apply only to those members approved to function as paramedics by the Medical Director of the MEC EMS Agency.

DEFINITIONS:
1. Resuscitation: Any effort, including basic and advanced life support procedures, used to restore cardiopulmonary functions.
2. Advanced Life Support (ALS): Accepted measures for attempting the definitive restoration of cardiopulmonary functions, including Endotracheal Intubation, defibrillation, and certain intravenous resuscitative medications.
3. Spontaneous Pulse: A return of a palpable pulse (including a transient return) at any point during the resuscitative efforts.
4. Persistent Ventricular Fibrillation/Tachycardia (VF)/(VT): Cases of VF/VT that do not resolve with therapy or are characterized by persistent re-fibrillation (each re-fibrillation occurs within two to three minutes after the last conversion).

PROCEDURE APPLICATION:
1. Background: Termination of ALS efforts in the out-of-hospital setting applies to adult patients who experience a cardiac arrest or cardiac arrest from blunt force trauma resulting in pulseless electrical activity (PEA) or asystole and meet the inclusion criteria specified below.
2. Inclusion Criteria: The paramedic at the scene may initiate the policy to terminate resuscitation efforts. To qualify for TOR the following criteria must be met:
   a. Adult patients (greater than 17 years of age).
   b. Patients must have had a presumed primary cardiac arrest or cardiac arrest from blunt trauma resulting in pulseless electrical activity (PEA) or asystole on EMS arrival.
   c. Patients must have airway adjunct (endotracheal tube, Supraglottic Airway), have IV or IO access and have standard advanced life support (ALS) measures applied throughout the resuscitation effort.
d. On-scene advanced resuscitation efforts by paramedics sustained for at least 20 minutes regardless of previous CPR time and the arrest interval. In other words, 20 minutes of ALS intervention not counting the time for basic CPR and defibrillation provided by EMS or bystanders prior to paramedic arrival.
e. Patient meets all criteria for TOR identified in the MEC EMS Termination of Resuscitation Checklist (next page)

3. **Operating Procedure:**
a. In the event that any family member or responsible party indicates their objection to the concept of termination of resuscitation efforts, continue resuscitation efforts until the receiving emergency physician assumes care.
b. After 20 minutes of ALS care with the inclusion criteria met and none of the exclusion criteria present, resuscitation efforts may be terminated. Leave IV catheters and endotracheal tubes in place.
c. At all times, address the social and psychological support needs of the “survivors” (i.e. family, friends and witnesses) and provide support as needed.
d. Once transport is initiated, do not terminate resuscitation, continue resuscitation until care is turned over in the emergency department.
e. Capnography should be used to monitor the patient's carbon dioxide levels and assist in confirming correct endotracheal tube placement. Levels of 15 mmHg or less are suggestive that the patient will not survive the cardiac arrest.

4. **Documentation:** Properly record information surrounding the events of the resuscitative efforts and the time of death on the patient care record.
# MEC EMS Termination of Resuscitation Checklist

All criteria below must be marked **NO**:  

<table>
<thead>
<tr>
<th>Criteria</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Recurrent V-Fib or Pulseless V-Tach arrest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Cardiac arrest in public setting.</td>
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<tr>
<td>3. Age &lt; 18 years old.</td>
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<tr>
<td>4. Cardiac arrest from electrocution or lightning strike.</td>
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<tr>
<td>5. Cardiac arrest in the presence of hypothermia.</td>
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<tr>
<td>6. Drowning with submersion &lt; 60 minutes.</td>
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<tr>
<td>7. Pregnant patient with estimated gestational age ≥ 20 weeks,</td>
<td></td>
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<tr>
<td>8. Patients at any time during the course of resuscitation has had ROSC or any neurological signs.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

All criteria below must be marked **YES**:  

<table>
<thead>
<tr>
<th>Criteria</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>9. Asystole (2 leads) or PEA is present on the cardiac monitor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Endotracheal intubation, or supraglottic airway has been confirmed, the patient has been well ventilated with 100% oxygen and standard ALS measures applied throughout the resuscitative effort.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Transcutaneous pacing, if indicated and available, has not been effective.</td>
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<td></td>
</tr>
<tr>
<td>12. Resuscitation time &gt; 20 minutes.</td>
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</tr>
<tr>
<td>13. All reversible causes or special resuscitation circumstances have been searched for, considered, and corrected.</td>
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</tbody>
</table>

**If all criteria are met, then resuscitation may be terminated**
Regarding EMS Provider Transport of Patients with Pre-Existing Medical Devices or Drug Administrations
February 2016

This statement is an attempt to provide general information about the above issue facing EMS providers. It should not be treated as legal advice or medical direction. For direct advice regarding a particular scenario, please consult with your medical director and legal counsel. Although the following statement represents the EMFTS Board’s general position on the above issue, this statement in no way precludes the EMFTS Board from taking disciplinary action in a particular case if necessary. Any potential complaints brought before the EMFTS Board will be decided on a case-by-case basis.

Introduction:
The EMFTS Board and the Ohio Department of Public Safety, Division of Emergency Medical Services, has developed a defined scope of practice for EMS providers. It is maintained in matrix form and available online as a reference for public access. This scope of practice addresses all levels of EMS providers and has been approved by the EMFTS Board. Updates to the scope of practice are made as necessary and after approval by the EMFTS Board.

From time to time, EMS providers are confronted on-scene with patients with preexisting medical situations not included or addressed in their respective EMFTS Board approved scope of practice. Specifically, patients with pre-existing medical devices and drug administrations requiring prehospital EMS service are becoming more commonplace. In addition, patients with pre-existing medical devices and drug administrations may require EMS service for emergent interfacility transfers due to a declared disaster or emergency. The intent of this position paper is to address the EMS provider’s approach to that prehospital patient with a pre-existing physician-ordered medical device or drug administration (“MDDA”) not covered in the provider’s scope of practice and the interfacility transfer of such a patient in a disaster or emergency scenario.

Discussion:
In general, the EMS provider should maintain the pre-existing MDDA and transport the patient to the appropriate facility. There is no expectation that the EMS provider will initiate, adjust, or discontinue the pre-existing MDDA. This implies that the EMS provider will maintain and continue care so that the patient can be transported.

The EMS provider is expected to follow local protocols regarding the overall evaluation, treatment, and transportation of this type of prehospital patient requiring EMS service. It applies to EMS provider situations where alternative transportation and care is not available or practical (prehospital, “911 scene response”, or threat to a patient’s life secondary to a declared disaster or emergency). It implies that the most appropriate and available level of EMS provider will respond to the request for EMS service in the prehospital setting or for emergent interfacility transfer following a declaration of a disaster or an emergency. It also implies that the patient requires the pre-existing MDDA and it is not feasible or appropriate to transport the patient without the pre-existing MDDA.

The number and type of pre-existing MDDAs currently or potentially encountered by the EMS provider in the community setting is extensive and may change frequently. The intent of this position paper is not to provide an inclusive list of pre-existing MDDAs. However, as a guideline for the EMS provider, current pre-existing MDDAs may include ventilatory adjuncts (CPAP, BiPAP), continuous or intermittent IV medication infusions (analgesics, antibiotics, chemotherapeutic agents, vasopressors, cardiac drugs), and nontraditional out-of-hospital drug infusion routes (subcutaneous infusaports, central venous access lines, direct subcutaneous infusions, self-contained implanted pumps).

Conclusion:
In conclusion, the EMS provider confronted with a prehospital patient with a pre-existing physician-ordered medical device or drug administration not covered in the EMS provider’s respective scope of practice or such a patient who requires emergent interfacility transfer due to a declared disaster or emergency should provide usual care and transportation while maintaining the pre-existing MDDA, if applicable. Concerns or questions regarding real-time events associated with a pre-existing MDDA should be directed to the relevant Medical Control Physician. Concerns or questions regarding previous, recurrent, or future pre-hospital transportations with a pre-existing MDDA should be directed to the appropriate EMS Medical Director and legal counsel.
1. Prepare ECG monitor and connect patient cable with electrodes.

2. Enter the required patient information into the 12 lead ECG device.

3. Expose chest (modesty of the patient should be respected) and prep as necessary.
   Poor tracings are usually caused by lack of skin preparation. Use gauze pad to vigorously rub site. Using alcohol preps will remove skin lotions and creams. Allow alcohol to dry before applying electrode. Remove any excess hair as needed to also improve tracing.

4. Attach limb leads on or near the limbs. Avoid attaching limb leads to the torso.
   Attaching leads to the torso produces a cleaner rhythm, but may limit evaluation of ECG. Some of the changes that can occur are:
   - A shift in the cardiac axis towards the right
   - R wave becomes smaller in lead I
   - Less prominent Q waves in inferior leads

5. Apply chest leads and extremity leads using the following landmarks: It is important to realize that once a 12 lead ECG has been performed, that any further 12 lead ECG’s, lead placement must be the same for true ECG comparison. This also includes Hospital vs. EMS 12 lead ECG comparison.
   - RA - Right arm
   - LA - Left arm
   - RL - Right leg
   - LL - Left leg
   - V1 - 4th intercostal space at right sternal border
   - V2 - 4th intercostal space at left sternal border
   - V3 - Directly between V2 and V4
   - V4 - 5th intercostal space at midclavicular line
   - V5 - Level with V4 at left anterior axillary line
   - V6 - Level with V5 at left midaxillary line

6. Instruct patient to remain still.

7. Press the appropriate button to acquire the 12 Lead ECG. Transmit ECG to receiving emergency department.

8. If the monitor detects signal noise (such as patient motion or a disconnected electrode), the 12 Lead acquisition will be interrupted until the noise is removed. Suggestions to troubleshoot are:
   1. Are cables connected?
   2. Is equipment functioning properly?
   3. Is an external electrical equipment interfering?
   4. Was skin prepared properly?
   5. Are Electrodes dry?
   6. Poor adhesion?

9. Monitor the patient while continuing with the treatment protocol.

10. Document the procedure, time, and results on/with the patient care report (PCR)
Clinical Indications:

- Non-traumatic cardiac arrest in patients > 8 years of age. Children < 33 Lbs. (15 kg) use pediatric pads

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Confirm the cardiac arrest. Instruct partners or First Responders to initiate CPR while the defibrillator is set up. If defibrillation is underway by First Responders, this defibrillation procedure should continue until 6 defibrillations are accomplished or patient is resuscitated.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>2. Turn the defibrillator on and begin documentation.</td>
<td></td>
</tr>
<tr>
<td>3. Attach the cables to the pads and then apply the pads to the patient’s chest in the proper position.</td>
<td></td>
</tr>
<tr>
<td>4. <strong>Stop CPR and clear the patient</strong> prior to rhythm analysis.</td>
<td></td>
</tr>
<tr>
<td>5. Analyze the patient’s rhythm by pushing the “analyze” button.</td>
<td></td>
</tr>
<tr>
<td>6. Defibrillate if appropriate by depressing the “shock” button. <strong>Assertively state “CLEAR” and visualize that no one, including yourself, is in contact with the patient prior to defibrillation.</strong> The sequence of defibrillation charges is preprogrammed for monophasic defibrillators. Biphasic defibrillators will determine the correct joules accordingly.</td>
<td>YES  NO</td>
</tr>
<tr>
<td>7. Reassess the patient.</td>
<td></td>
</tr>
<tr>
<td>8. Repeat steps 4 - 7 two more times if indicated.</td>
<td></td>
</tr>
<tr>
<td>9. If the patient remains pulseless, perform CPR for one minute and then repeat steps 4 – 7 three more times if indicated.</td>
<td></td>
</tr>
</tbody>
</table>
**Clinical Indications:**

- The AutoPulse is intended to be used as an adjunct to manual CPR, on adult patients only, in cases of clinical death as defined by a lack of spontaneous breathing and pulse.

For Adult (≥ 18 years) Non-Traumatic Cardiac Arrest
Maximum Patient Weight 300 Pounds.

<table>
<thead>
<tr>
<th>Steps</th>
<th>AutoPulse® Quick Reference Guide</th>
<th>Was performed ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Remove ALL clothing from torso (both front and back) to ensure skin-to-platform contact.</td>
<td>YES</td>
</tr>
<tr>
<td>2.</td>
<td>Align armpits onto yellow line on platform. <strong>DO NOT</strong> twist the chest bands.</td>
<td>YES</td>
</tr>
<tr>
<td>3.</td>
<td>Maintain chest bands at 90 degrees to platform and free of obstructions.</td>
<td>YES</td>
</tr>
<tr>
<td>4.</td>
<td>Power up AutoPulse.</td>
<td>YES</td>
</tr>
<tr>
<td>5.</td>
<td>Close chest bands.</td>
<td>YES</td>
</tr>
<tr>
<td>6.</td>
<td>Press CONTINUE (green button).</td>
<td>YES</td>
</tr>
<tr>
<td>7.</td>
<td>Press START (green button) to begin compressions.</td>
<td>YES</td>
</tr>
<tr>
<td>8.</td>
<td>To pause or stop operation, press STOP (orange button).</td>
<td>YES</td>
</tr>
</tbody>
</table>

**TROUBLESHOOTING**

For Fault/User Advisory
- Lift up and fully extend both chest bands.
- **Check both lateral and vertical patient alignment.**
- Verify that chest bands are not twisted, are 90 degrees to the Platform and are free of obstructions.
- Press **RESTART (green button)** and follow on-screen instructions to begin compressions.

**If you cannot rectify problem immediately open chest bands and revert to manual CPR.**

*Review User Guides and complete in-service training.*
Center the patient on the AutoPulse Platform.

Line up armpits to the yellow Patient Alignment Reference.

Aligning the LifeBand

Band 1

LifeBand Alignment Tab

LifeBand Alignment Slot

Band 2
**Indications:** Suspicion of Acute Stroke

**Blood Draw Kit:** Vacutainer holder, Vacutainer adapter, Blue and Purple lab tubes

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Have all supplies ready prior to initiating the IV.</td>
<td>YES</td>
</tr>
<tr>
<td>2. Connect the vacutainer adapter to the vacutainer holder.</td>
<td>YES</td>
</tr>
<tr>
<td>3. Place a tourniquet around the patient's extremity to restrict venous flow only.</td>
<td>YES</td>
</tr>
<tr>
<td>4. Select a vein and an appropriate gauge catheter for the vein and the patient's condition. Prep the skin with an antiseptic solution.</td>
<td>YES</td>
</tr>
<tr>
<td>5. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.</td>
<td>YES</td>
</tr>
<tr>
<td>6. Advance the catheter into the vein. <strong>Never</strong> reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.</td>
<td>YES</td>
</tr>
<tr>
<td>7. Leave tourniquet in place while drawing blood.</td>
<td>YES</td>
</tr>
<tr>
<td>8. After the vein is cannulated, attached the vacutainer adapter to the open end of the angiocath. Push the lab tubes, <strong>(using the blue tube first, followed by the purple tube)</strong> onto the end of the needle inside the vacutainer.</td>
<td>YES</td>
</tr>
<tr>
<td>9. If you have properly accessed the vein correctly, blood will flow into lab tube. Allow to fill until flow ceases.</td>
<td>YES</td>
</tr>
<tr>
<td>10. Once tube is filled remove it from the vacutainer holder and insert the second tube.</td>
<td>YES</td>
</tr>
<tr>
<td>11. Once each tube is filled, rock gently end over end a minimum of 8 - 10 times to ensure that the additive is well mixed</td>
<td>YES</td>
</tr>
<tr>
<td>12. Once tubes are removed from vacutainer remove tourniquet, occlude vein and insert IV tubing or saline lock and refer to venous access procedure.</td>
<td>YES</td>
</tr>
</tbody>
</table>
| 13. Label the tubes documenting on the white label of the tube itself  
• Patient name  
• Date  
• Time  
• EMS provider initials | YES | NO |

**Certification Requirements:**
Maintain knowledge of the indications, contraindications, technique, and possible complications of the procedure. Assessment of this knowledge may be accomplished via quality assurance mechanisms, classroom demonstrations, skills stations, or other mechanisms as deemed appropriate by the MEC EMS System.
Clinical Indications:

- Patients with suspected hypoglycemia (diabetic emergencies, change in mental status, bizarre behavior, syncope, etc.)

Steps

1. Gather and prepare equipment.
2. Blood samples for performing glucose analysis should be obtained simultaneously with intravenous access or by finger stick.
3. Place correct amount of blood on reagent strip or site on glucometer per the manufacturer's instructions.
4. Time the analysis as instructed by the manufacturer.
5. Document the glucometer reading (ex. 100 mg / dL) and treat the patient as indicated by the analysis and protocol.
6. Repeat glucose analysis as indicated for reassessment after treatment and as per protocol.
Clinical Indications:

- Reported breech and no fetus visible or legs/buttocks only visible

### Steps

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Tell mother not to push</td>
<td></td>
</tr>
<tr>
<td>2. Administer Oxygen to mother as needed, to assure fetal oxygenation.</td>
<td></td>
</tr>
<tr>
<td>3. Place hand in vagina and attempt to keep fetus from delivering</td>
<td></td>
</tr>
<tr>
<td>NOTE: Placing hand in vagina to take pressure off cord is NOT effective.</td>
<td></td>
</tr>
<tr>
<td>4. Tell mother to push vigorously</td>
<td></td>
</tr>
<tr>
<td>5. Do not assist in delivery until fetal umbilicus visualized.</td>
<td></td>
</tr>
<tr>
<td>6. Perform Pinard maneuver. Back up, grasp hips (not abdomen), rotate infant 90 degrees clockwise.</td>
<td></td>
</tr>
<tr>
<td>7. If Frank breech (buttocks first), sweep legs to deliver.</td>
<td></td>
</tr>
<tr>
<td>8. Gently rotate fetus to back-up position.</td>
<td></td>
</tr>
<tr>
<td>9. Have assistant provide suprapubic pressure</td>
<td></td>
</tr>
<tr>
<td>10. Perform Mariceau maneuver. (A method of delivering the head in an assisted breech delivery in which the infant's body is supported by the right forearm while traction is made upon the shoulders by the left hand)</td>
<td></td>
</tr>
<tr>
<td>12. Consider Zavanelli maneuver. (Replacing the born fetal parts into the uterus)</td>
<td></td>
</tr>
<tr>
<td>13. Reattempt Mariceau maneuver, then reattempt manually pushing cervix over fetal head.</td>
<td></td>
</tr>
<tr>
<td>14. Reattempt Mariceau maneuver, then reattempt manually pushing cervix over fetal head.</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications

- Capnography shall be used when available with all endotracheal airways. Any patient with respiratory complaint consider capnography.

Steps | Was performed ?
--- | ---
1. Attach capnography sensor to endotracheal tube. If intubated need Capnography | YES NO
2. Note CO₂ level and waveform changes. These will be documented on each respiratory failure or cardiac arrest patient. | YES NO
3. The capnometer shall remain in place with the airway and be monitored throughout the prehospital care and transport. | YES NO
4. Any loss of CO₂ detection or waveform indicates an airway problem and should be documented | YES NO
5. The capnogram should be monitored as procedures are performed to verify or correct the airway problem. | YES NO
6. Document the procedure and results on/with the Patient Care Report (PCR). | YES NO
7. For intubated patient’s target ETCO₂ should be no less than 36 - 40 mmHg. | YES NO

Components of the capnogram:

A capnogram consists of 4 phases and plots CO₂ concentration over time.

**Phase I**, respiratory baseline, is shown as A-B. It measures the CO₂-free Gas in the deadspace of the conducting airways (so named because they conduct gas to the alveoli where gas exchange can occur). The A-B value is normally zero.

**Phase II**—also known as the expiratory upstroke—is shown as B-C. The rapid rise seen in the capnogram represents mixing of dead space (CO₂-free) and alveolar air (contains CO₂). The expiratory upstroke should be steep.

