Pediatric Considerations

For Implementing the National EMS Education Standards:

- Emergency Medical Responder (EMR)
- Emergency Medical Technician (EMT)
- Advanced Emergency Medical Technician (AEMT)
- Paramedic

15 September 2013
National Association of State EMS Officials
Falls Church, VA
Table of Contents

Introduction .................................................................................................................................................. 3

1. Cross Reference of Education Standards and Instructional Guidelines (by Sections) ........................................................................................................................................................................... 6
    Outline of the materials with helpful cross-references, specifically the page numbers related to where one might find related material in the Education Standards and Instructional Guidelines.

2. National EMS Education Standards Related to Pediatrics: MATRIX ................................................. 9
    The charts represent the recommended pediatric content as presented in the Education Standards.

3. Review of Pediatric Content: Instructional Guidelines ................................................................. 11
    Emergency Medical Responder (EMR) ................................................................................................. 11
    Emergency Medical Technician (EMT) ................................................................................................. 11
    Advanced EMT (AEMT) ....................................................................................................................... 12
    Instructional Guidelines: Paramedic ................................................................................................... 14

4. New Course Considerations: Pediatrics .......................................................................................... 15

5. Measuring Instructor and Practitioner Competency ...................................................................... 16

6. Integration With Model Clinical Guidelines .................................................................................. 18

7. Recommendations .......................................................................................................................... 19

Appendix A: Writing Educational Goals and Objectives ................................................................. 21
Introduction

A component of the EMS Education Agenda: A Systems Approach (Education Agenda), the National Highway Traffic Safety Administration (NHTSA) published the National EMS Education Standards (Education Standards) in 2009. Because states need to revise and/or develop processes to facilitate a smooth transition from the U.S. Department of Transportation National Standard Curricula (NSC) to the Education Standards, the National Association of State EMS Officials (NASEMSO) convened an expert panel with representation from several national stakeholder groups to establish a companion resource or Gap Analysis Template for states.

The purpose of the gap analysis was to identify skills, content, and new course considerations not included in the previous National Standard Curricula for each EMS practitioner level. The Gap Analysis Template was never intended as a “stand-alone” transition document; the template continues to serve as another tool to facilitate implementation of the EMS Education Agenda. Its intended audience is state EMS offices although NASEMSO acknowledges that the content may be useful to a much broader audience.

In 2013, NASEMSO convened a second expert panel to help address cognitive, psychomotor, and affective learning needs of EMS practitioners related to the care of pediatric populations. The following goals were established:

- Identify evidence-based knowledge and skills that lead to improvements in the delivery of EMS care for pediatric populations
- Increase input and enhance communications among EMS partner groups on pediatric education issues
- Increase pediatric competency for all EMS practitioners

The expert panel noted that the Education Standards effectively illustrate the increasing complexity of knowledge and behaviors through the progression of licensure levels and originate, in part, from the National EMS Scope of Practice Model. Pediatric objectives are integrated throughout and the document reflects the differences in the breadth, depth, and considerations required at each licensure level.

- **Depth (of knowledge):** the amount of detail a student needs to know about a particular topic,
- **Breadth:** the number of topics or issues a student needs to learn in a particular competency are difficult concepts for persons informally trained
in educational methodology to comprehend and implement.

Therefore, the panel identified several current barriers to effective pediatric education:

1. Most programs have not allocated sufficient time to pediatric-related didactic content, labs, or clinical experiences.
2. EMS Programs often rely heavily on instructor-centered teaching methods and do not gain the benefit of simulations (high fidelity or low tech) or contact with “real” children or clinical time in a pediatric care setting.
3. It is unclear to many instructors how to design lesson plans and educational strategies that fully address the needed depth and breadth of instruction.
4. Educator time may be very limited for curriculum development, especially if it involves sophisticated simulations and/or AV aids.
5. Adult students have different learning styles and are more motivated to accept responsibility for learning when convinced of the need for knowing the information.

The transition away from the NSC to the Education Standards is ongoing. NASEMSO believes that the primary goal should be that children of all ages, circumstances, and needs receive appropriate assessment and care from EMS personnel consistent with their scope of practice and local protocols. This is best accomplished through:

- effective entry level and continuing education for EMS and on-line medical control personnel;
- valid and reliable competency measurement tools;
- model evidence based guidelines that serve as a foundation for EMS care across states and jurisdictions;
- and a robust quality management process that spans the entire career of each practitioner.

This document will attempt to identify focus areas for ongoing EMS pediatric education and competency efforts.

Essential components of EMS pediatric practice that lie outside the scope of the Education Standards may include, but are not limited to:

- Pediatric Readiness Guidelines,
Performance measures to improve pediatric infrastructure, such as:
  o Availability of EMS online and off line pediatric medical direction,
  o Availability pediatric equipment on ambulances,
  o EMS pediatric continuing education requirements,
  o Inter facility pediatric transfer guidelines,
  o Inter facility pediatric transfer agreements, and
  o Hospital pediatric facility recognition.

The Education Standards are one component of the EMS Education Agenda for the Future: A Systems Approach. The Education Agenda and the following components: National EMS Core Content, National EMS Scope of Practice Model, and the National EMS Education Standards are available at www.ems.gov.

The NASEMSO Implementation Team and Pediatric Working Group are available to provide technical assistance to states with the gap analysis and other Education Agenda implementation efforts. State officials that desire additional information can contact NASEMSO via info@nasmemo.org or call NASEMSO Program Advisor Kathy Robinson at (703) 538-1799 ext 1894.
### 1. Cross Reference of Education Standards and Instructional Guidelines (by Sections)

Please also see Section 2, National EMS Education Standards Related to Pediatrics: Matrix and Section 3, Review of Pediatric Content: Instructional Guidelines for pediatric references currently included in the Education Standards and Instructional Guides.

<table>
<thead>
<tr>
<th>Section Title</th>
<th>Education Standards Page Number</th>
<th>EMR Instructional Guidelines Page Number</th>
<th>EMT Instructional Guidelines Page Number</th>
<th>AEMT Instructional Guidelines Page Number</th>
<th>Paramedic Instructional Guidelines Page Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparatory</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>• EMS Systems</td>
<td>11</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>• Research</td>
<td>11</td>
<td>4</td>
<td>4</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>• Workforce Safety and Wellness</td>
<td>12</td>
<td>4</td>
<td>5</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>• Documentation</td>
<td>13</td>
<td>12</td>
<td>9</td>
<td>5</td>
<td>16</td>
</tr>
<tr>
<td>• EMS System Communication</td>
<td>13</td>
<td>13</td>
<td>13</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>• Therapeutic Communications</td>
<td>13</td>
<td>14</td>
<td>17</td>
<td>11</td>
<td>20</td>
</tr>
<tr>
<td>• Medical/Legal Ethics</td>
<td>13</td>
<td>15</td>
<td>20</td>
<td>12</td>
<td>25</td>
</tr>
<tr>
<td>Anatomy and Physiology</td>
<td>14</td>
<td>18</td>
<td>24</td>
<td>13</td>
<td>31</td>
</tr>
<tr>
<td>Medical Terminology</td>
<td>14</td>
<td>21</