**Phase III**, the expiratory plateau, represents exhalation of mostly alveolar gas; this is shown as C-D. Point D is the EtCO₂ level at the end of a normal exhaled breath; normally 38 mmHg or 5%.

**Phase IV**, or the inspiratory down stroke, shown as D-E, reflects the inhalation of CO₂-free gas. The capnogram quickly returns to its baseline.

Changes in the capnogram or EtCO₂ values reflect changes in metabolism, circulation, ventilation or equipment function.

**In summary**: An elevated EtCO₂ indicates compromised ventilation or alveolar hypoventilation. A below-normal EtCO₂ indicates an increase in ventilation or possible alveolar hyperventilation.

See Reference:  
- Capnography Basic
- Capnography Information
- Capnography Information / Waveforms
### Indications:
1. All persons exhibiting signs and symptoms of Carbon Monoxide toxicity as detailed in “Suspected Carbon Monoxide Exposure” must be evaluated for level of carboxyhemoglobin (COHb).

2. If atmospheric CO is detected at any concentration, all persons occupying the structure should be evacuated from the structure to fresh air and evaluated for blood carboxyhemoglobin (COHb) using the RAD-57™ SpO2/SpCO™ monitor. Persons with elevated levels of COHb should be assessed and treated by EMS per the appropriate protocol.

### Contraindications: None

### Precautions:
1. Very low perfusion at the monitored site may result in inaccurate readings. If the “Low Perfusion” indication is frequently displayed, find a better perfused monitoring site.
2. A misapplied sensor or a sensor that becomes dislodged may cause inaccurate readings.
3. Do not use tape to secure the sensor to the site.
4. Sensor calibrated to penetrate mid-nail, not cuticle area. Do Not force finger in too far.

### Steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Press green power button to activate unit</td>
</tr>
<tr>
<td>2.</td>
<td>Place sensor on patient finger (observe top/bottom of sensor). <strong>DO NOT</strong> place on thumb or 5th digit. If available, utilize the pediatric sensor (less than 30kg).</td>
</tr>
<tr>
<td>3.</td>
<td>Four green LED’s below power button indicate battery level.</td>
</tr>
<tr>
<td>4.</td>
<td>Sensor calibrated to penetrate mid-nail, not cuticle area. Do Not force finger in too far.</td>
</tr>
<tr>
<td>5.</td>
<td>RAD-57™ will calibrate on the patient in about 5-8 seconds.</td>
</tr>
<tr>
<td>6.</td>
<td>Displays will come up in pulse oximeter (SpO2) mode.</td>
</tr>
<tr>
<td>7.</td>
<td>PI graph will display perfusion strength.</td>
</tr>
<tr>
<td>8.</td>
<td>Display will show “SEN OFF” until sensor is on finger.</td>
</tr>
<tr>
<td>10.</td>
<td>Display will show SpO2 level from 1% to 99%.</td>
</tr>
<tr>
<td>11.</td>
<td>Record level(s) on PCR.</td>
</tr>
<tr>
<td>12.</td>
<td>Press and hold the green power button to turn unit off.</td>
</tr>
</tbody>
</table>
Clinical Indications:

- Unstable patient with a tachydysrhythmia (rapid atrial fibrillation, supraventricular tachycardia, ventricular tachycardia)
- Patient is not pulseless (the pulseless patient requires unsynchronized cardioversion, i.e., defibrillation)

Steps

1. Ensure the patient is attached properly to a monitor/defibrillator capable of synchronized cardioversion.

2. Have all equipment prepared for unsynchronized cardioversion/defibrillation if the patient fails synchronized cardioversion and the condition worsens.

3. Consider the use of pain or sedating medications, Midazolam (Versed) per protocol.

4. Set energy selection. Unstable:
   - **LifePak:** Wide Complex Tachycardia: 100, 200, 300, 360 Joules
     Narrow Complex Tachycardia (PSVT): 50, 100, 200, 300, 360 Joules
   - **Zoll:** Wide Complex Tachycardia: 50, 70, 120, 150, 200 Joules
     Narrow Complex Tachycardia (PSVT): 50, 70, 120, 150, 200 Joules
     Atrial Fibrillation: 120, 150, 200 Joules

5. Set monitor/defibrillator to synchronized cardioversion mode.

6. Make certain all personnel are clear of patient.

7. Press the button to cardiovert. Stay clear of the patient until you are certain the energy has been delivered. NOTE: It may take the monitor/defibrillator several cardiac cycles to “synchronize”, so there may a delay between activating the cardioversion and the actual delivery of energy.

8. Note patient response and perform immediate unsynchronized cardioversion/defibrillation if the patient’s rhythm has deteriorated into pulseless ventricular tachycardia/ventricular fibrillation, following the procedure for Defibrillation.

9. If the patient’s condition is unchanged, repeat steps 2 to 8 above.

10. If the patient has not improved after cardioversion, continue with drug therapy.

Purpose:
To access existing central venous catheters for the administration of fluids and medications when peripheral access would be difficult

Common Central Venous Catheters:

Hickman, Broviac or Groshong Catheters (External Central Catheters)
- Usually located on the anterior chest wall
- Soft pliable catheter with exterior access
- Catheter has injection cap with infusion port or leurollock

PICC (Peripherally Inserted Central Venous Catheter)
- Provides peripheral access to the central venous system for therapy or blood sampling
- Located in the antecubital fossa
- Catheter has injection cap and infusion port or leurollock

Steps

1. Wash hands and use aseptic technique throughout procedure
2. Prep port with alcohol prep
3. Using a syringe with luerlock or a straight needle (18-21 gauge) flush line with 10 ml of 0.9% Normal Saline. If line does not flush easily, do not access.
4. If line flushes easily use infusion port for fluid or medication administration
5. IV fluids must be infused at minimum of 100 ml/hr in order to maintain patency of line
6. Do not discontinue fluid administration
Clinical Indications: (Signs and Symptoms)

Tension pneumothorax

a. progressive severe respiratory distress and/or cyanosis
b. hyper resonance on percussion of the affected area
c. tracheal shift away from the affected side
d. distended neck veins
e. hypotension
f. sudden difficulty bag breathing the patient
g. reduced or absent breath sounds over the affected lung

Steps

1. Administer 100% \textbf{Oxygen} should be administered to maintain SpO2 >94% to patients with suspected tension pneumothorax

2. Expose entire chest area and clean site vigorously with an antimicrobial/antiseptic wipe. Prepare large bore over the needle catheter, 14 gauge or larger (16-18 gauge for children) with 30 ml or larger syringe attached.

3. Insert catheter (4" or longer) into mid-clavicular line, on affected side into second or third intercostals space. Hit the rib and then slide over it. Thus, the needle should be “walked” upward on the rib until it slides off the upper edge and penetrates into the parietal space. In obese patients follow the same technique but in the 5th intercostal space at the anterior axillary line with the ipsilateral arm held above the head.
   After entering air space, remove needle and leave cannula in place. Do not pull skin taut during stick or cannula will kink when stylet is removed.

4. If air is under tension, it will exit under pressure.

5. If air is not under tension, remove needle and cover site with dressing, inform receiving facility of attempt.

6. Continuously reassess adequacy of ventilation. Decompressed patients may require assistance with the bag valve mask. **REMEMBER YOU NOW HAVE A 100% SIMPLE PNEUMOTHORAX ON THE SIDE WITH THE NEEDLE.**
Clinical Indications:
- Imminent delivery with crowning

Steps

1. Ensure the mother's ABC's. **Universal Patient Assessment**
   - Was performed? **YES**  **NO**

2. Administer OXYGEN via non-rebreather mask.
   - Was performed? **YES**  **NO**

3. Start an IV of 0.9 NORMAL SALINE if time allows at TKO.
   - Was performed? **YES**  **NO**

4. Suction the baby's airway with bulb syringe as soon as head is delivered. Meconium staining requires adequate suctioning before stimulation of the baby.
   - Was performed? **YES**  **NO**

5. Allow delivery to continue normally.
   - Was performed? **YES**  **NO**

6. Clamp then cut the cord between clamps. Keep the child at or below the level of the mother’s hips.
   - Was performed? **YES**  **NO**

7. Assess baby for APGAR Score at 1 & 5 minutes (see **APGAR Score**).
   - Was performed? **YES**  **NO**

8. If baby is in distress, resuscitate as needed.
   - Was performed? **YES**  **NO**

9. Put baby to the mother's breast and keep warm, apply cap to baby's head. Follow the **Pediatric Neonatal Care** Protocol for further treatment.
   - Was performed? **YES**  **NO**

10. Allow placenta to deliver. Do not pull on cord. Once the placenta is delivered, bleeding can be controlled by massaging the fundus.
    - Was performed? **YES**  **NO**

11. If mother is bleeding heavily and exhibiting signs of shock, massage fundus, increase IV flow rate.
    A) If birth is breech, allow infant to deliver to the waist without active assistance (give support only); once the legs and buttocks are delivered, the head can be assisted out. If head does not deliver within 2 minutes, insert gloved hand into the vagina and create an airway for the infant.
    B) If the cord is wrapped around the infant's neck, slip the cord over the head and off the neck; you may need to clamp and cut the cord if it is tightly wrapped.
    C) In case of prolapsed cord, place the mother in shock position with her hips elevated on pillows, insert a gloved hand into the vagina and gently push the baby's head off the cord. Transport while retaining this position; do not remove hand until relieved by hospital personnel.
    D) Notify the receiving facility.
    - Was performed? **YES**  **NO**
Clinical Indications: Acute respiratory distress other than pneumothorax. Particularly pulmonary edema, asthma, and COPD.
- Is awake and oriented.
- Is over 12 years of age and CPAP mask has proper seal.
- Has ability to maintain open airway (GCS>10).
- A respiratory rate greater than 25 breaths per minute
- Has a systolic pressure above 90 mmHg.
- Uses accessory muscles during respirations.
- Signs and symptoms consistent with pulmonary edema, and CHF.

Contraindications:
- Patient is in respiratory arrest.
- Patient is suspected of having a pneumothorax.
- Patient has tracheostomy.

Precautions:
Use care if patient:
- Has impaired mental status, and is not able to cooperate with procedure.
- Has active upper GI bleed.
- Has history of recent gastric surgery (use 5 cm H2O of pressure and no higher).
- Complains of nausea or vomiting.
- Has inadequate respiratory effort.
- Has excessive secretions.
- Has facial deformity that inhibits proper CPAP mask seal.

Steps

1. Assure spontaneous respirations

2. Perform appropriate patient assessment including vital signs, pulse Oximeter (SpO2), and heart monitor.

3. Select appropriate size face mask.

4. Set oxygen flow to deliver CPAP in cmH2O.
   - 15 liters = 5 cmH2O
   - 20 liters = 7.5 cmH2O
   - 25 liters = 10 cmH2O

5. Connect funnel end of Green Oxygen Tubing to an O2 source capable of delivering flow up to 25 liters/ min. This provides the full range of CPAP needed for clinical use (5-10cmH2O).
   Typically a “D” size cylinder in the field.

6. Insert white end of the Boussignac CPAP into the face mask. If required, insert a pressure manometer between the Boussignac CPAP and the face mask.

7. Explain to the patient how the Boussignac CPAP will help their breathing.
   Gently hold the mask to the patients face insuring a good face/mask seal.
   Turn the flow control device to the desired liters/min, generally 15 l/min, to begin the CPAP.
   Gradually adjust the flow to achieve the desired level of CPAP.

8. Secure the Boussignac CPAP System to the patient with the head strap. Check around the mask for any leaks. Adjust the mask and/or head strap accordingly. Monitor patient’s vital signs.

9. If the patient requires suctioning of the oral cavity, insert French size suction catheter through the open end of the Boussignac CPAP System. CPAP pressure will not be affected.

10. CO2 can be monitored with either a nasal cannula or an in-line CO2 adapter. If respiratory status deteriorates, remove device and intubate.

11. Document patient’s condition as presented, upon release to receiving hospital.

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- A respiratory rate greater than 25 breaths per minute
- Has a systolic pressure above 90 mmHg.
- Uses accessory muscles during respirations.
- Signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, pneumonia.

**Contraindications:**
- Patient is in respiratory arrest.
- Patient is suspected of having a pneumothorax.
- Decreased cardiac output and gastric distention
- Hypotension secondary to Hypovolemia

**Precautions:**

**Use care if patient:**
- Has impaired mental status, and is not able to cooperate with procedure.
- Has active upper GI bleed.
- Has history of recent gastric surgery (use 5 cm H2O of pressure and no higher).
- Complains of nausea or vomiting.
- Has inadequate respiratory effort.
- Has excessive secretions.
- Has facial deformity that inhibits proper CPAP mask seal.

**Steps**

<table>
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<tr>
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<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Assure spontaneous respirations. Perform appropriate patient assessment including vital signs, pulse oximeter (SpO2), and heart monitor.</td>
<td></td>
</tr>
<tr>
<td>2. O2-CPAP Valves are attached on the elbow of the circuit. Select appropriate valve. 10 cm H2O is most common. 5 cmH2O for patients with COPD or fragile/small build in size. Circuit has an Anti-Asphyxia valve. The O2-RESQ Filter is an optional accessory that reduces the risk of medic infections by filtering exhaled air from patient Bacterial/Viral Efficiency 99.9999%. Attach the filter between the Circuit Elbow and the Mask.</td>
<td></td>
</tr>
<tr>
<td>3. Remove mask from Inner bag and attach circuit. <strong>Turn on oxygen</strong></td>
<td></td>
</tr>
<tr>
<td>4. Flip Head Strap forward and place mask on face. Pinch OmniClip, <em>slide up or down</em> to position on patient’s forehead.</td>
<td></td>
</tr>
<tr>
<td>5. Flip Head Strap back over patient’s head, bring tabs forward on top Head Strap and adjust equally to proper fit. Attach bottom 2 clips and repeat above sequence.</td>
<td></td>
</tr>
<tr>
<td>6. Adjust OmniClip <em>in and out</em>. Head Strap and Mask for best fit: <strong>Do Not Overtighten Head Strap.</strong></td>
<td></td>
</tr>
</tbody>
</table>
| 7. Success is highly dependent upon patients tolerance and medics ability to coach the patient  
   Explain the procedure to the patient  
   Anticipate and control anxiety: ■ CPAP may produce anxiety in some patients ■ Verbally coach breathing as needed ■ Consider having the patient hold the mask in place for a minute or so to reduce anxiety. As an option, the medic may hold the mask in place if a good seal is obtained.  
   Attach Head Straps loosely at first and gradually tighten until air leaks are eliminated |                |
| 8. Fixed O2-RESQ Flow Generator operates at 30% FiO2. Maximum O2 rate utilized at 13 LPM. Always connect generator directly to a 50 psi pressure gas source. A “D” Tank should last approximately 30 minutes. For additional O2 attach another "D" tank at 6 LPM to get an FIO2 of 70%. Use O2 tubing to connect to the ports located on the sides of the mask. |                |
Clinical Indications: Acute respiratory distress other than pneumothorax. Particularly pulmonary edema, asthma, and COPD.

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- A respiratory rate greater than 25 breaths per minute
- Has a systolic pressure above 90 mmHg.
- Uses accessory muscles during respirations.
- Signs and symptoms consistent with asthma, COPD, pulmonary edema, CHF, pneumonia.

Contraindications:
- Patient is in respiratory arrest.
- Patient is suspected of having a pneumothorax.
- Patient has tracheostomy.

Precautions:
Use care if patient:
- Has impaired mental status, and is not able to cooperate with procedure.
- Has active upper GI bleed.
- Has history of recent gastric surgery (use 5 cm $H_2O$ of pressure and no higher).
- Complains of nausea or vomiting.
- Has inadequate respiratory effort.
- Has excessive secretions.
- Has facial deformity that inhibits proper CPAP mask seal.

Steps

<table>
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<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1. Assure spontaneous respirations</td>
<td></td>
</tr>
<tr>
<td>2. Perform appropriate patient assessment including vital signs, pulse Oximeter (SpO2), and heart monitor.</td>
<td></td>
</tr>
<tr>
<td>3. Apply CPAP mask over patient’s mouth and nose. Hold CPAP mask to patient’s face, until patient feels comfortable enough to have straps in place and adjusted to ensure proper CPAP mask seal.</td>
<td></td>
</tr>
<tr>
<td>4. Set pressure to 5 cm of $H_2O$ initially, then increase pressure slowly to 10 cm $H_2O$ (unless patient has history of asthma, COPD, or frail build, then maximum pressure is 5 cm $H_2O$.)</td>
<td></td>
</tr>
<tr>
<td>5. When using CPAP os (device), oxygen percentage is always delivered at 100% (non-adjustable).</td>
<td></td>
</tr>
<tr>
<td>6. Check for proper CPAP mask seal. Ensure no air leaks present. If air leaks present, adjust straps for proper seal.</td>
<td></td>
</tr>
<tr>
<td>7. Consider sedation for anxiety.</td>
<td></td>
</tr>
<tr>
<td>9. If respiratory status deteriorates, remove device and intubate.</td>
<td></td>
</tr>
<tr>
<td>10. Document patient’s condition as presented, upon release to receiving hospital.</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications:

- Summary of BLS Maneuvers for Adult, Children, and Infants

Steps

### High Performance/Priority Based CPR

<table>
<thead>
<tr>
<th>Component</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recognition</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Unresponsive (for all ages)</td>
</tr>
<tr>
<td>Children</td>
<td>No breathing or no normal breathing (i.e., only gasping)</td>
</tr>
<tr>
<td>Infants</td>
<td>No breathing or only gasping</td>
</tr>
<tr>
<td></td>
<td>No pulse palpated within 10 seconds</td>
</tr>
<tr>
<td><strong>CPR Sequence</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>C-A-B (Circulation-Airway-Breathing)</td>
</tr>
<tr>
<td>Children</td>
<td></td>
</tr>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td><strong>Compression Rate</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Continuous compressions of at Least 100 per minute</td>
</tr>
<tr>
<td>Children</td>
<td>(80 per minute with Autopulse)</td>
</tr>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td><strong>Compression Depth</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>At least 2 inches (5 cm)</td>
</tr>
<tr>
<td>Children</td>
<td>At least 1/3 AP diameter</td>
</tr>
<tr>
<td>Infants</td>
<td>About 2 inches (5 cm)</td>
</tr>
<tr>
<td><strong>Chest Wall Recoil</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Allow complete recoil between compressions</td>
</tr>
<tr>
<td>Children</td>
<td>Rotate compressors every 2 minutes</td>
</tr>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td><strong>Compression Interruptions</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Minimize interruptions in chest compressions</td>
</tr>
<tr>
<td>Children</td>
<td>Attempt to limit interruptions to &lt;10 seconds</td>
</tr>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td><strong>Airway</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Head tilt-chin lift (suspected trauma: jaw thrust)</td>
</tr>
<tr>
<td>Children</td>
<td></td>
</tr>
<tr>
<td>Infants</td>
<td></td>
</tr>
<tr>
<td><strong>Ventilation</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>1 breath every 6-8 seconds (8-10 breaths/minute)</td>
</tr>
<tr>
<td>Children</td>
<td>Asynchronous with chest compressions</td>
</tr>
<tr>
<td>Infants</td>
<td>About 1 second per breath – Visible chest rise</td>
</tr>
<tr>
<td><strong>Defibrillation</strong></td>
<td></td>
</tr>
<tr>
<td>Adults</td>
<td>Attach and use AED as soon as available.</td>
</tr>
<tr>
<td>Children</td>
<td>Minimize interruptions in chest compressions before and after shock:</td>
</tr>
<tr>
<td>Infants</td>
<td>Resume CPR beginning with compressions immediately after each shock</td>
</tr>
</tbody>
</table>
Clinical Indications:

- Pediatric Airway Protocol

**NOTE:** Can be done on conscious and awake patients. In most situations, Cricothyroidotomy should be used only after other methods of airway management have failed. Needle Cricothyroidotomy is the procedure of choice in Pediatrics.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Palpate cricothyroid membrane anteriorly between thyroid cartilage and cricoid cartilage.</td>
<td></td>
</tr>
<tr>
<td>2. If time allows, prep area with alcohol swab.</td>
<td></td>
</tr>
<tr>
<td>3. Use 14 gauge catheter over needle device with syringe and puncture skin midline and directly over the cricothyroid membrane.</td>
<td></td>
</tr>
<tr>
<td>4. Direct needle at 45 degree angle caudally.</td>
<td></td>
</tr>
<tr>
<td>5. Insert needle through lower half of cricothyroid membrane. Aspiration of air signifies entry into the tracheal lumen.</td>
<td></td>
</tr>
<tr>
<td>6. Withdraw the stylet while advancing catheter downward.</td>
<td></td>
</tr>
<tr>
<td>7. Attach the catheter needle hub to IV extension tubing and then to a 3.0mm pediatric endotracheal tube adaptor.</td>
<td></td>
</tr>
<tr>
<td>8. Auscultate chest for adequate ventilation.</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications:

- Failed Airway Protocol

**NOTE:** Cricothyrotomy is painful and if indicated in conscious patients, RSI procedure should be followed. In most situations, Cricothyrotomy should be used only after other methods of airway management have failed.

DO NOT DO SURGICAL CRICOThYROTOMY ON PEDIATRICS!

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If the patient is conscious, see <strong>Rapid Sequence Intubation (RSI)</strong>.</td>
<td>YES</td>
</tr>
<tr>
<td>2. Palpate cricothyroid membrane anteriorly between thyroid cartilage and cricoid cartilage.</td>
<td>YES</td>
</tr>
<tr>
<td>3. Prep area with alcohol swab if possible.</td>
<td>YES</td>
</tr>
<tr>
<td>4. Stabilize thyroid cartilage and make vertical skin incision approximately 2.5cm (1 inch) over cricothyroid membrane. Carefully incise through the membrane transversely (horizontally).</td>
<td>YES</td>
</tr>
<tr>
<td>5. Insert scalpel handle into incision and rotate 90 degrees to open the airway.</td>
<td>YES</td>
</tr>
<tr>
<td>6. Insert an appropriately sized cuffed ET tube through incision. A 6 mm tube is generally sufficient.</td>
<td>YES</td>
</tr>
<tr>
<td>7. Inflate cuff and ventilate patient.</td>
<td>YES</td>
</tr>
<tr>
<td>8. Auscultate chest.</td>
<td>YES</td>
</tr>
<tr>
<td>9. Stabilize the endotracheal tube securely.</td>
<td>YES</td>
</tr>
</tbody>
</table>
Figure 6-6 Surgical cricothyrotomy: traditional technique. (Adapted from Custalow CB. Color Atlas of Emergency Department Procedures. Philadelphia: Saunders; 2005.)
### Clinical Indications:
- Cardiac arrest with V-Fib / Pulseless V-Tach

### Steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Clinically confirm the diagnosis of cardiac arrest and identify the need for defibrillation.</td>
</tr>
<tr>
<td>2.</td>
<td>After application of an appropriate conductive agent if needed, apply defibrillation paddles or hands free pads to the patient’s chest in the proper position (right of sternum at 2nd intercostal space and anterior axillary line at 5th intercostal space).</td>
</tr>
<tr>
<td>3.</td>
<td>Set the appropriate energy level: <strong>Adult (Not Stacked)</strong> performing 2 minutes of CPR (5 cycles of CPR) between shocks. <strong>Pediatric (Not Stacked)</strong> 2 joules/kg initially, then repeat at 4 joules/kg perform 2 minutes of CPR (5 cycles of CPR) between shocks.</td>
</tr>
<tr>
<td>4.</td>
<td>Charge the defibrillator to the selected energy level.</td>
</tr>
<tr>
<td>5.</td>
<td>Assure proper placement of the paddles or pads.</td>
</tr>
<tr>
<td>6.</td>
<td>Assure proper contact by applying 25 pounds of pressure on each paddle or make sure combipads have good skin contact.</td>
</tr>
<tr>
<td>7.</td>
<td>Assertively state, “CLEAR” and visualize that no one, including yourself, is in contact with the patient.</td>
</tr>
<tr>
<td>8.</td>
<td>Deliver the countershock by depressing the discharge button(s) when using paddles, or depress the <strong>shock button</strong> for hands free operation.</td>
</tr>
<tr>
<td>10.</td>
<td>Document the dysrhythmia and the response to defibrillation with ECG strips on/with the PCR.</td>
</tr>
<tr>
<td>11.</td>
<td>Repeat the procedure as indicated by patient response and ECG rhythm.</td>
</tr>
</tbody>
</table>
Clinical Indications:

- The End-Tidal CO2 detector shall be used with all endotracheal or Supraglottic Airway. To help verify tube placement with the exception of cardiac arrest. During cardiac arrest, it is an unreliable means of verifying placement.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Attach End-Tidal CO2 detector to Combitube or endotracheal tube.</td>
<td></td>
</tr>
<tr>
<td>2. Note color change. A color change: Yellow, tube is placed correctly. Tan, tube may not be properly placed. Purple, tube is not in the trachea.</td>
<td></td>
</tr>
<tr>
<td>3. The CO2 detector shall remain in place with the airway and monitored throughout the prehospital care and transport. Any loss of CO2 detection or color change, is to be documented and monitored, as procedures are done to verify or correct the airway problem.</td>
<td></td>
</tr>
<tr>
<td>4. Tube placement should be verified frequently and always with each patient move or loss of color change in the End-Tidal CO2 detector.</td>
<td></td>
</tr>
<tr>
<td>5. Document the procedure and the results on/with the Patient Care Report (PCR).</td>
<td></td>
</tr>
<tr>
<td>6. If fluid enters the CO2 detector, remove.</td>
<td></td>
</tr>
<tr>
<td>7. In addition to the use of the CO2 detector, assessing breath sounds bilaterally, and negative gastric sounds must also be performed.</td>
<td></td>
</tr>
<tr>
<td>8. If the patient’s condition is unchanged, repeat steps 2 to 8 above.</td>
<td></td>
</tr>
<tr>
<td>9. If the patient has not improved after cardioversion, continue with drug therapy.</td>
<td></td>
</tr>
<tr>
<td>10. Note procedure, response, and time, in the patient care report (PCR).</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications:
- Patient meets clinical indications for oral intubation (appropriate to use with any attempt)
- Initial intubation attempt(s) Unsuccessful
- Predicted difficult intubation

Contraindications:
- Three (3) attempts at orotracheal intubation (utilize Failed Airway protocol)
- Introducer larger than ETT internal diameter

### Steps

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Prepare, position and oxygenate the patient with 100% oxygen, via nasal cannula at 10+ LPM non-rebreather mask or CPAP</td>
<td>YES</td>
</tr>
<tr>
<td>2.</td>
<td>Select proper ET tube without stylet, test cuff and prepare suction.</td>
<td>YES</td>
</tr>
<tr>
<td>3.</td>
<td>Lubricate the distal end and cuff of the endotracheal tube (ETT) and the distal ⅔ of the endotracheal tube introducer (Gum Bougie) (note: Failure to lubricate the Gum Bougie and the ETT may result in being unable to pass the ETT.</td>
<td>YES</td>
</tr>
<tr>
<td>4.</td>
<td>Using laryngoscopic techniques, visualize the vocal cords if possible using Sellick’s/BURP as needed.</td>
<td>YES</td>
</tr>
<tr>
<td>5.</td>
<td>Introduce the Gum Bougie with curved tip anteriorly and visualize the tip passing the vocal cords or above the arytenoids if the cords cannot be visualized.</td>
<td>YES</td>
</tr>
<tr>
<td>6.</td>
<td>Once inserted, gently advance the Gum Bougie until you meet resistance or “hold-up” (if you do not meet resistance you have a probable esophageal intubation and insertion should be re-attempted or the failed airway protocol implemented as indicated.</td>
<td>YES</td>
</tr>
<tr>
<td>7.</td>
<td>Withdraw the Gum Bougie ONLY to a depth sufficient to allow loading of the ETT while maintaining proximal control of the Gum Bougie.</td>
<td>YES</td>
</tr>
<tr>
<td>8.</td>
<td>Gently advance the Gum Bougie and loaded ET tube until you have hold-up again, thereby assuring tracheal placement and minimizing the risk of accidental displacement of the Gum Bougie.</td>
<td>YES</td>
</tr>
<tr>
<td>9.</td>
<td>While maintaining a firm grasp on the proximal Gum Bougie, introduce the ET tube over the Gum Bougie passing the tube to its appropriate depth.</td>
<td>YES</td>
</tr>
<tr>
<td>10.</td>
<td>If you are unable to advance the ETT into the trachea and the Gum Bougie and ETT are adequately lubricated, withdraw the ETT slightly and rotate the ETT 90 degrees COUNTER clockwise to turn the bevel of the ETT posteriorly. If this technique fails to facilitate passing of the ETT you may attempt direct laryngoscopy while advancing the ETT (this will require an assistant to maintain the position of the Gum Bougie and, if so desire, advance the ETT).</td>
<td>YES</td>
</tr>
<tr>
<td>11.</td>
<td>Once the ETT is correctly placed, hold the ET tube securely and remove the Gum Bougie.</td>
<td>YES</td>
</tr>
<tr>
<td>12.</td>
<td>Confirm tracheal placement according to the intubation protocol, inflate the cuff with 3 – 10 ml of air, auscultate for equal breath sounds and reposition accordingly.</td>
<td>YES</td>
</tr>
<tr>
<td>13.</td>
<td>When final position is determined, secure the ET tube, reassess breath sounds, apply end tidal CO2 monitor, and record and monitor readings to assure continued tracheal intubation.</td>
<td>YES</td>
</tr>
</tbody>
</table>
**Clinical Indications: EMT, Advanced EMT, Paramedic**

Patients who are prescribed an **Epinephrine** auto-injector for the treatment of allergic reaction.

**Cautions**

This device is for use by those patients for whom they are prescribed. The EMT is only assisting the patient by administering their medication for them. If the EMS carries an **Epinephrine** auto-injector, the medication may not be used by the EMT, unless the patient does not have their device with them, or is having trouble with their own device.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use body substance precautions.</td>
<td>YES No</td>
</tr>
<tr>
<td>2. Contact medical control for authorization if possible.</td>
<td>YES No</td>
</tr>
<tr>
<td>3. Assure medication is prescribed for patient.</td>
<td>YES No</td>
</tr>
<tr>
<td>4. Check expiration date, if medication outdated cloudy, or discolored, do not use.</td>
<td>YES No</td>
</tr>
<tr>
<td>5. Remove cap and select an injection site. (thigh or shoulder)</td>
<td>YES No</td>
</tr>
<tr>
<td>6. Push firmly against the site.</td>
<td>YES No</td>
</tr>
<tr>
<td>7. Hold the injector against the site for at least 10 seconds.</td>
<td>YES No</td>
</tr>
<tr>
<td>8. Properly discard injector.</td>
<td>YES No</td>
</tr>
<tr>
<td>9. Monitor the patient with transporting.</td>
<td>YES No</td>
</tr>
</tbody>
</table>
Clinical Indications:

- To assist in determining and documenting the correct placement of an endotracheal tube.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Complete intubation as per Airway Intubation-Oral protocol.</td>
<td></td>
</tr>
<tr>
<td>2. Place the bulb device over the proximal end of the ETT. Squeeze the bulb to remove air prior to securing the bulb on the tube.</td>
<td></td>
</tr>
<tr>
<td>3. Once secured on the tube, release the bulb.</td>
<td></td>
</tr>
<tr>
<td>4. If the bulb expands evenly and easily, this indicates probable tracheal intubation. Assessment of the patients breath sounds bilaterally should also be performed.</td>
<td></td>
</tr>
<tr>
<td>5. If the bulb does not expand easily, this indicates possible esophageal intubation and the need to reassess the airway.</td>
<td></td>
</tr>
</tbody>
</table>
**Clinical Indications:**
Noninvasive pacing is indicated for symptomatic bradycardia in patients with a pulse.

**Contraindications:**
Noninvasive pacing is contraindicated for the treatment of ventricular fibrillation and asystole.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Press <strong>ON</strong>.</td>
<td></td>
</tr>
<tr>
<td>2. Connect the patient ECG cable, apply ECG electrodes to the ECG cable and patient, and select lead I, II, or III. To receive the best monitoring signal, make sure there is adequate space between the ECG electrodes and the therapy electrodes.</td>
<td></td>
</tr>
<tr>
<td>3. Identify the QUICK-COMBO therapy electrodes sites on the patient. Use either the anterior-lateral or anterior-posterior position and prepare the patient’s skin.</td>
<td></td>
</tr>
<tr>
<td>4. Apply therapy electrodes to the patient.</td>
<td></td>
</tr>
<tr>
<td>5. Connect the therapy electrodes to the therapy cable.</td>
<td></td>
</tr>
<tr>
<td>6. Press <strong>PACER</strong></td>
<td></td>
</tr>
<tr>
<td>7. Observe the ECG rhythm. Confirm that a triangle sense market (▼) appears near the middle of each QRS complex. If the sense markers do not appear or are displayed in the wrong location (for example, on the T-wave), adjust ECG Size, or select another lead. (The sense marker location may vary slightly on each QRS complex.)</td>
<td></td>
</tr>
<tr>
<td>8. Press <strong>RATE</strong> pr rotate the <strong>SPEED DIAL</strong> to select the desired pacing rate.</td>
<td></td>
</tr>
<tr>
<td>9. Press <strong>CURRENT</strong> or rotate the <strong>SPEED DIAL</strong> to increase current until electrical capture occurs. Electrical capture is indicated by a wide QRS complex and a T-wave following the pace maker. For each delivered pacing stimulus, a positive pace marker displays on the ECG waveform.</td>
<td></td>
</tr>
<tr>
<td>10. Palpate patient’s pulse or check blood pressure to assess for mechanical capture. Consider use of sedation or analgesia if patient is uncomfortable.</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE:</strong> To change rate or current during pacing, press <strong>RATE</strong> or <strong>CURRENT</strong>. The <strong>RATE</strong> and <strong>CURRENT</strong> buttons allow changes in increments of 10; the <strong>SPEED DIAL</strong> allows in increments of 5.</td>
<td></td>
</tr>
<tr>
<td><strong>NOTE:</strong> To interrupt pacing and view the patient’s intrinsic rhythm, press and hold <strong>PAUSE</strong>. This causes the pacer to pace at 25% of the set rate. Release <strong>PAUSE</strong> to resume pacing at the set rate.</td>
<td></td>
</tr>
<tr>
<td>11. To stop pacing, reduce current to zero or press <strong>PACER</strong>.</td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:** To defibrillate and stop noninvasive pacing, press **CHARGE**. Pacing automatically stops. Proceed with defibrillation.
**Clinical Indications:**
Noninvasive pacing is indicated for symptomatic bradycardia in patients with a pulse.

**Contraindications:**
Noninvasive pacing is contraindicated for the treatment of ventricular fibrillation and asystole.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Press <strong>ON</strong>.</td>
<td></td>
</tr>
<tr>
<td>2. Connect the patient ECG cable, apply ECG electrodes to the ECG cable and patient, and select lead I, II, or III. To receive the best monitoring signal, make sure there is adequate space between the ECG electrodes and the therapy electrodes.</td>
<td>YES</td>
</tr>
<tr>
<td>3. Identify the STAT-PADZ therapy electrodes sites on the patient. Use either the anterior-lateral or anterior-posterior position and prepare the patient’s skin.</td>
<td>YES</td>
</tr>
<tr>
<td>4. Apply therapy electrodes to the patient.</td>
<td>YES</td>
</tr>
<tr>
<td>5. Press <strong>PACER</strong></td>
<td>YES</td>
</tr>
<tr>
<td>6. The suggested starting pacer settings are Demand, Rate of 70, Output of 30mA, scroll down to “Start Pacer” and push the select button.</td>
<td>YES</td>
</tr>
<tr>
<td>7. Increase your pacer output in increments of 10mA until you achieve mechanical capture, as indicated by a wide QRS complex following each blue pacer spike and a palpable pulse associated with each QRS. Energy output is increased by 10mA using the up arrow but can be decreased in increments of 5mA with the down arrow</td>
<td>YES</td>
</tr>
<tr>
<td>8. After achieving mechanical capture, increase your energy output by an additional 10%.</td>
<td>YES</td>
</tr>
<tr>
<td>9. Regular assessment of mechanical capture should be performed by checking for a palpable carotid pulse. Please consider the use of sedation or pain control if the patient is uncomfortable</td>
<td>YES</td>
</tr>
<tr>
<td>10. If you would like to pause pacing, press the Pacer button, highlight “Pause Pacer” and press the select key. If you would like to stop pacing, you can highlight “Turn Pacer Off” and press the select key</td>
<td>YES</td>
</tr>
<tr>
<td>11. Remember that this is a demand pacer. Should the patients underlying heart rhythm increase above 70bpm, the pacer will stop until the patient’s heart rate drops back below 70. It will be important to assess for a palpable pulse at that time. <strong>Consider changing into Fixed pacing if the patient’s intrinsic heart rate is above 70 without a palpable pulse.</strong> This is accomplished by pressing the pacer button, scrolling up to mode, and changing it from Demand to Fixed</td>
<td>YES</td>
</tr>
</tbody>
</table>

**NOTE:** To defibrillate and stop noninvasive pacing, press the energy select button. You will be prompted as to whether or not you would like to stop pacing. Select yes and proceed with defibrillation.
Clinical Indications:

- Eye irrigation should be performed on all patients with significant exposure to a gas or when the eye is contaminated by a substance.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Remove contact lenses.</td>
<td></td>
</tr>
<tr>
<td>2. Place 1 - 2 drops of <strong>Tetracaine</strong> 0.5% Solution in the affected eye(s).</td>
<td></td>
</tr>
<tr>
<td>3. Irrigate using 0.9 NS, an IV tubing setup and a Morgan Lens. Irrigate with at least 1000 ml of fluid per eye.</td>
<td></td>
</tr>
<tr>
<td>4. Attempt to contain the run-off if the chemical the patient was exposed to creates a potential for a secondary exposure.</td>
<td></td>
</tr>
<tr>
<td>5. Do not allow the patient to rub their eyes after the <strong>Tetracaine</strong> drops as they can damage them.</td>
<td></td>
</tr>
</tbody>
</table>
## Steps

### Conscious Patient (sitting or standing)

1. If respiration present but compromised, provide support, \textbf{Oxygen} therapy, IV of \textbf{0.9\% NS}, cardiac monitor, assurance and transport.

2. If respiration absent or patient increasingly hypoxic:
   a. Start CPR
   b. If airway cleared:
      1) reassess ABC’s
      2) maintain Oxygenation, initiate appropriate therapy
      3) establish IV of \textbf{0.9\% NS}
      4) monitor EKG
      5) transport to medical facility
   c. If airway not cleared, proceed with below.

### Unconscious Patient

3. Attempt ventilation, Reposition head and try to ventilate.

4. Start CPR.

5. Finger probe and/or visualization (have suction available) with laryngoscope and removal if possible with Magill Forceps™.

6. Establish airway and attempt to ventilate.

7. If unable to ventilate, repeat 6 - 10 abdominal thrusts and/or visualization (have suction available) attempt with laryngoscope and removal if possible with Magill Forceps™.
   a. Intubation of patient
   b. Perform cricothyrotomy and attempt positive pressure ventilation

8. Once successful, perform the following:
   a. reassess ABC’s
   b. maintain Oxygenation, initiate appropriate therapy (may intubate patients that are unable to manage their airway)
   c. establish IV of \textbf{0.9\% NS}
   d. monitor EKG and transport to medical facility
Clinical Indications:
Helmets in general are designed to protect the wearer from acute head injury. If used correctly, the wearer will have a greater chance of withstanding a traumatic head injury. The Helmet Removal Procedure is a guideline designed in two parts. Part I is for those patients wearing a motorcycle, bicycle or other non-football type head protective device. Part II is designed for those patients wearing a football helmet.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Perform a primary survey if possible. Also, if the situation permits, ascertain if the victim has the ability to move their extremities. If unable to perform a primary survey, go to step 2.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. The in-charge rescuer should designate a trained rescuer (rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap device. A third rescuer should prepare padding, for use to keep the spine in a neutral position.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. The in-charge rescuer should then take control of the cervical spine from a side position to the patient. Rescuer II should then relinquish control of the cervical spine to the in-charge rescuer. Rescuer II should remove the helmet by spreading the sides of the helmet and removing the helmet using caution not to manipulate the cervical spine (use caution not to pinch the nose when removing). The in-charge rescuer should be prepared to hold the head as when the helmet is removed, there will be an increase in weight. The pad should be inserted under the patient's head and cervical spine control should then be maintained by rescuer II.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. The in-charge rescuer should then resume the primary survey, further assessment and interventions.</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>5. Provide spinal motion restriction (SMR) as outlined in Spinal Injury Assessment protocol. Backboard and straps may be utilized to facilitate patient movement off of playing field. The patient should be removed from the board to EMS gurney following SMR guidelines as soon as feasible.</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Clinical Indications:
Helmets in general are designed to protect the wearer from acute head injury. If used correctly, the wearer will have a greater chance of withstanding a traumatic head injury. The Helmet Removal Procedure is a guideline designed in two parts. Part I is for those patients wearing a motorcycle, bicycle or other non-football type head protective device. Part II is designed for those patients wearing a football helmet.

Part II Football Helmets
The goal of evaluation of football player injuries is to do no further harm. The following procedure should be used to facilitate proper management of the injured player. Keep the cervical spine in the neutral position as much as possible.

Steps | Was performed?
--- | ---
1. Perform a Primary Survey. Also, if the situation permits, ascertain if the victim has the ability to move all extremities. | EMT AEMT Paramedic

2. Remove helmet and pads:
   a. The in-charge rescuer should designate a trained rescuer (rescuer II) to manually control the cervical spine. The in-charge rescuer should kneel beside the patient and remove the chin strap, ear pads, and remove the face mask retainers (if not already done). A third rescuer should prepare padding for use to keep the spine in a neutral position.
   b. The in-charge rescuer should then take control of the cervical spine from a side position to the patient. Rescuer II should then relinquish control of the cervical spine to the rescuer in-charge. Rescuer II should then remove the helmet by spreading the sides of the helmet and removing the helmet not to manipulate the cervical spine. The in-charge rescuer should be prepared to hold the head as when the helmet is removed, there will be an increase in weight. The pad should be inserted under the patient’s head and cervical spine control should then be maintained by rescuer II.
   c. The helmet should be removed prior to the shoulder pads. When removing shoulder pads, remove the straps and lift on the side of the pads prior to log-rolling. Then after rolling the patient on their side, finish removing the shoulder pads. A CID pad or a 1” pad may be sufficient to maintain neutral alignment of the cervical spine.
   d. Provide Spinal Motion Restriction (SMR) as outlined in Spinal Injury Assessment protocol.
   e. Backboard and straps may be utilized to facilitate patient movement off playing field. The patient should be removed from the board to EMS gurney following SMR.

3. If athletic trainer or team physician is present, equipment removal should be coordinated effort between EMS providers and trainers(s)/physician.
Clinical Indications:
For establishing a patent airway during resuscitation of the unconscious patient in the pre-hospital setting

Contraindications:
- Patients with intact gag reflexes
- Patients with unknown esophageal pathology
- Patients after ingestion of caustic substances
- Central-airway obstruction

Steps

1. Select an appropriately sized I-gel according to patient weight.

2. Apply lubrication by placing a small bolus of a water-based lubricant, such as K-Y Jelly, onto the middle of the smooth surface of the protective cradle in preparation for lubrication. Grasp the i-gel with the opposite (free) hand along the integral bite block and lubricate the back, sides and front of the cuff with a thin layer of lubricant.

3. Remove the i-gel from the protective cradle. Grasp the lubricated i-gel firmly along the integral bite block. Position the device so that the i-gel cuff outlet is facing towards the chin of the patient. The patient should be in the ‘sniffing the morning air’ position with head extended and neck flexed. The chin should be gently pressed down before proceeding. Introduce the leading soft tip into the mouth of the patient in a direction towards the hard palate.

4. Glide the device downwards and backwards along the hard palate with a continuous but gentle push until a definitive resistance is felt.

5. The tip of the airway should be located into the upper esophageal opening (a) and the cuff should be located against the laryngeal framework (b). The incisors should be resting on the integral bite-block.

6. I-gel should be strapped by sliding the strap under the patient’s neck and securing it in place to the hook ring on the collar of the I-gel O2. If there is early resistance during insertion a ‘jaw thrust’ (above) or ‘Insertion with Deep Rotation’ (right) is recommended.

### I-Gel Size

<table>
<thead>
<tr>
<th>Patient Size</th>
<th>Patient weight guidance (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size 1.0 Neonates</td>
<td>2 - 5 kg (5 - 11 lbs.)</td>
</tr>
<tr>
<td>Size 1.5 Infants</td>
<td>5 - 12 kg (11 - 25 lbs.)</td>
</tr>
<tr>
<td>Size 2.0 Small Pediatrics</td>
<td>10 - 25 kg 22 - 55 lbs.</td>
</tr>
<tr>
<td>Size 2.5 Large Pediatrics</td>
<td>25 - 35 kg (55 - 77 lbs.)</td>
</tr>
<tr>
<td>Size 3 Small Adults</td>
<td>30 - 60 kg (65 - 130 lbs.)</td>
</tr>
<tr>
<td>Size 4 Medium Adults</td>
<td>50 - 90 kg (110 - 200 lbs.)</td>
</tr>
<tr>
<td>Size 5 Large Adults</td>
<td>90+ kg (200+ lbs.)</td>
</tr>
</tbody>
</table>

http://www.youtube.com/watch?feature=player_embedded&v=ijAeVvgh7sg
Clinical Indications:

- **EZ-IO 15mm** (3-39 kg / 7 – 87 Lbs)
- **EZ-IO 25mm** (40 kg / 88 Lbs and over)
- **EZ-IO 45mm** 40 kg and greater with excessive tissue

1. Intravenous fluids or medications needed in adults /children and a peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:
   a. An altered mental status (GCS of 8 or less)
   b. Respiratory compromise
   c. Hemodynamic instability (Systolic BP <90)

2. **EZ-IO AD® & EZ-IO PD®** may be considered PRIOR to peripheral IV attempts in the following situations:
   a. Cardiac Arrest
   b. Profound hypovolemia with alteration of mental status

Contraindications:

- Fracture of the bone selected for IO infusion (consider alternate site)
- Excessive tissue at insertion site with the absence of anatomical landmarks (consider alternate tibia)
- Previous significant orthopedic procedures (IO within 24 hours, prosthesis – consider alternate tibia)
- Infection at the site selected for insertion (consider alternate site)

Steps

1. **Select a site**  **Proximal Humerus** Prep the skin with an antimicrobial wipe.

2. Prepare the EZ-IO driver and appropriate needle set. (the **45 mm needle** set for adults)

3. Position the arm for maximum humeral head exposure. Adduct the humerus then posteriorly locate the elbow toward the back rest of your chair (or floor if you are laying down).

4. Place the patient’s hand on the patient’s abdomen – at near the umbilicus. This will provide for a more prominent insertion site as well as ensure protection for the vital neurovascular structures located under the patient’s arm.
   
   Important note: By placing the hand on the umbilicus (rather than the entire forearm across the abdomen) you will be able to retain the elbow on the stretcher or the ground and maximize your approach to the humeral head.

5. The patient should be in a supine position. Expose shoulder and adduct humerus (place the patient’s arm against the patient’s body) resting the elbow on the stretcher or ground.

6. Palpate and identify the mid-shaft humerus and continue palpating toward the proximal aspect or humeral head. As you near the shoulder you will note a protrusion. This is the base of the greater tubercle insertion site.

   With the opposite hand you may consider “pinching” the anterior and inferior aspects of the humeral head while confirming the identification of the greater tubercle. This will ensure that you have identified the midline of the humerus itself.

7. Stabilize the arm and place the powered EZ-IO AD - maintaining a 90 degree angle during the insertion process. IMPORTANT - Stabilize the needle set prior to any attempt at removing the driver. The Humeral cortex can be considerably “less dense” and failure to stabilize the catheter may cause inadvertent dislodgment. As patients advances in age - bone density continues to decrease and the proximal humeral catheter’s stability must routinely be assessed.

8. Connect primed EZ-Connect (Important)
   
   Rapid syringe bolus (flush) the EZ-IO AD® catheter with 10 ml of normal saline.
   
   Rapid syringe bolus (flush) the EZ-IO PD® catheter with 5 ml of normal saline.
   
   Repeat syringe bolus (flush) as needed.

9. Utilize pressure (pressure bag or infusion pump) for continuous infusions where applicable. Begin infusion, dress site, secure tubing, and monitor site and patient condition.

10. **Conscious Patients**: IO Infusion for conscious patients has been noted to cause severe discomfort. Prior to IO syringe bolus (flush) or continuous infusion in alert patients, SLOWLY administer Lidocaine 2% (Preservative Free) through the EZ-IO hub. Ensure that the patient has no allergies or sensitivity to Lidocaine.

    **EZ-IO AD** Slowly administer 50 mg Lidocaine 2% (Preservative Free)

    **EZ-IO PD** Slowly administer 0.5 mg/kg Lidocaine 2% (Preservative Free)
Intraosseous Infusion EZ-IO (Distal Tibia)

Clinical Indications:
EZ-IO 15mm (3-39 kg / 7 – 87 Lbs) & EZ-IO 25mm (40 kg / 88 Lbs and over) EZ-IO 45mm (40 kg / 88 Lbs and over) excessive tissue

1. Intravenous fluids or medications needed in adults/children and a peripheral IV cannot be established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:
   a. An altered mental status (GCS of 8 or less)
   b. Respiratory compromise (SaO2 80% after appropriate oxygen therapy respiratory rate <10 or >40)
   c. Hemodynamic instability (Systolic BP <90)

2. EZ-IO AD® & EZ-IO PD® may be considered PRIOR to peripheral IV attempts in the following situations:
   a. Cardiac Arrest
   b. Profound hypovolemia with alteration of mental status

Contraindications:
Fracture of the bone selected for IO infusion (consider alternate site)
Excessive tissue at insertion site with the absence of anatomical landmarks (consider alternate tibia)
Previous significant orthopedic procedures (IO within 24 hours, prosthesis – consider alternate tibia) Infection at the site selected for insertion (consider alternate site)

Steps

1. Select site Tibia Prep the skin with an antimicrobial wipe. Prepare EZ-IO driver and appropriate needle set.

2. Here we can identify the major structures of the lower leg as well as the EZ-IO PD landmarks, the distal Tibia (the lower portion of the anterior lower leg bone), The Medial Malleolus (Ankle) and the insertions site - one finger width proximal to the medial malleolus – along the flat aspect of the medial distal tibia.

3. Stabilize the leg and place the powered EZ-IO AD® - maintaining a 90 degree angle during the insertion process. IMPORTANT - Stabilize the needle set prior to any attempt at removing the driver. Failure to stabilize the catheter may cause inadvertent dislodgment. Remove EZ-IO driver from needle set while stabilizing catheter hub. Remove stylet from catheter, place stylet in shuttle or approved sharps container.

4. Confirm placement
   The catheter is firmly seated and does not move.
   • Observed blood on the stylet tip (noted by wiping tip on a 4x4) prior to placing stylet in the shuttle or bio hazard container.
   • You note blood at the catheter hub.
   • You are able to aspirate blood or marrow from the catheter (We recommend aspirating a small amount of blood due to its extremely viscous nature).
   • Drugs or fluids flow without difficulty – there are no signs of extravasation (leakage) in or around the tissue. CAUTION: Conscious patients will experience pain with infusion prior to Lidocaine! Flow rates may be slow or non existent prior to the 10 ml bolus.
   • You note the effects of administered drugs. Connect primed EZ-Connect

5. Rapid syringe bolus (flush) the EZ-IO AD® catheter with 10 ml of normal saline. (Important)
   Rapid syringe bolus (flush) the EZ-IO PD® catheter with 5 ml of normal saline. (Important)
   Repeat syringe bolus (flush) as needed.
   Utilize pressure (pressure bag or infusion pump) for continuous infusions where applicable.

6. Conscious Patients: IO Infusion for conscious patients has been noted to cause severe discomfort. Prior to IO syringe bolus (flush) or continuous infusion in alert patients, SLOWLY administer Lidocaine 2% (Preservative Free) through the EZ-IO hub. Ensure that the patient has no allergies or sensitivity to Lidocaine.
   EZ-IO AD Slowly administer 50 mg Lidocaine 2% (Preservative Free)
   EZ-IO PD Slowly administer 0.5 mg/kg Lidocaine 2% (Preservative Free)

7. Four Important points to consider once the EZ-IO has been established:
   A. Routinely reconfirm that the EZ-IO catheter is secure and in position.
   B. Maintain appropriate protection at the insertion site guarding against accidental bumping or dislodgement.
   C. Frequently monitor the EZ-IO, the fluid and the extremity.
   D. Remove the EZ-IO within 24hrs.
Clinical Indications:
EZ-IO 15mm (3-39 kg / 7 – 87 Lbs) & EZ-IO 25mm (40 kg / 88 Lbs and over) EZ-IO 45mm (40 kg / 88 Lbs and over) excessive tissue
1. Intravenous fluids or medications needed in adults/children and a peripheral IV cannot be
   established in 2 attempts or 90 seconds AND the patient exhibits one or more of the following:
   a. An altered mental status (GCS of 8 or less)
   b. Respiratory compromise (SaO2 80% after appropriate oxygen therapy respiratory rate <10 or >40)
   c. Hemodynamic instability (Systolic BP <90)
2. EZ-IO AD® & EZ-IO PD® may be considered PRIOR to peripheral IV attempts in the following situations:
   a. Cardiac Arrest
   b. Profound hypovolemia with alteration of mental status

Contraindications:
Fracture of the bone selected for IO infusion (consider alternate site)
Excessive tissue at insertion site with the absence of anatomical landmarks
(consider alternate tibia)
Previous significant orthopedic procedures (IO within 24 hours, prosthesis –
(consider alternate tibia) Infection at the site selected for insertion (consider alternate site)

Steps

1. Select site Tibia Prep the skin with an antimicrobial wipe. Prepare EZ-IO driver and appropriate needle set.

2. Identify the major structures of the upper and lower leg as well as the three EZ-IO landmarks, the Tibia (anterior or most forward lower leg bone), Patella (knee cap) and Tibial tuberosity (bump or raised area on the anterior aspect or front of the tibia)

   Note that the insertion site is one finger width medial to the tibial tuberosity.

3. Stabilize the leg and place the powered EZ-IO AD - maintaining a 90 degree angle during the insertion process. IMPORTANT - Stabilize the needle set prior to any attempt at removing the driver. Failure to stabilize the catheter may cause inadvertent dislodgment.
   Remove EZ-IO driver from needle set while stabilizing catheter hub.
   Remove stylet from catheter, place stylet in shuttle or approved sharps container.

4. Confirm placement
   The catheter is firmly seated and does not move.
   • Observed blood on the stylet tip (noted by wiping tip on a 4x4) prior to placing stylet in the shuttle or bio hazard container.
   • You note blood at the catheter hub.
   • You are able to aspirate blood or marrow from the catheter (We recommend aspirating a small amount of blood due to its extremely viscous nature).
   • Drugs or fluids flow without difficulty – there are no signs of extravasation (leakage) in or around the tissue. CAUTION: Conscious patients will experience pain with infusion prior to Lidocaine! Flow rates may be slow or non existent prior to the 10 ml bolus.
   • You note the effects of administered drugs. Connect primed EZ-Connect

5. Rapid syringe bolus (flush) the EZ-IO AD® catheter with 10 ml of normal saline. (Important)
   Rapid syringe bolus (flush) the EZ-IO PD® catheter with 5 ml of normal saline. (Important)
   Repeat syringe bolus (flush) as needed.
   Utilize pressure (pressure bag or infusion pump) for continuous infusions where applicable.

6. Conscious Patients: IO Infusion for conscious patients has been noted to cause severe discomfort. Prior to IO syringe bolus (flush) or continuous infusion in alert patients, SLOWLY administer Lidocaine 2% (Preservative Free) through the EZ-IO hub. Ensure that the patient has no allergies or sensitivity to Lidocaine.
   EZ-IO AD Slowly administer 50 mg Lidocaine 2% (Preservative Free)
   EZ-IO PD Slowly administer 0.5 mg/kg Lidocaine 2% (Preservative Free)

7. Four Important points to consider once the EZ-IO has been established:
   A. Routinely reconfirm that the EZ-IO catheter is secure and in position. B. Maintain appropriate protection at the insertion site guarding against accidental bumping or dislodgement.
   C. Frequently monitor the EZ-IO, the fluid and the extremity. D. Remove the EZ-IO within 24hrs.

Respontsoft EMS Protocols Page 276 01/01/2019
Clinical Indications:
- To relieve upper airway obstruction: Oropharyngeal edema, anaphylaxis, burns, facial injuries.
- To prevent aspiration: Head injuries, unconscious patients, seizures.
- To allow for removal of aspirated contents or secretions.
- To establish a means of mechanical ventilation: Depressed respiratory drive, head injuries, expanding abdomen causing respiratory distress.
- Correction of hypoxia, hypercarbia, or acidosis: Altered lung function (pulmonary injuries), expanding abdomen causing respiratory distress.

Steps | Was performed?
--- | ---
1. Paramedics and Advanced EMT’s are directed to intubate any victim who has little or no spontaneous respiratory effort or has significant airway compromise.
2. Conscious patients may exhibit anxiety or fear of impending doom when having breathing difficulties. During these times, the patient may need to be intubated to protect the airway or to improve the oxygenation process. If the Medic-in-Charge feels it is necessary to intubate the patient, See Rapid Sequence Intubation (RSI).
3. All patients should be pre-oxygenated with 100% OXYGEN for 60 seconds prior to any intubation attempt via nasal cannula at 10 lpm.
4. Use the blade to lift the tongue and epiglottis (either directly with the straight blade or indirectly with the curved blade).
5. The intubation attempt should be no longer than 30 seconds. If so, the attempt should be stopped and the patient should be re-oxygenated for 60 seconds with 100% OXYGEN.
6. After the trachea is intubated, proper tube placement must be assured by:
   a) Observing rise and fall of both sides of the chest wall.
   b) Confirming the presence of bilateral breath sounds.
   c) Observing the absence of air movement out of the mouth or into the stomach with each bagged ventilation.
   d) Appropriate color change on an end-tidal CO2 detector (from purple to yellow) placed on the end of the endotracheal tube during ventilation (Easy-Caps).
   **NOTE:** When using the Easy-Caps, look for immediate color change. If after 4-5 breaths the Easy-Cap is not changing color, re-check the tube placement. With no color change, the esophagus may be intubated.
7. If there is any doubt as to proper tube placement, remove the tube and resume ventilation with the bag valve mask using 100% OXYGEN before re-attempting intubation.
8. If tube placement is confirmed, inflate the cuff and secure the tube in place from moving. If the patient is unable to be intubated, continue to bag with the BVM and an oral airway in place, or, prepare to insert a Supraglottic Airway. End tidal CO2. Target CO2 at 36 – 40 mmHg.
9. Tracheal intubation should be approached with extreme caution in patients with suspected cervical fractures. Preferred methods of intubating these patients include:
   a) Proper two-man intubation maneuver using cervical spine control
   b) Cricothyroidotomy.
Clinical Indications:

- An unconscious patient without a gag reflex who is apneic or is demonstrating inadequate respiratory effort.
- Any patient medicated for sedation.

Steps

1. The patient should be oxygenated for at least 60 seconds before intubation attempt is made. This should be accomplished via 100% non-rebreather mask if the patient is breathing, or via bag valve mask device if apneic or respiratory effort is insufficient.

2. The technique should be performed by the most experienced person and not to exceed 15 - 20 seconds in duration. Cardiac monitoring should be instituted prior to insertion of the laryngoscope.

3. In children <8 years, an uncuffed tube is used.

4. Studies suggest endotracheal tube size is best determined by using a length-based resuscitation tape, for example, the Broselow Tape.

5. Apply Sellick’s Maneuver (cricoid pressure), should be initiated during pre-oxygenation, and continue until endotracheal tube (ET Tube) is secured.

6. Oral intubation should be performed. Never perform blind airway procedures (i.e.: nasal intubation) on a pediatric patient due to anatomic variations.

7. Endotracheal tube placement should be confirmed by: direct visualization of tube entering vocal cords, the presence of bilateral breath sounds, bilateral chest excursion, vapor in endotracheal tube, and use of an end-tidal carbon dioxide (ET CO2) detector (example-Easy Cap). For children under 15 kg or with an endotracheal tube size 5.0 or less, a pediatric size ET CO2 detector should be used. If this is not available, the ET CO2 detector should be used briefly to assess initial placement, then as an occasional spot check, due to the large dead space volume. Document actions. **In the emergent setting, the only absolute methods to confirm placement are direct visualization and ET CO2 detection.

8. Endotracheal tube depth, in cm, should be documented and continuously re-assessed. Proper depth can be estimated by the following formulas:

   * Infants < 1yr..............7 + Wt (kg) = ____ cm depth
   * Children >1 yr...........12 + 1/2 age = ____ cm depth
   * When intubating children who are not in full cardiac arrest, consider using the following medications:

<table>
<thead>
<tr>
<th>Medication</th>
<th>Dose</th>
<th>Route</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Midazolam</td>
<td>0.1 mg/kg</td>
<td>IV, IO</td>
<td>Useful for combative patients, give 1 - 2 minutes before intubating. Max. Pediatric dose 2 mg.</td>
</tr>
<tr>
<td>Atropine</td>
<td>0.02 mg/kg</td>
<td>IV, IO</td>
<td>Eliminates bradycardia due to vagal stimulation. Use on children &lt; 5 years. Give 1 minute before intubating.</td>
</tr>
</tbody>
</table>
Clinical Indications:

- Any patient where intravenous access is indicated (significant trauma or mechanism, emergent or potentially emergent medical condition).
- **Normal Saline 0.9% (NS)** (Fluid for all IV infusions, with exception to premixed solutions)

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inspect the IV solution for expiration date, cloudiness, discoloration, leaks, or the presence of particles.</td>
<td>YES NO</td>
</tr>
<tr>
<td>2. Connect IV tubing to the solution in a sterile manner. Fill the drip chamber half full and then flush the tubing bleeding all air bubbles from the line.</td>
<td>YES NO</td>
</tr>
<tr>
<td>3. Place a tourniquet around the patient’s extremity to restrict venous flow only.</td>
<td>YES NO</td>
</tr>
<tr>
<td>4. Select a vein and an appropriate gauge catheter for the vein and the patient’s condition.</td>
<td>YES NO</td>
</tr>
<tr>
<td>5. Prep the skin with an antiseptic solution.</td>
<td>YES NO</td>
</tr>
<tr>
<td>6. Insert the needle with the bevel up into the skin in a steady, deliberate motion until the bloody flashback is visualized in the catheter.</td>
<td>YES NO</td>
</tr>
<tr>
<td>7. Advance the catheter into the vein. <strong>Never</strong> reinsert the needle through the catheter. Dispose of the needle into the proper container without recapping.</td>
<td>YES NO</td>
</tr>
<tr>
<td>8. Remove the tourniquet and connect the IV tubing or saline lock.</td>
<td>YES NO</td>
</tr>
<tr>
<td>9. Open the IV to assure free flow of the fluid and then adjust the flow rate as per protocol or as clinically indicated.</td>
<td>YES NO</td>
</tr>
<tr>
<td>10. Cover the site with a sterile dressing and secure the IV and tubing.</td>
<td>YES NO</td>
</tr>
</tbody>
</table>
**Clinical Indications:** Oral intubation

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
</table>
| 1. Check the Display is ready by pressing and holding (about a second) the power button on the back of the Display.  
   A. The LED above the screen should illuminate and show Green. If the LED is RED the batteries that were installed need to be replaced with fresh ones. | YES NO |
| 2. Turn the Display OFF. The Display must be OFF before attaching the Blades, if not the video image will not display. | YES NO |
| 3. Select the proper endotracheal tube being used and stylet if needed. (stylets are not needed with channeled blades) | YES NO |
| 4. Open the blade packaging and remove Blade.  
   A. Insert the Display into the Blade.  
   B. Listen for a “click” and feel the Display engage with the Blade.  
   C. Turn the Display ON, both the LED should light up GREEN and the video screen should now show an image. | YES NO |
| 5. (If you are using the Standard style Blade-SKIP this step) For the Channeled Blade: take the lubricated endotracheal tube and slide it through the channel to lubricate it. | YES NO |
| 6. Insert the King Vision Video Laryngoscope into the patient’s mouth midline. Watch for airway structures as you advance the device. Always center the vocal cords in the middle of the video screen. | YES NO |
| 7. Pass the endotracheal tube through the vocal cords confirming placement with the display. | YES NO |
| 8. Standard Blade simply remove it from the patient’s airway. | YES NO |
| 9. Dispose of the Blade. Display should be cleaned or disinfected before its next use. | YES NO |
LIFEVEST WEARABLE DEFIBRILLATOR
EMERGENCY PATIENT MANAGEMENT

What alert sounds and voice prompts are being broadcast:

**Alert:**
- Device silent OR Gong Alert (SINGLE TONE)

**Voice:**
- None-device silent
- “Contact physician”
- “Treatment has been given, call your doctor”

**Status:**
- Device is monitoring the patient
- Device may be alerting the patient to follow instructions on the screen

**Alert:**
- Siren Alert (TWO TONE)

**Voice:**
- “If patient is not responsive, call for help, perform CPR”
- “Device disabled, call ambulance”

**Status:**
- Device cannot detect ECG or the device has delivered the maximum number of treatments

**Alert:**
- Siren Alert (TWO TONE)

**Voice:**
- “Press response buttons to delay treatment”
- “Electrical shock possible, DO NOT TOUCH PATIENT”
- “Bystanders do not interfere”

**Status:**
- Device has detected a ventricular arrhythmia
- Device is preparing to treat the patient
  - Shock likely
  - Stop CPR
  - Only the patient should press the response buttons (patient consciousness test)
  - Do not touch patient
  - Allow device to treat the patient

When siren alert stops or “If patient is not responsive, call for help, perform CPR” is broadcast:

**First Responder Instructions**

- Proceed with standard evaluation and treatment measures.
- CPR can be performed as long as the device is not broadcasting “press the response buttons,” “electrical shock possible, do not touch patient,” or “bystanders do not interfere.”
- If external defibrillation is available, a decision can be made to remove the LifeVest and monitor/treat the patient with the external equipment.
- To remove the LifeVest, first pull out the battery, then remove the garment from the patient.
Questions & Answers

1. What is a LifeVest?
The LifeVest wearable defibrillator is worn by patients at risk for sudden cardiac arrest (SCA), providing protection during their changing condition and while permanent SCA risk has not been established.

2. What does the “Respond” message mean?
Before delivering a treatment shock, the LifeVest tests to see if a patient is conscious by providing the patient an opportunity to press and hold the response buttons to prevent a treatment shock. It is important that only the patient press and hold the response buttons.

3. What if the patient has BlueTM gel on their skin?
The LifeVest therapy pads release a BlueTM gel prior to a treatment shock to both improve shock conduction and mitigate burning. The gel should remain on the patient as long as the patient is wearing the LifeVest in case additional treatment shocks are required. If you choose to remove the LifeVest from the patient and monitor the patient with external equipment, the gel can be removed with water.

4. How long does it take for the LifeVest to treat a ventricular arrhythmia?
After the LifeVest detects a treatable arrhythmia, the time to treatment will be between 25 and 60 seconds depending on the type and rate of the arrhythmia and whether the patient presses the response buttons.

5. Can emergency personnel get shocked by the LifeVest?
Yes. No one should touch the patient while a shock is delivered. The LifeVest will warn bystanders with both a siren alert and a voice command stating “electrical shock possible,” “do not touch patient,” or “bystanders do not interfere” before a shock is delivered.

6. Can emergency personnel use external defibrillation while the patient is wearing a LifeVest?
The monitor should be disconnected from the electrode belt prior to delivering an external defibrillation shock. The garment and belt do not need to be removed.

7. What if the patient describes or feels a vibration coming from the garment?
The vibrations, along with the siren alerts and voice prompts, are part of the LifeVest consciousness test, which requires the patient to press and hold the response buttons to avoid a shock. It is important that only the patient press and hold the response buttons.

8. What LifeVest items should the patient bring with them to the hospital?
If possible, the patient should bring the LifeVest, modem, charger, and extra battery to the hospital. This will allow the patient to download any stored event data from the monitor and charge the battery as required.

24 hour technical support, call: (800) 543-3267
Clinical Indications:
The Lucas may be used in patients 12 years of age in cardiac arrest, where manual CPR would otherwise be used.

Contraindications:
1. Patients < 12 years of age.
2. Patients who do not fit within the device.
   a. Patients who are too large and with whom you cannot press the pressure pad down 2 inches.
   b. Patients who are too small and with whom you cannot pull the pressure pad down to touch the sternum.

Steps

1. All therapies related to the management of cardiopulmonary arrest should be continued as currently defined.

2. Initiate resuscitative measures following the Join ems protocols
   a. Early defibrillation should be considered and provided as indicated based on clinical presentation.
   b. Manual chest compressions should be initiated immediately while the LUCAS device is being placed on the patient.
   c. Limit interruptions in chest compressions to 10 seconds or less.
   d. Do not delay manual CPR for the LUCAS. Continue manual CPR until the device can be placed.

3. While resuscitative measures are initiated, the LUCAS device should be removed from its carrying device and placed on the patient in the following manner.

Backplate Placement
- The backplate should be centered on the nipple line and the top of the backplate should be located just below the patient’s armpits.
- In cases for which the patient is already on the stretcher, place the backplate underneath the thorax. This can be accomplished by log-rolling the patient or raising the torso (Placement should occur during a scheduled discontinuation of compressions [e.g., after five cycles of 30:2 or two minutes of uninterrupted compressions]).
Position the Compressor

Turn the LUCAS Device on (the device will perform a 3 second self test).

Remove the LUCAS device from its carrying case using the handles provided on each side.

With the index finger of each hand, pull the trigger to ensure the device is set to engage the backplate. Once this is complete, you may remove your index finger from the trigger loop.

Approach the patient from the side opposite the person performing manual chest compressions.

- Attach the claw hook to the backplate on the side of the patient opposite that where compressions are being provided.
- Place the LUCAS device across the patient, between the staff member's arms who is performing manual CPR.
- At this point the staff member performing manual CPR stops and assists attaching the claw hook to the backplate on their side.
- Pull up once to make sure that the parts are securely attached.

Adjust the Height of the Compression Arm

- Use two fingers (V pattern) to make sure that the lower edge of the Suction Cup is immediately above the end of the sternum. If necessary, move the device by pulling the support legs to adjust the position.
- Press the Adjust Mode Button on the control pad labeled #1 (This will allow you to easily adjust the height of the compression arm).
- To adjust the start position of the compression arm, manually push down the SUCTION CUP with two fingers onto the chest (without compressing the patient’s chest)
- Once the position of the compression arm is satisfactory, push the green PAUSE button labeled #2 (This will lock the arm in this position), then remove your fingers from the SUCTION CUP.
- If the position is incorrect, press the ADJUST MODE BUTTON and repeat the steps.
Start Compressions

- If the patient is not intubated and you will be providing compression to ventilation ratio of 30:2 push ACTIVE (30:2) button to start.
- If the patient is intubated and you will be providing continuous compressions push ACTIVE (continuous) button.

Patient Adjuncts

- Place the neck roll behind the patient’s head and attach the straps to the LUCAS device.
- This will prevent the LUCAS from migrating toward the patient’s feet.
- Place the patient’s arms in the straps provided.
- Using the LUCAS during the Resuscitation.

Defibrillation

- Defibrillation can and should be performed with the LUCAS device in place and in operation.
- One may apply the defibrillation electrodes either before or after the LUCAS device has been put in position.
  - The defibrillation pads and wires should not be underneath the suction cup.

  - If the electrodes are already in an incorrect position when the LUCAS is placed, you must apply new electrodes.
  - Defibrillation should be performed according to the joint EMS protocols and following the instructions of the defibrillator manufacturer.

  - If the rhythm strip cannot be assessed during compressions, one may stop the compressions for analysis by pushing the PAUSE BUTTON (The duration of interruption of compressions should be kept as short as possible and should not be > 10 seconds. There is no need to interrupt chest compressions other than to analyze the rhythm).

  - Once the rhythm is determined to require defibrillation, the appropriate ACTIVE BUTTON should be pushed to resume compressions while the defibrillator is charging and then the defibrillator should be discharged.

Pulse Checks/Return of Spontaneous Circulation (ROSC)

- Pulse checks should occur intermittently while compressions are occurring.
- If the patient moves or is obviously responsive, the LUCAS Device should be paused and the patient evaluated.
- If there is a change in rhythm, but no obvious indication of responsiveness or ROSC, a pulse check while compressions are occurring should be undertaken. If the palpated pulse is asynchronous, one may consider pausing the LUCAS Device. If the pulse remains, reassess the patient. If the pulse disappears, one should immediately restart the LUCAS Device.

Disruption or Malfunction of Lucas Device

- If disruption or malfunction of the LUCAS device occurs, immediately revert to Manual CPR.
Device Management

Power Supply

- Battery Operation
  - When fully charged, the Lithium Polymer battery should allow 45 minutes of uninterrupted operation.
  - There is an extra battery in the Lucas Device bag.
  - The battery is automatically charged when the device is plugged into a wall outlet and not in operation. The device should be stored with the Lucas Device plugged into a wall outlet (When detaching from the wall outlet, make sure that the cord is always with the LUCAS Device).
  - When the orange Battery LED shows an intermittent light, one should replace the battery or connect to a wall outlet.

- One may connect the LUCAS Device to wall power in all operational modes (One must always keep the battery installed in order for the LUCAS Device to remain operational).

Care of the LUCAS Device after use

- Remove the Suction cup and the Stabilization Strap (if used, remove the Patient Straps).
- Clean all surfaces and straps with a Sani-Cloth.
- Let the device and parts dry.
- Replace the used Battery with a fully-charged Battery.
- Replace the Suction Cup and straps.
- Repack the device into the carrying bag.
- Make sure that the Charging Cord is plugged into the LUCAS Device.
- The LUCAS Device in the carrying bag should be charging on and secure while in rescue.
**Clinical Indications:**

The Morgan Eye® Lens is used for treating ocular trauma. Used to lavage, necessary to treat chemical and thermal burns or to remove non-embedded foreign materials in the eye.

**Contraindications:**
- Do Not use with penetrating eye injuries
- Do not use with suspected or actual rupture of the globe
- Do not use anesthetic agents if there is a known allergy
- Not to be used for foreign body

**Steps**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Determines scene safety and utilizes appropriate PPE</td>
<td>YES NO</td>
</tr>
<tr>
<td>2. Determines need for using the Morgan Lens</td>
<td>YES NO</td>
</tr>
<tr>
<td>Chemical in the eye</td>
<td></td>
</tr>
<tr>
<td>3. Prepare the patient for insertion of the Morgan Lens</td>
<td>YES NO</td>
</tr>
<tr>
<td>Instill 2 drops of <strong>Tetracaine</strong> in the affected eye</td>
<td></td>
</tr>
<tr>
<td>4. Assemble appropriate equipment</td>
<td>YES NO</td>
</tr>
<tr>
<td>1 bag of 0.9 NS (500ml - 1000ml)</td>
<td></td>
</tr>
<tr>
<td>Macrodrip IV administration set</td>
<td></td>
</tr>
<tr>
<td>Morgan Lens</td>
<td></td>
</tr>
<tr>
<td>Pre-flush IV tubing before Morgan Lens is connected</td>
<td></td>
</tr>
<tr>
<td>Flush Morgan Lens</td>
<td></td>
</tr>
<tr>
<td>5. Insert Morgan Eye Lens</td>
<td>YES NO</td>
</tr>
<tr>
<td>Start flow to Morgan Lens</td>
<td></td>
</tr>
<tr>
<td>Have patient look down, insert lens under upper lid</td>
<td></td>
</tr>
<tr>
<td>Have patient look up, insert under lower lid</td>
<td></td>
</tr>
<tr>
<td>Adjust flow and tape tubing to patient’s forehead to secure</td>
<td></td>
</tr>
<tr>
<td>Tilt head toward affected side</td>
<td></td>
</tr>
<tr>
<td>Absorb excess flow with towel</td>
<td></td>
</tr>
</tbody>
</table>

**Helpful Tips:**
- Failure to verbalize scene safety and/or take or verbalize body substance isolation precautions
- **Tetracaine** drops were not instilled prior to insertion
- Morgan Lens improperly inserted
- IV tubing/Morgan Lens were not flushed
- IV tubing/Morgan Lens not secured to patient
- Solution set run dry
**Clinical Indications:**
- Midazolam – Seizures, Sedation
- Fentanyl – Pain Control, Sedation
- Glucagon – Hypoglycemia
- Naloxone – Narcotic Overdose

**Steps**

1. **Load syringe with appropriate ml volume of medication **Recommended:**
   - **Fentanyl:** Adult: 1.5 mcg/kg  Pediatric: 1.5 mcg/kg  (Maximum 200 mcg)
   - **Glucagon:** Adult: 1 mg  Pediatric: 25 mcg/kg  (Maximum 1 mg)
   - **Naloxone:** Adult: 2 mg  Pediatric: 0.2 mg/kg  (Maximum 2 mg)
   
   Add 0.12 ml volume for dead space of device and round up to next higher 0.1 ml.

2. **Load syringe with appropriate Midazolam (Versed) 5 mg/ml volume of medication **Recommended:**
   - **Midazolam (Versed):** Adult: 10 mg, 5 mg/per nostril (Seizure) IN is preferred over IVP, IO
   - 5 mg, 2.5 mg/per nostril (Sedation) IN is preferred over IVP, IO

   **Step 1:** Select weight-based dose  (see below)
   **Step 2:** Attach mucosal atomizer device to syringe
   **Step 3:** Briskly plunge the syringe to give the appropriate dose

<table>
<thead>
<tr>
<th>Patient Weight</th>
<th>Total Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kilograms (kg)</td>
<td>Pounds (lbs.)</td>
</tr>
<tr>
<td>3 – 5 kg</td>
<td>6.6 – 11 lbs.</td>
</tr>
<tr>
<td>6 kg</td>
<td>13.2 lbs.</td>
</tr>
<tr>
<td>7 – 12 kg</td>
<td>15.4 – 26.4 lbs.</td>
</tr>
<tr>
<td>13 – 24 kg</td>
<td>28.6 – 52.8 lbs.</td>
</tr>
<tr>
<td>≥ 25 kg</td>
<td>≥ 55 lbs.</td>
</tr>
</tbody>
</table>

3. **Attach the Mucosal Atomizer Device (MAD).**

4. **Place the MAD tip within nostril approximately 1.5 cm.**

5. **Briskly compress syringe to administer ½ of the volume as atomized spray. No more than 1 ml total in each nostril**

6. **Remove and repeat in other nostril, so all medication is administered, half in each nostril.**
Clinical Indications:

- Patients experiencing bronchospasm.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gather the necessary equipment.</td>
<td></td>
</tr>
<tr>
<td>2. Assemble the nebulizer kit.</td>
<td></td>
</tr>
<tr>
<td>3. Instill the premixed Med-Neb into the reservoir well of the nebulizer.</td>
<td></td>
</tr>
<tr>
<td>4. Connect the nebulizer device to oxygen at 6 liters per minute.</td>
<td></td>
</tr>
<tr>
<td>5. Instruct the patient to breathe as calmly, deeply and evenly as possible through the mouthpiece of the nebulizer. The patient needs to have a good lip seal around the mouthpiece. To confirm the patient is breathing through their mouth, observe the mist at the end of the nebulizer reservoir to make sure it disappears with inspiration.</td>
<td></td>
</tr>
<tr>
<td>6. The treatment should last until the solution is depleted. Tapping the reservoir well near the end of the treatment will assist in utilizing all of the solution.</td>
<td></td>
</tr>
<tr>
<td>7. Monitor the patient for medication effects. This should include the patient's assessment of his/her response to the treatment and reassessment of vital signs, ECG, and breath sounds.</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications:
- Any patient with pain.

Definitions:
- Pain is an unpleasant sensory and emotional experience associated with actual or potential tissue damage.
- Pain is subjective (whatever the patient says it is).

Steps

<table>
<thead>
<tr>
<th></th>
<th>Was performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Initial and ongoing assessment of pain intensity and character is accomplished through the patient’s self report.</td>
<td>YES</td>
</tr>
<tr>
<td>2. Pain should be assessed and documented during initial assessment, before starting pain control treatment, and with each set of vitals.</td>
<td>YES</td>
</tr>
<tr>
<td>3. Pain should be assessed using the appropriate approved scale.</td>
<td>YES</td>
</tr>
<tr>
<td>4. 0 – 10 Scale: the most familiar scale used by EMS for rating pain with patients. It is primarily for adults and is based on the patient being able to express their perception of the pain as related to numbers. Avoid coaching the patient, simply ask them to rate their pain on a scale from 0 to 10, where 0 is no pain and 10 is the worst pain ever.</td>
<td>YES</td>
</tr>
</tbody>
</table>
| 5. Use of the mnemonic “OPQRST” may help to assess the patient’s pain.  
O nset: was pain sudden? What were you doing when pain occurred?  
P rovocative/palliative: What makes pain better? Worse? Does position make a difference?  
Q uality: What does pain feel like?  
R egion: Location? Does pain move?  
S everity: Mild, Moderate, or Severe? Pain scale 1-10.  
T ime: When did pain start? Constant/intermittent? | YES | NO |
Clinical Indications:
- Patients with suspected hypoxemia or to obtain baseline reading.

Steps

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed ?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Turn the machine on and allow for self-tests.</td>
<td></td>
</tr>
<tr>
<td>2. Apply probe to patient’s finger or any other digit as recommended by the device manufacturer. The thumb is not recommended for use.</td>
<td></td>
</tr>
<tr>
<td>3. Allow machine to register saturation level.</td>
<td></td>
</tr>
<tr>
<td>4. Record time and initial saturation percent on room air if possible on/with the patient care report (PCR).</td>
<td></td>
</tr>
<tr>
<td>5. Verify pulse rate on machine with actual pulse of the patient.</td>
<td></td>
</tr>
<tr>
<td>6. Monitor critical patients continuously until arrival at the hospital. If recording a one-time reading, monitor patients 30 - 60 seconds minimum.</td>
<td></td>
</tr>
<tr>
<td>7. Document percent of oxygen saturation in response to therapy to correct hypoxemia and initial vital signs when appropriate.</td>
<td></td>
</tr>
<tr>
<td>8. Normal saturation is 95-100%. Below 94%, suspect a respiratory compromise.</td>
<td></td>
</tr>
<tr>
<td>9. Use the pulse oximetry as an added tool for patient evaluation. Treat the patient, not the data provided by the device.</td>
<td></td>
</tr>
<tr>
<td>10. Factors which may reduce the reliability of the pulse oximetry reading include:</td>
<td></td>
</tr>
<tr>
<td>(a) Poor peripheral circulation (blood volume, hypotension, hypothermia)</td>
<td></td>
</tr>
<tr>
<td>(b) Excessive pulse oximeter sensor motion</td>
<td></td>
</tr>
<tr>
<td>(c) Fingernail polish (may be removed with acetone pad)</td>
<td></td>
</tr>
<tr>
<td>(d) Artificial nails</td>
<td></td>
</tr>
<tr>
<td>(e) Carboxyhemoglobin</td>
<td></td>
</tr>
<tr>
<td>(f) Methemoglobin</td>
<td></td>
</tr>
<tr>
<td>(g) Moisture in the sensor</td>
<td></td>
</tr>
<tr>
<td>(h) Excessive ambient light</td>
<td></td>
</tr>
<tr>
<td>(i) Arterial catheters, BP cuffs, infusion lines, etc.</td>
<td></td>
</tr>
<tr>
<td>(j) Poor pulse quality</td>
<td></td>
</tr>
<tr>
<td>(j) Incorrect sensor type</td>
<td></td>
</tr>
<tr>
<td>(k) Venous pulsations</td>
<td></td>
</tr>
<tr>
<td>(l) Sensor not at heart level</td>
<td></td>
</tr>
</tbody>
</table>

See manufactures Instructions for use for additional cautions and proper cleaning instructions.
Clinical Indications: Hemorrhage Control

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Open package and remove Combat Gauze. Keep the empty package.</td>
<td></td>
</tr>
<tr>
<td>2. Open clothing around wound. Remove excess pooled blood from wound, while preserving any clots already in the wound if possible.</td>
<td></td>
</tr>
<tr>
<td>3. Locate source of bleeding and pack QuikClot Combat Gauze into wound. Use as much gauze as needed to stem blood flow. Remainder of roll can be used on top of wound or to wrap wound as injury requires.</td>
<td></td>
</tr>
<tr>
<td>4. Pack QuikClot Combat Gauze tightly and directly onto bleeding source. More than one may be required.</td>
<td></td>
</tr>
<tr>
<td>5. Quickly apply pressure until bleeding stops. Suggested time 3 to 5 minutes of continuous pressure.</td>
<td></td>
</tr>
<tr>
<td>6. Leave QuikClot Combat Gauze in place. Wrap to secure the product in the wound.</td>
<td></td>
</tr>
<tr>
<td>7. Do not remove bandage or QuikClot Combat Gauze. Elevate and evaluate as needed. Transport to next level of medical care as soon as possible.</td>
<td></td>
</tr>
<tr>
<td>8. Make sure empty package is attached to or sent with the patient - removal instructions are on the back of package for emergency room staff. •For external use only. •Avoid Contact with eyes.</td>
<td></td>
</tr>
</tbody>
</table>
Clinical Indications:

When patient condition requires IV access, but does not require continuous infusion of IV solution.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. After successful IV cannulation, the open end plastic tip of the Saline Lock is inserted into the IV catheter hub using aseptic technique. The Saline Lock should be placed securely into the IV catheter to prevent accidental removal and loss of blood.</td>
<td>YES</td>
</tr>
<tr>
<td>2. Once the Saline Lock is secured, it must be immediately secured with tape and flushed with 2 ml of NS for Injection from a single dose vial or prefilled syringe. Prepare the syringe, cleanse the Saline Lock rubber hub with an alcohol or betadine prep and insert the needle gently through the rubber hub. Once inserted, draw back on the syringe plunger to observe venous blood return (verifies patency), then slowly administer the 2 ml's of NS for Injection.</td>
<td>YES</td>
</tr>
<tr>
<td>3. A continuous infusion of an IV solution may be done through a saline lock by attaching an 18 gauge needle to the end of the IV tubing and inserting the needle into the Saline Lock using aseptic technique. For patients that may require rapid IV solution infusion, a Saline Lock should not be used or should be removed if already in place (causes more resistance to rapid infusion of IV solutions).</td>
<td>YES</td>
</tr>
<tr>
<td>4. Conventional IV site monitoring is indicated to ensure patency during flushing, medication administration or IV solution administration. If resistance is felt during administration, do not force administration of the IV solution or medication. A check for common problems.</td>
<td>YES</td>
</tr>
</tbody>
</table>
Clinical Indications:

- Immobilization of an extremity for transport, either due to suspected fracture, sprain, or injury.
- Immobilization of an extremity for transport to secure medically necessary devices such as intravenous catheters

Steps

1. Assess and document pulses, sensation, and motor function prior to placement of the splint. If no pulses are present and a fracture is suspected, consider reduction of the fracture prior to placement of the splint.

2. Remove all clothing from the extremity.

3. Select a site to secure the splint both proximal and distal to the area of suspected injury, or the area where the medical device will be placed.

4. Do not secure the splint directly over the injury or device.

5. Place the splint and secure with Velcro, straps, or bandage material (e.g., kling, kerlex, cloth bandage, etc.) depending on the splint manufacturer and design.

6. Document pulses, sensation, and motor function after placement of the splint. If there has been a deterioration in any of these 3 parameters, remove the splint and reassess

7. If a femur fracture is suspected and there is no evidence of pelvic fracture or instability, the following procedure may be followed for placement of a femoral traction splint:
   a. Assess neurovascular function as in #1 above.
   b. Place the ankle device over the ankle.
   c. Place the proximal end of the traction splint on the affected extremity, being careful to avoid placing too much pressure on genitalia or open wounds. Make certain the splint extends proximal to the suspected fracture. If the splint will not extend in such a manner, reassess possible involvement of the pelvis
   d. Extend the distal end of the splint at least 6 inches beyond the foot.
   e. Attach the ankle device to the traction crank.
   f. Twist until moderate resistance is met.
   g. Reassess alignment, pulses, sensation, and motor function. If there has been deterioration in any of these 3 parameters, release traction and reassess.

8. Document the time, type of splint, and the pre and post assessment of pulse, sensation, and motor function in the patient care report (PCR).
<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ET and Tracheostomy tubes can be suctioned using the 8fr or 16fr suction catheters provided on the vehicles.</td>
<td></td>
</tr>
<tr>
<td>2. Prior to suctioning, the patient must be hyper-oxygenated using the BVM device.</td>
<td></td>
</tr>
<tr>
<td>3. The suction procedure should last no more than 15-20 seconds. Insert the catheter into the tube without suction. The patient will cough when the catheter is deep enough or at the carina. Apply suction, no more than 80mm Hg, and withdraw the catheter. After the catheter is out, hyper-oxygenate the patient again.</td>
<td></td>
</tr>
<tr>
<td>4. If the secretions are thick, instill 2 – 3 ml of 0.9 NS into the tube during the hyper-oxygenation to loosen the secretions.</td>
<td></td>
</tr>
<tr>
<td>5. Some patients may have a double lumen tracheostomy tube. If they do, the inner cannula can be removed and suctioned/cleaned. Once this is done, reinsert the cannula making sure to lock it into place. While the cannula is out, continue to oxygenate the patient.</td>
<td></td>
</tr>
</tbody>
</table>
1. Take Universal Precautions and use BSI.

2. Place one hand on the patient in the area where the probe is embedded to stabilize the skin surrounding the puncture site.

3. Firmly grasp the probe with the other hand and in a fluid motion pull the probe straight out from the puncture site.

4. Repeat the procedure with the second probe.

5. Handle all probes as SHARPS and secure appropriately UNLESS the PD requires the probes for evidence. If PD requires the probes for evidence, place the probes in an evidence collection container of their choice.

6. Cleanse the puncture sites with commercial wound cleaner or Betadine® and bandage as appropriate.

7. If the patient has not received a tetanus shot within the past five years, they should be advised to do so.

8. Police officers may sign a medical refusal on behalf of the patient UNLESS they meet transport criteria as defined in the EMS Medical Protocol. The key to evaluating patients in custody is common sense. Make good medical decisions based on a thorough medical assessment.

Clinical Indications:
Whenever called to assess a person who has been subdued by a taser, a thorough medical and trauma assessment must be completed unless such exam might jeopardize personal and/or crew safety. Make sure prior to evaluation that the cables have been disconnected from the device, to prevent you from being shocked. A thorough exam is necessary to determine the circumstances that lead to the person being tased. Many taser related deaths have been linked to subjects who had illegal drugs in their systems. Providers must work to rule out a medically-related problem that led to the person being tased.

Studies demonstrate that injuries resulting from tasers are primarily related to falling during the application of current. Treat any injuries or symptoms following EMS Protocols.

Probes may be removed from the person UNLESS embedded in the face (including eyes), neck, groin or spinal column. If probes are found in the face (including eyes), neck, groin or spinal column the wires may be cut and the barbs stabilized for removal by a physician in the Emergency Department.

Typical Taser Probes

Medical Research Reports
http://www.taser.com/pages/pr/medical.html
Indications:
To stop bleeding when:
A. Life-threatening limb hemorrhage is not controlled with direct pressure or other simple measures, as may occur with a managed extremity.
b. Traumatic amputation has occurred.

**Combat Application Tourniquet®**

<table>
<thead>
<tr>
<th>Placement</th>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Expose the extremity by removing clothing in proximity to the injury.</td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Place directly over exposed skin 5 – 6 cm proximal to the injury.</td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Route the self-adhering band around the extremity.</td>
<td></td>
</tr>
<tr>
<td>4.</td>
<td>Pass the band through the outside slit of the buckle.</td>
<td></td>
</tr>
<tr>
<td>5.</td>
<td>Pull the self-adhering band tight.</td>
<td></td>
</tr>
<tr>
<td>6.</td>
<td>Twist the rod until bright red bleeding stops.</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Lock the rod in place with the clip.</td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>Record the date/time of application on the tourniquet</td>
<td></td>
</tr>
</tbody>
</table>

**Evaluation**
1. The tourniquet is effectively applied when there is cessation of bleeding from the injured extremity, indicating total occlusion of arterial blood flow.
2. Any preexisting distal pulse should be absent at that time as well.

**Placement**
1. Tourniquets should be removed as soon as possible under conditions where the hemorrhage can be directly controlled.
2. Tourniquet placement must be communicated in patient reports for all pre-hospital and inter-hospital transfers.
3. Tourniquet time > 6 hours is associated with distal tissue loss.
Clinical Indications:

- Patients requiring two individual peripheral sites.
- Patients with minimal or decreased peripheral venous access
- Patients receiving two or more incompatible drugs

Steps

1. Prepare the puncture site in suitable manner. **Do Not Delay Transport in order to place Twin Cath.**
2. Prepare the catheter for insertion by flushing the proximal port through the injection cap as follows:
   - Leaving the needle guard in place hold the catheter in an upright position.
   - Flush with normal saline or heparin flush solution to activate the catheter’s hydrophilic coating.
   **Precaution:** Do not allow the flush solution to go beyond the tip of the catheter. Allowing the flushing solution to go beyond the catheter’s tip might partially or totally occlude the introducer needle and interfere with flashback.
3. Puncture the vessel using a continuous, controlled slow forward motion, being careful to avoid transfixing both vessel walls. Blood flashback in the clear hub of the introducer needle indicates successful entry into the vessel. Aspiration may be required.
4. After entering the vein, advance the catheter and needle as a unit, approximately 1 cm, to ensure that vessel dilation is complete.
5. Hold the clear introducer needle hub in position, and advance the catheter forward into the vessel. Remove the introducer needle.
   **Precaution:** Do not reinsert the needle into the catheter.
6. Attach a desired stopcock, injection cap or connecting tubing to the distal hub. Do not begin the infusion until proximal lumen placement is verified.
   **Precaution:** In order to avoid problems associated with disconnects, it is recommended that only luer lock fittings be used with this device.
7. Check the proximal lumen placement. Aspirate blood from the proximal port through the extension line, then flush.
8. Attach the proximal hub to a desired connecting line, or, if desired, the proximal port may be “locked” through the injection cap. A slide clamp is provided to occlude flow through the proximal lumen for cap and line changes.
   **Precaution:** Open the clamp prior to infusion.
9. Secure the catheter to the patient. Begin infusion through the distal lumen.
Clinical Indications:

- Treatment of supraventricular tachycardia dysrhythmias.

Steps | Was performed?
---|---
1. Oxygen, ECG monitoring, and IV therapy must be established prior to performing Valsalva Maneuver. | YES NO
2. Record the ECG rhythm continuously while performing all vagal maneuvers. | YES NO
3. Place patient in sitting or semi-fowlers position with head tilted down. | YES NO
4. Instruct the patient to take in a deep breath and bear down as if having a bowel movement or lifting a heavy weight lasting approximately 30 seconds. | YES NO
5. The forced expiration against the closed glottis, stimulates the vagus nerve and may stop the tachycardic rhythm. | YES NO
6. This procedure may be repeated if unsuccessful. | YES NO
7. Continuously monitor the ECG rhythm visually. | YES NO
A ventricular assist device (VAD) is a mechanical pump that helps a weak heart pump blood adequately. VADs are implanted surgically and provide partial or total circulatory assistance to the natural heart. VADs are placed for 1 of 2 purposes:

1. **Bridge to Transplantation** – To assist the patient until a donor organ becomes available.
2. **Destination Therapy** – the patient is not eligible for a donor heart and the VAD is the destination itself. Destination patients typically live the remainder of their lives with the VAD.

### What Is a Ventricular Assist Device (VAD)?
A ventricular assist device (VAD) is a mechanical pump that helps a weak heart pump blood adequately. VADs are implanted surgically and provide partial or total circulatory assistance to the natural heart. These devices may be referred to as mechanical assist devices, mechanical circulatory support (MCS), left ventricular assist devices (LVAD), or biventricular assist devices (Bi-VAD). VADs are different from artificial hearts, which are designed to completely take over cardiac function and require the removal of the patient's heart. About 40,000 people in the United States need a heart from a compatible donor, but only 2,200 donor hearts become available each year. VADs can keep patients alive during the wait for transplantation. There are three types of ventricular assist devices:

1. **Left Ventricular Assist Device (LVAD):** This device supports the pumping of the left ventricle of the heart.
2. **Right Ventricular Assist Device (RVAD):** This device supports the pumping of the right ventricle.
3. **Biventricular Assist Device (Bi-VAD):** This device supports the pumping of the right and left ventricles of the heart.

The most common VAD is the LVAD.

### What are the components of a LVAD
Most devices are implanted within the thorax/abdomen. Components include:
- Implant pump (internal device) with intake line from the left ventricle and outflow into the proximal aorta.
- Device controller (external) that is responsible for controlling pump speed and sense pump performance.
- Power cable from controller to pump (inserted in lower chest)
- Power pack (external)

### Quick Tips for Management of Patients with Left Ventricular Assist Devices (LVADs)
**General Tips**
- **Let patient and/or caregiver lead. They are your experts.** The caregiver is trained in how to manage the VAD.
- If transport is indicated, bring a caregiver along in case their assistance is needed.
- Take the patient’s emergency travel bag when leaving the scene. It has an extra controller, batteries and the VAD coordinator’s emergency contact number.
- **Patients should be transported to their hospital of record for any and all complaints (even if not related to VAD).**
- Avoid kinking or twisting driveline when strapping the patient onto the stretcher.
- Keep batteries and controller in reach and secured to the patient during transport. Keep them dry.
- Be careful when removing/cutting off clothes to ensure you don’t cut through the driveline, which is the power cord of the pump.
- Currently only Wexner Medical Center and Riverside Methodist Hospital should receive VAD patients.
Patient Assessment
- The most common causes of acute VAD failure is loss of power or failure of the driveline.
- LVAD patients typically have an extremely reduced pulse rate or none at all.
- A Doppler device and manual blood pressure cuff are the most accurate way to obtain a blood pressure. The first sound heard is approximately equivalent to the mean arterial pressure, and 60–90 mmHg is the acceptable range.
- It may be difficult to obtain accurate O2 saturation because of little or no pulse.
- The most common complications are bleeding (nasal, gastrointestinal or intracranial), thromboemboli (pulmonary embolism, myocardial infarction or cerebrovascular accident), right-sided heart failure, pump malfunction and infection.
- LVADs are preload dependent and rely on right ventricular function to provide adequate device filling to maintain flow through the pump. Acute conditions that decrease right ventricular filling or function (e.g. sepsis, dehydration, uncontrolled hemorrhage, tachyarrhythmias, pulmonary embolism or RV ischemia) may cause inadequate flow and patient decompensation.

Treatment Considerations
- Use the attached algorithm to determine how you should manage a LVAD patient who is unresponsive or has other altered level of consciousness.
- External chest compressions are now recommended for patients in cardiac arrest.
- Defibrillate/cardiovert as normal. Don’t place defibrillator pads directly over the implanted device.
- Perform all other BLS/ACLS protocols as indicated.
Perform external chest compressions
Assist ventilation if necessary and assess perfusion
• Normal skin color and temperature?
• Normal capillary refill?

Assess and treat non-LVAD causes for altered mental status, such as
• Hypoxia
• Blood glucose
• Overdose
• Stroke

Assess LVAD function
• Look/listen for alarms
• Listen for LVAD hum

If the patient is in cardiac arrest or has altered mental status (AMS) without doppler pulses and the device is not functioning.
BEGIN MANUAL CHEST COMPRESSIONS AND CONTACT THE MCS/LVAD COORDINATOR
NOTE: The use of a mechanical chest compression device is not recommended in MCS patients

Do not perform external chest compressions
Perform external chest compressions

Follow local EMS and ACLS protocols
Notify VAD center and/or medical control and transport

PETCO2 cutoff of > 20 mmHg should be used only when an ET tube or tracheostomy is used to ventilate the patient. Use of a supraglottic (eg, King) airway results in a falsely elevated PETCO2 valve.
Source: Cardiopulmonary Resuscitation in Adults and Children with Mechanical Circulatory Support A Statement from the American Heart Association
Circulation.2017;135:e1115‐e1134
Clinical Indications:

- Protection and care for open wounds prior to and during transport.

<table>
<thead>
<tr>
<th>Steps</th>
<th>Was performed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Use personal protective equipment, including gloves, gown, and mask as indicated.</td>
<td></td>
</tr>
<tr>
<td>2. If active bleeding, apply <a href="#">Quickclot Combat Gauze</a> (see procedure). If Quickclot not available, elevate the affected area if possible and hold direct pressure. Do not rely on &quot;compression&quot; bandage to control bleeding. Direct pressure is much more effective.</td>
<td></td>
</tr>
<tr>
<td>3. Once bleeding is controlled, irrigate contaminated wounds with saline as appropriate (this may have to be avoided if bleeding was difficult to control). Consider analgesia per protocol prior to irrigation.</td>
<td></td>
</tr>
<tr>
<td>4. If bleeding still not controlled: <a href="#">Tourniquet Application</a></td>
<td></td>
</tr>
<tr>
<td>5. Cover wounds with sterile gauze/dressings. Check distal pulses, sensation, and motor function to ensure the bandage is not too tight.</td>
<td></td>
</tr>
<tr>
<td>6. Monitor wounds and/or dressings throughout transport for bleeding.</td>
<td></td>
</tr>
</tbody>
</table>
Changes made Effective: January 1, 2019

ADULT

Cardiovascular

Asystole/PEA: Epinephrine Maximum 5 doses (5 mg) total.

Cardiac Arrest: Added note, “Humeral IO preferred over tibial”.

V-Fib/Pulseless V-Tach: Joules changed from 300 J to “360 J” after first 2 defibrillations using LP 15.

Rapid Sequence Intubation (RSI): Clinical Indications, added GCS “≤” 8

Added additional bullet point, age = or > 12. < 12 only on order of medical control physician

Contraindications, added additional bullet point, “Patient maintaining their own airway”

Rocuronium (Zemuron), replaced with Succinylcholine (Anectine)

PHARMACOLOGY

Prochlorperazine (Compazine): Added to protocol, replaced Promethazine (Phenergan)

Epinephrine 1:10,000: Maximum 5 doses (5 mg) total.

Promethazine (Phenergan): Removed from protocol

Rocuronium (Zemuron): Will be removed from protocol after 6 month phase out to permit existing stock to be used up.

Succinylcholine (Anectine): Replaced Rocuronium (Zemuron) in RSI page

Vecuronium (Norcuron): Removed from protocol as alternative to Rocuronium (Zemuron)

Tuberculin Purified Protein Derivative (Aplisol): Removed from protocol
CLINICAL STANDARDS

**Patient Transport Part C**: Removed Mt. Carmel West as Level II Trauma Center.

Added Mt. Carmel East as Level II Trauma Center

Added OSU as Level III Trauma Center

LAMS 1-3, Removed Mt. Carmel West

**Patient Transport Part D**: Added to “Psychiatric Patients”

May divert to freestanding psychiatric hospital if qualifies as identified in Clinical Standard on Diversion of Psychiatric Patients.

PROCEDURES

**Central Line Access**: New page added

**I-gel Supraglottic Airway**: Included, EMT may insert if patient Pulseless & Apneic.

King LT-D: Removed from protocol

REFERENCE

Removed King LT-D sizing chart

New section added

SUPPLEMENTAL MEDICATION INFORMATION

First page link: Supplemental Medication Information
**Capnography**

**Considered the ventilation vital sign**
Capnography gives a true accurate picture of ventilation status frequently before patient symptoms are recognized by health care providers.

- Gives objective data regarding clinical course of management and treatment
- Arterial blood gas CO2 has a normal range of 35 – 45.
- EtCO2 will normally be within 0 – 5 mm of ABG CO2 value
- ETCO2 can be used to estimate ABG PaCO2
  - Elevated ETCO2 = Hypoventilation / ROSC / increased metabolism
  - Decreases ETCO2 = Hyperventilation / decreased metabolism

**Prehospital Airway**

- **Intubated Patients**
  - Maintains Airway Presence during transport and patient movement
  - Quality of Ventilation
  - Early notification of problems or ROSC
  - Advantages to head trauma patients by maintaining ventilation rates in head injured patients

- **Non Intubated Patients**
  - Assesses ventilation status in patients with respiratory distress
  - Shows bronchodilator effectiveness
  - Indicates patients ventilation rate
  - Diabetics patients

*The diagnostic element of CO2 is in the waveform not in the numeric value!!!*

False Positives Possible?
- After recent ingestions of a carbon beverages or alcohol, this can give a false positive EtCO2 for 2 – 3 ventilated breaths.
- Several ventilations should wash out stomach CO2 content.
- Displacement of ETT against the lateral tracheal wall can cause flat wave

**Phases of the Capnogram**

- **Phase 1: Beginning of Exhalation**
  - Anatomic Dead Space

- **Phase 2: Early Exhalation**
  - Gas Mixing

- **Phase 3: Alveolar Plateau**
  - Exhalation

- **End Tidal**
  - Peak CO2 Concentration (Capnography Reading)

- **Phase 4: Descending Phase**
  - Inspiration

**Normal Capnography Waveform**
**Capnography Uses**

**Increased ICP** - You can use capnography to maintain ventilation rates to obtain \(\text{EtCO}_2\) at the low end of normal.

**Use in Ventilation Rates** - useful in the prehospital setting to help maintain appropriate manual and mechanical ventilation –
- Inadvertent Hyperventilation - Inadvertent hyperventilation is common following paramedic RSI despite \(\text{EtCO}_2\) monitoring and target parameters.\(^{(1)}\)

**Cardiac Arrest** - Reductions in \(\text{EtCO}_2\) during CPR are associated with comparable reductions in cardiac output making \(\text{EtCO}_2\) more reliable than radial pulses. \(^{(2)}\)

**Return of Spontaneous Circulation** - The use of CO2 is able to be used in the determination of ROSC often the first indicator. Increase occurs due to the excess CO2 being washed out of the previously hypoperfused tissue.\(^{(3)}\)

**Use in Death Confirmation** - Studies indicate that patients that have been intubated and have a CO2 less than 10 which does not increase are clinically dead.\(^{(4)}\)

**ACLS Medication** - You will see an initial increase in the \(\text{EtCO}_2\) after administration of Sodium Bicarbonate. This will come back down after several ventilations. This demonstrates the reason ACLS suggest no NaHCO3 unless adequate ventilation present.

**Paralytics** - You may see a “curare cleft” Caused by the stronger thoracic muscles that are more paralyzed than the weaker diaphragm, This is an indicator that the patient is coming up from medication, Consider further sedation and/or paralyzation.

**Pacemaker** - Can be used to help determine when a patient has captured during pacing as you will see an increase in CO2 prior to feeling a pulse. The increase is due to the increase in cardiac output that should accompany capture.

**Trauma Patients** - Decrease levels when determined to be not from other causes should lead you to suspect hypovolemia as severe shock will have low CO2 due to poor perfusion. You will see an increase in CO2 as perfusion status improves during resuscitation.

**Nasotracheal Intubation** - In NTI capnography can be used to guide the ET tube into proper position
You will see an increase in CO2 as the tube passes into the hypopharynx and decrease if you remove it from the hypopharynx and move toward the esophagus.\(^{(5)}\)

**Diabetic** – In DKA patients, Kussmaul respiration helps correct acidosis. Patients with an \(\text{EtCO}_2\) of less than 29 were found to be in acidosis 95% of the time, whereas no patients with \(\text{EtCO}_2\) of 36 or higher were in acidosis.\(^{(6)}\)

**Seizure Patients** - Capnography is a very valuable and reliable assessment tool to assure airway patency in seizure patients or those medicated with Diazepam, Midazolam, or Ativan for seizure activity.
- Can be used in actively seizing patients
- Increases in CO2 are common in the seizure patient due to the exaggerated muscular activity
- Continued increases or very high \(\text{EtCO}_2\) can indicate hypoventilation, commonly associated with benzodiazepine use.

**Pain Management** - Patients that are given sedatives or narcotics for pain are at risk for hypoventilation, Capnography can assure continued airway presence during extrication and/or transport with just a glance at the monitor.

**Asthma** - \(\text{EtCO}_2\) is specifically good for assessing the severity of asthma or the presence of bronchospasm
- Bronchospasm can give the appearance of a “shark fin” on the waveform.
- Diagnosis of asthma versus panic attack

Patients experiencing bronchoconstriction will develop a shark fin appearance to the waveform. This shark fin will resolves as the patient responds to treatment. In the event the patient fails treatment the shark fin will not resolve and increases in \(\text{EtCO}_2\) may be seen as the patient gets tired.

**CPAP** - You can use the cannula with CPAP as long as you can good get a good seal.
It is a good idea to place it on the patient to monitor respiratory status of your patient during CPAP use. Prevents missing apnea in CPAP patients.
Pulmonary Embolus (PE) - Typical presentation of SOB, tachycardia, risk factors. EtCO2 can present with normal waveform appearance and a lower numeric value due to respiratory rate and decrease perfusion to lungs. If the PE is small you may see no change. Small PE may demonstrate no change in EtCO2 values and should not be used as a single assessment tool for assessment of a PE.

Pregnant Patients - compression of the vena cava restricts blood flow back to the heart and lungs which can cause decreases in EtCO2 due to decrease perfusion.

Note: Shark-fin waveform appearance in pregnant patients can be a normal finding and does not specifically indicate bronchoconstriction.

Rescue Airway Device – Rescue Airway Devices - Used to confirm adequate ventilation. Without other evidence of bronchoconstriction as this may be a normal finding.

Remember
- Capnography assesses ventilation
- It confirms adequate ventilation – not a confirmed secured airway!!!!
- You have to have adequate perfusion
- Changes are immediate long before pulse oximetry
- You need to use it to be comfortable with it

Capnography Wave Forms

References
(1) Davis, DP., Dunford, JV. Inadvertent Hyperventilation following Paramedic RSI of Severely Head-injured Patients. Acad Emerg Med. Vol. 10, No. 5 446. 2003
(2) Well, M. Cardiac Output and End-Tidal Carbon Dioxide. Critical Care Medicine, November 1985
(3) Singh Amar. Comparing the Ability of Colormetric and Digital Waveform End Tidal Capnography to Verify ET tube placement. Academic Emergency Medicine Vol. 10 No. 5 466-467
(5) Phillips 2003
(6) Fearon D., Steele D. End-tidal CO2 predicts the presence and severity of Acidosis in Children. Academic Emergency Medicine Vol 9 No. 12 1373-1378
### Epinephrine 1:1,000

1 mg / 100 ml in NS  
(Use 60 gtts administration set)

<table>
<thead>
<tr>
<th>mcg / min.</th>
<th>gtts / min.</th>
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<tbody>
<tr>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>12</td>
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<td>9</td>
<td>54</td>
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<tr>
<td>10</td>
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</table>

Also use Epinephrine Drip during shortages of Atropine
<table>
<thead>
<tr>
<th>Site of Obstruction</th>
<th>Bronchospasm or narrowing of the small airways</th>
</tr>
</thead>
<tbody>
<tr>
<td>Etiology</td>
<td>Varies</td>
</tr>
<tr>
<td>Age range</td>
<td>Varies</td>
</tr>
<tr>
<td><strong>Clinical Appearance</strong></td>
<td><strong>MILD</strong> Cough, tachypnea, tachycardia, plus nasal congestion, mild retractions, audible wheezing</td>
</tr>
<tr>
<td></td>
<td><strong>Severe</strong> Anxious, obtunded, pale, cyanotic, unable to talk, dimished to no air exchange, severe retractions, wheezing may or may not be present.</td>
</tr>
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</table>
Pediatric Normal Vital Signs

- **Age Range**
  - 0 – 1 Year
  - 1 – 5 Years
  - 6 – 10 Years

- **Pulse**
  - 120 - 140
  - 100 - 120
  - 80 - 100

- **Respirations**
  - 30 - 40
  - 20 - 30
  - 12 - 20

- **Blood Pressure**
  - 70 – 80 Systolic
  - Systolic = 80 + 2
  - Diastolic = 2/3 Systolic

Reference: Pediatric Vital Signs

Responsoft EMS Protocols

Page 317

01/01/2019
<table>
<thead>
<tr>
<th>Hospitals/Urgent Cares/Stand Alone ER's</th>
<th>Phone Number</th>
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<tbody>
<tr>
<td>Diley Ridge Medical Center</td>
<td>(614) 838-7926</td>
</tr>
<tr>
<td>Doctors Hospital West</td>
<td>(614) 297-5676</td>
</tr>
<tr>
<td>Dublin Methodist</td>
<td>(614) 544-8310</td>
</tr>
<tr>
<td>Fairfield Medical Center</td>
<td>(740) 687-8100</td>
</tr>
<tr>
<td>Grant Medical Center</td>
<td>(614) 566-9268 or 9562</td>
</tr>
<tr>
<td>Licking Memorial Hospital</td>
<td>(740) 348-4151</td>
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<tr>
<td>Mt. Carmel East</td>
<td>(614) 234-6010</td>
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<tr>
<td>Mt. Carmel East (Reception)</td>
<td>(614) 234-6539</td>
</tr>
<tr>
<td>Mt. Carmel St. Ann’s</td>
<td>(614) 898-4040</td>
</tr>
<tr>
<td>Mt. Carmel West</td>
<td>(614) 234-5212</td>
</tr>
<tr>
<td>Nationwide Children’s Hospital℠</td>
<td>(614) 722-6868</td>
</tr>
<tr>
<td>Ohio Health-New Albany</td>
<td>(614) 788-9350</td>
</tr>
<tr>
<td>Ohio Health-Pickerington</td>
<td>(614) 788-4100</td>
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<tr>
<td>Ohio Health-Reynoldsburg</td>
<td>(614) 788-9428</td>
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<tr>
<td>OSU Medical Center</td>
<td>(614) 293-8333</td>
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<tr>
<td>OSU Hospital East</td>
<td>(614) 257-3414</td>
</tr>
<tr>
<td>Pickerington Urgent Care</td>
<td>(614) 833-6002</td>
</tr>
<tr>
<td>Riverside Methodist Hospital</td>
<td>(614) 566-5321</td>
</tr>
<tr>
<td>Poison Control</td>
<td>(800) 222-1222</td>
</tr>
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<table>
<thead>
<tr>
<th>County Coroners</th>
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</tr>
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<tbody>
<tr>
<td>Fairfield County</td>
<td>(740) 652-2865</td>
</tr>
<tr>
<td>Franklin County</td>
<td>(614) 525-5290</td>
</tr>
<tr>
<td>Licking County</td>
<td>(740) 349-3633</td>
</tr>
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<table>
<thead>
<tr>
<th>County Children Services</th>
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</thead>
<tbody>
<tr>
<td>Fairfield County Children’s &amp; Adult Protective Services</td>
<td>(740) 652-7887</td>
</tr>
<tr>
<td>Franklin County Children’s Services</td>
<td>(614) 229-7000 24 Hour Hotline</td>
</tr>
<tr>
<td>Franklin County Adult Protective Services</td>
<td>(614) 525-4348</td>
</tr>
<tr>
<td>Licking County Children Services</td>
<td>(740) 670-8888</td>
</tr>
<tr>
<td>Licking County Adult Protective Services</td>
<td>(740) 670-8800</td>
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### Law Enforcement

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<tr>
<th>Department</th>
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<tbody>
<tr>
<td>Delaware County Sheriff</td>
<td>(740) 833-2800</td>
</tr>
<tr>
<td>Franklin County Sheriff</td>
<td>(614) 462-3333</td>
</tr>
<tr>
<td>Fairfield County Sheriff</td>
<td>(740) 681-5561</td>
</tr>
<tr>
<td>Gahanna Police Department</td>
<td>(614) 342-4240</td>
</tr>
<tr>
<td>Lancaster Police Department</td>
<td>(740) 687-6680</td>
</tr>
<tr>
<td>Licking County Sheriff</td>
<td>(740) 345-2345</td>
</tr>
<tr>
<td>Mifflin Township Police Department</td>
<td>(614) 471-3548</td>
</tr>
<tr>
<td>New Albany Police Department</td>
<td>(614) 855-8576</td>
</tr>
<tr>
<td>OSP-Columbus</td>
<td>(614) 466-2660</td>
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<tr>
<td>OSP-Lancaster</td>
<td>(740) 654-1523</td>
</tr>
<tr>
<td>Pickerington Police Department</td>
<td>(614) 575-6911</td>
</tr>
<tr>
<td>Reynoldsburg Police Department</td>
<td>(614) 866-6375</td>
</tr>
<tr>
<td>Whitehall Police Department</td>
<td>(614) 237-6333 X0</td>
</tr>
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</table>
Airway Mnemonics

Assessing difficult mask ventilation

MOANS

M-mask seal

O-obesity / obstruction

A-age (greater than age 55)

N-no teeth

S-stiff lungs / snoring

Mallampati

The amount of the posterior pharynx you can visualize

Assessing the difficult Airway

LEMONS

L-Look visual inspection such as small jaw, large tongue, short neck, facial trauma, or congenital abnormalities.

E-Evaluate apply 3:3:2 rule Three fingers in the fully opened mouth, three from the apex of the jaw to hyoid bone and two fingers from the hyoid to the tracheal cartilage is predictive of good visualization.

M-Mallampati (see above)

O-Obstruction Upper airway obstruction

N-Neck mobility
## FLACC-Revised Scale

<table>
<thead>
<tr>
<th>Categories</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Face</td>
<td>No particular expression or smile</td>
<td>Occasional grimace or frown, withdrawn, disinterested, sad, appears worried</td>
<td>Frequent to constant quivering chin, clenched jaw, distressed looking face, expression of fright/panic</td>
</tr>
<tr>
<td>Legs</td>
<td>Normal position or relaxed, usual tone &amp; motion to limbs</td>
<td>Uneasy, restless, tense, occasional tremors</td>
<td>Kicking, or legs drawn up, marked increased in spasticity, constant tremors, jerking</td>
</tr>
<tr>
<td>Activity</td>
<td>Lying quietly, normal position, moves easily, regular, rhythmic respirations</td>
<td>Squirming, shifting back and forth, tense, tense/guarded movements, mildly agitated, shallow/splinting respirations, intermittent signs</td>
<td>Arched, rigid or jerking, severe agitation, head banging, shivering, breath holding, gasping, severe splinting</td>
</tr>
<tr>
<td>Cry</td>
<td>No cry (awake or asleep)</td>
<td>Moans or whimpers; occasional complaint, occasional verbal outbursts, constant grunting</td>
<td>Crying steadily, screams or sobs, frequent complaints, repeated outbursts, constant grunting</td>
</tr>
<tr>
<td>Consolability</td>
<td>Content, relaxed</td>
<td>Reassured by occasional touching, hugging or being talked to, distractible</td>
<td>Difficult to console or comfort, pushing caregiver away, resisting care or comfort measures</td>
</tr>
</tbody>
</table>
This section identifies medications and procedures that are not part of the MEC EMS protocol for routine patient care. A MEC EMS provider may encounter these medications during the interfacility transfer of a patient. These medications and procedures are included in the protocol for provider reference.

It is the responsibility of each MEC EMS member agency to determine if there is a freestanding emergency department, surgical center or specialty hospital in their response area for which that agency may provide emergent transfer of a patient. If there is, then that agency is responsible for provider training on the medications and procedures identified in this section. Documentation of such training should be maintained by that agency.
**Indications**

Acute CVA, Massive Pulmonary Embolism

- **For CVA:** 0.9 mg/kg to Maximum of 90 mg. 10% of dose given IVP over 1 minute and remainder infused over next hour.
- **For PE:** 100 mg infused over 2 hours. May be given as 50-100 mg bolus for patient in cardiac arrest with suspected PE.

**Contraindications**

- Active internal bleeding, history of stroke, recent intracranial or intraspinal injury or trauma, aneurysm, uncontrolled hypertension, recent surgery, hypersensitivity.

**Adverse Reactions**

- Stroke, Accelerated idioventricular rhythm, Pulmonary edema, Arterial embolism, Bruising, Bleeding, DVT, Hypotension, Intracranial hemorrhage, GI/GU hemorrhage, Pulmonary embolism, Fever/chills, Nausea/vomiting, Sensitivity reaction, Sepsis, Shock, Hypersensitivity, Cerebral edema. Cerebral herniation, Seizure, Ischemic stroke, Thromboembolism

**Precautions**

- Use caution in individuals with recent history of major surgery, trauma, GI or GU bleeding, hepatic or renal disease.

**Medical Considerations**

None
Antibiotics
Used to treat a bacterial infection

Common Side effects include:
- diarrhea
- nausea
- vomiting
- rash
- upset stomach
- with certain antibiotics or prolonged use, fungal infections of the mouth, digestive tract, and vagina

Allergies may include: If any of these symptoms below occur, discontinue antibiotic immediately and treat.
- Rash
- Swelling of tongue, lips, and face
- Difficulty Breathing
- Nausea/Vomiting
- Wheezing
- Lightheadedness, dizziness
- Shock

List of Generic Antibiotics
- amoxicillin
- doxycycline
- cepalexin
- ciprofloxacin
- clindamycin
- metronidazole
- azithromycin
- sulfamethoxazole/trimethoprim
- amoxicillin/clavulanate
- Levofoxacin

List of Brand Name Antibiotics
- Augmentin
- Flagyl, Flagyl ER
- Amoxil
- Cipro
- Keflex
- Bactrim, Bactrim DS
- Levaquin
- Zithromax
- Avelox
- Cleocin

About Antimicrobial Resistance
Antibiotic resistance happens when germs like bacteria and fungi develop the ability to defeat the drugs designed to kill them. That means the germs are not killed and continue to grow.

Infections caused by antibiotic-resistant germs are difficult, and sometimes impossible, to treat. In most cases, antibiotic-resistant infections require extended hospital stays, additional follow-up doctor visits, and costly and toxic alternatives.

Antibiotic resistance does not mean the body is becoming resistant to antibiotics; it is that bacteria have become resistant to the antibiotics designed to kill them.

Brief History of Resistance and Antibiotics
Penicillin, the first commercialized antibiotic, was discovered in 1928 by Alexander Fleming. Ever since, there has been discovery and acknowledgement of resistance alongside the discovery of new antibiotics. In fact, germs will always look for ways to survive and resist new drugs. More and more, germs are sharing their resistance with one another, making it harder for us to keep up. (Source: CDC)
1. Continue infusion of unit of packed red blood cells (PRBCs) started by sending facility at rate of infusion ordered by physician. Monitor the patient continuously for blood transfusion reaction (see below) If RN accompanying the patient, he/she may infuse additional unit(s) of blood ordered by physician. Document each additional unit as required by section 2 below.

2. Documentation:
   A. Record the blood unit number for each unit transfused in the chart
   B. Record a temperature 5 minutes after initiation of transfusion. If no evidence of transfusion reaction, monitor temperatures every 30 minutes during transport and document “no signs/symptoms of a transfusion reaction” in the patient chart

3. Transfusion Reaction
   A. If a transfusion reaction is suspected, (see #4 below) stop the transfusion immediately
      1. notify MCP that a transfusion reaction has occurred as soon as possible
   B. Remove and cap the entire length of blood tubing with a sterile needle. Do not discontinue the intravenous line. Do not infuse saline from the Y-connector to clear the blood, which is present in the tubing
   C. Initiate an intravenous line of 0.9 NS and infuse through the new sterile tubing at the hub of the existing intravenous site
   D. For pulmonary edema, see Acute Pulmonary Edema/CHF protocol
   E. For hypotension, see Hypotension protocol
   F. For allergic reaction, see Allergic Reaction/Anaphylaxis protocol
   G. Monitor the patient’s vital signs including temperature at least every 5 minutes following a suspected transfusion reaction
   H. Upon arrival at the receiving unit, notify the receiving staff that a transfusion reaction has occurred.

4. Signs/Symptoms of Transfusion Reaction:
   Allergic reaction, Acute hemolytic transfusion reaction (AHTR), Delayed hemolytic transfusion reaction (DHTR), Delayed serologic transfusion reaction (DSTR), Febrile non-hemolytic transfusion reaction (FNHTR), Hypotensive transfusion reaction, Post-transfusion purpura (PTP), Transfusion-associated circulatory overload (TACO), Transfusion-related acute lung injury (TRALI), Transfusion-associated dyspnea (TAD), Transfusion-associated graft vs. host disease (TAGVHD), Transfusion-transmitted infection (TTI).
   Source: https://www.cdc.gov/bloodsafety/basics.html
Clinical Indications:
Maintaining chest tube patency during interfacility transport.
Maintaining chest tube drainage systems during interfacility transport.

1. **Maintain chest tube patency.**
   A. Auscultate breath sounds at least every 15 minutes during transport.
   B. Keep all equipment and tubes below the level of the patient’s chest in order to prevent reflux of drainage into pleural cavity.
   C. Keep all tubing straight and free of kinks.
   D. Monitor continuous pulse oximetry and ETCO2 during transport.

2. **Maintenance of Drainage systems.**
   A. Assure chest drainage system is functioning prior to leaving referring facility.
   B. Keep drainage system below the level of the patient's chest.
   C. Connect drainage system to suction

3. Pain control as needed

Complications

1. Observe for any signs of hemorrhage, respiratory distress, or subcutaneous emphysema. If present, immediately contact the receiving facility via radio for instructions.

2. If patient shows signs of rapid decompensation (i.e. Dyspnea, cyanosis, tachypnea, or deviated trachea,) immediately contact the receiving facility via radio for instructions. Listen to breath sounds and consider needle thoracostomy.

3. If chest tube is accidentally removed, cover the insertion site with sterile gauze or, if immediately available, Vaseline gauze. Immediately contact the receiving facility via radio for instructions.

Special Notes

1. Documentation of chest drainage system includes:
   A. Type of system used
   B. Chest tube placement at the chest wall
   C. Amount of negative water pressure used
   D. Any activity in the air leak monitor (bubbling or fluctuating)
   E. Any and how much drainage of fluid in the collection chamber
**Diltiazem (Cardizem)**

**Action:** Calcium channel blocker. Decreases heart rate, Slows the ventricular rate in patients with rapid response during atrial fibrillation or atrial flutter.

**Indications:**
- Atrial fibrillation with rapid ventricular response

**Adult Dose:**
- 0.25 mg/kg IVP, IO over 2 minutes Maximum 20 mg

In 10 - 15 minutes, may repeat if necessary at:
- 0.35 mg/kg IVP, IO over 2 minutes Maximum 25 mg

**Pediatric Dose:**
- Ø

**Contraindications:**
- Hypersensitivity, Patients with sick sinus syndrome, 2nd or 3rd degree blocks, except with functioning ventricular pacemaker.
- Severe hypotension or cardiogenic shock. WPW, or short PR syndrome. Patient’s with wide complex tachycardia, Acute MI, CHF

**Adverse Reactions:**
- Hypotension, Itching, or burning at injection site, Vasodilation (flushing), Asystole, A-V Block, Chest Pain, CHF, Syncope, V-Fib., V-Tach., Ectopy, Dizziness, Headache, Nausea, Vomiting, Edema

**Precautions:**
- Use with caution in patients with a BP <110; consider ½ dose in these situations. If blood pressure remains adequate greater than 110 and heart rate remains >110, you may administer the other half of the initial loading bolus in 5 minutes.

**Onset:** Onset 2 - 5 min. Peak effect 2 - 4 hours

**Medical Considerations:**
- Do not mix with other drugs. Flush tubing after use.
**Dobutamine (Dobutrex)**

**Action:** Increases force of the systolic contraction.

**Onset:** 1 - 2 minutes

**Indications**
- Cardiogenic shock

**Adult Dose**
- 250 mg in 250 cc NS at 5 - 20 mcg/kg/min
- Infusion: Start infusion at 5 mcg/kg/min

**Pediatric Dose**
- 

**Contraindications**
- Idiopathic hypertrophic subaortic stenosis

**Adverse Reactions**
- Tachycardia, arrhythmias, myocardial ischemia

**Precautions**
- Ineffective when administered to patients on beta blockers.
**Action:** Increases heart rate & cardiac contractility

**Onset:** < 5 minutes

**Indications**
Symptomatic bradycardia, hypotension

**Adult Dose**
5 - 20 mcg/kg/minute, titrate to desired effect
See: Dopamine Drip Chart

**Pediatric Dose**
5 - 20 mcg/kg/minute, titrate to desired effect
See: Dopamine Drip Chart

**Contraindications**
Tachyarrhythmias, Ventricular Fibrillation

**Adverse Reactions**

**Cardiovascular:** Ventricular Arrhythmia, Ectopic Beats, Tachycardia,
Anginal pain, Palpitation, Cardiac Conduction
Abnormalities, Widened QRS Complex, Bradycardia, Hypotension,
Hypertension, Vasoconstriction

**Respiratory:** Dyspnea

**Gastrointestinal:** Nausea, Vomiting

**CNS:** Headache, Anxiety

**Precautions**
Careful monitoring of vital signs, Avoid hypovolemia, Correct Hypoxia,
Hypercapnia, Acidosis. Reduce dose if ventricular arrhythmias are observed.
At lower infusion rates, if hypotension occurs, infusion rate should be rapidly
increased until adequate BP is obtained. If hypotension persists more potent
vasoconstrictor agent should be administered. Infusion into large vein when possible

**Medical Considerations**
Do not mix with other drugs. Must use infusion pump. Acidosis decreases effectiveness. Administer into large vein, infiltration will cause necrosis & sloughing.
**Heparin**

**Action:** Anticoagulant

**Onset:** 20 - 60 minutes SQ, IV immediate.

**Indications**
- Acute Coronary Syndrome, STEMI, Pulmonary Embolism

**Adult Dose**
- STEMI/Non-STEMI: 60 IU/kg bolus
- Pulmonary Embolism, DVT, Thromboembolism: 80 IU/kg bolus, then infusion of 15 IU/kg/hr

**Pediatric Dose**
- Ø

**Contraindications**
- Severe thrombocytopenia (the number of platelets is reduced the most common cause of bleeding disorders), Uncontrollable active bleeding state.

**Adverse Reactions**
- Hemorrhage, local irritation, hypersensitivity: some reactions to occur include; fever, chills, urticaria, asthma, rhinitis, headache, nausea & vomiting.

**Precautions**
- Heparin resistance encountered in fever, thrombosis, infections, MI, cancer and post surgical patients. Increased risk to older patients and especially women is a higher incidence of bleeding and particularly women over 60 years of age. Pregnant & nursing mothers.
**Insulin (Humulin)**

**Action:** Hormone

**Onset:** 15 - 30 minutes

### Indications

Endocrine Emergencies

**Adult Dose**

Regular Insulin 5 - 10 Units IVP, IO
2 U/hr for diabetic ketoacidosis

**Pediatric Dose**

∅

### Adverse Reactions

- **Skin:** urticaria, itching, swelling, redness, stinging
- **Other:** Lipoatrophy, lipohypertrophy, hypersensitivity, hypoglycemia

### Precautions

Excessive doses may induce hypoglycemia. Must correct hypokalemia prior to infusion in DKA

### Contraindications

Use cautiously in patients with high fever, thyroid disease, severe infections, trauma, impaired hepatic or renal function, eating disorders, nausea, vomiting, or diarrhea

### Medical Considerations

None
**Action**: Antihypertensive

**Onset**: 15 minutes

**Indications**

- Acute Coronary Syndrome
- STEMI
- Hypertension
- Tachyarrythmia

**Adult Dose**

5 mg Slowly IVP, IO

**Contraindications**

Hypersensitivity, Cardiogenic shock, Sinus bradycardia, 2\textsuperscript{nd} & 3\textsuperscript{rd} degree block, CHF. Use caution: Asthma, impaired liver or kidney function & diabetes mellitus

**Adverse Reactions**

**Cardiovascular**: Bradycardia, Cold extremities, Palpitations, CHF, Peripheral edema, Hypotension

**CNS**: Tiredness, Dizziness, Mental confusion, Depression, Headache

**Respiratory**: Shortness of breath, Wheezing

**Gastrointestinal**: Diarrhea, Nausea & Vomiting, Dry mouth, Gastric pain, Flatulence, Heartburn

**Other**: Rash, Musculoskeletal pain, Blurred vision, dry eyes

**Metabolic**: Hypoglycemia

**Precautions**

Use caution in patients with impaired hepatic function.
**Nitroglycerin (Tridal)**

**Action:** Vasodilator  
**Onset:** 2 minutes

**Indications**
- Acute Coronary Syndrome
- STEMI
- Pulmonary Edema

**Adult Dose**
- 50 mg/250 NS 10 mcg/min.  
  **Maximum of 100 mcg/min.**

**Contraindications**
- Known Hypersensitivity, Pericardial tamponade, Restrictive Cardiomyopathy, Constrictive pericarditis
- Do not administer Nitroglycerin if the following medications were taken, until after hours stated:
  - **Drug Hours**
    - Cialis 48
    - Levitra 24
    - Viagra 24+

**Adverse Reactions**
- Headache, Orthostatic hypotension, Dizziness, Weakness, Palpitations, Nausea & vomiting

**Precautions**
- Contraindicated in head trauma.
- Use caution in any patient whom is intoxicated.
- Be sure to remove any transdermal system before defibrillation.

**Medical Considerations**
- Check for transdermal patch prior to initiating spray/tablet.

Responsoft EMS Protocols Page 333 01/01/2019
Oxytocin (Pitocin)

**Action:** Synthetic Hormone

**Onset:** Peak effect: 1 - 1.5 hours

**Indications**
- Delivery

**Adult Dose**
- 20 Units in 1 liter NS; administer 500 ml bolus

**Pediatric Dose**
- ∅

**Contraindications**
- Hypersensitivity

**Adverse Reactions**
- **Cardiovascular:** Angina, Electrocardiographic Alterations, Hypotension, Tachycardia, Syncope, Palpitations
- **Neurological:** Extrapyramidal reactions, Grand Mal Seizure, Dizziness, Lightheadedness,
- **General:** Flushing
- **Local Reactions:** Pain, Redness, Burning at site of injection
- **Other:** Hypokalemia, Hiccups

**Precautions**
- Not a drug that stimulates gastric or intestinal peristalsis. Transient ECG changes including, QT interval prolongation.

**Medical Considerations**
- None
Phenytoin serum level determinations may be necessary to achieve optimal dosage adjustments. Monitor patients for the emergence or worsening of depression, suicidal thoughts or behavior, and/or any unusual changes in mood or behavior.

Seizures, Neurologic Trauma

**Indications**

- Cardiovascular: Atrial and ventricular conduction depression, CV collapse, hypotension; ventricular fibrillation (IV use).
- CNS: Asterixis, ataxia, chorea, decreased coordination, dizziness, dystonia, headache, insomnia, mental confusion, motor twitching, nystagmus, sensory peripheral neuropathy, slurred speech, transient nervousness, tremor; CNS depression (IV use).
- Dermatologic: Bullous, exfoliative, or purpuric dermatitis; hypertrichosis; lupus erythematosus; morbilliform or scarlatiniform rashes, sometimes accompanied by fever; Stevens-Johnson syndrome; TEN.
- GI: Constipation, nausea, vomiting.
- Hepatic: Liver damage, toxic hepatitis.
- Local: Inflammation, local irritation, necrosis, sloughing; tenderness (IV use).

**Contraindications**


**Adverse Reactions**

<table>
<thead>
<tr>
<th>Precautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenytoin serum level determinations may be necessary to achieve optimal dosage adjustments. Monitor patients for the emergence or worsening of depression, suicidal thoughts or behavior, and/or any unusual changes in mood or behavior.</td>
</tr>
</tbody>
</table>

**Dosage**

- Adult Dose: 15 mg/kg slow IVP, IO Maximum 1 gram
  (Note: Fosphenytoin is administered in Phenytoin-equivalents)

- Pediatric Dose: $\emptyset$
Propofol (Diprivan)

**Action:** Sedative-hypnotic

**Onset:** 15 - 30 minutes

**Indications**
- Sedation while on ventilator
- General anesthesia
- Sedation for joint reduction

**ADULT DOSE**

Propofol should be mixed to a final concentration of 10 mg/ml (e.g. 500 mg/50 ml).

Initiate a Propofol infusion 10 ug/kg/min. Increase infusion by 5 - 10 ug/kg/min every 5 - 10 minutes until desired level of sedation is achieved. Monitor patient's BP and respiratory status (if not intubated) closely. Maximum infusion is 50 ug/kg/min.

**PEDIATRIC DOSE**

None

**Contraindications**
- Hypersensitivity, allergies to eggs, egg products, soybeans and anaphylactoid reactions

**Adverse Reactions**
- Cardiovascular: Bradycardia, hypotension
- CNS: Movement
- Respiratory: Apnea
- Skin: Rash
- Injection site: Burning/stinging or pain

**Precautions**

Contains sodium metabisulfite, a sulfite that may cause allergic-type reactions including anaphylactic symptoms and life-threatening or less severe asthmatic episodes in certain susceptible people. The overall prevalence of sulfite sensitivity in the general population is unknown and probably low. Sulfite sensitivity is seen more frequently in asthmatic than in nonasthmatic people.

**Medical Considerations**

None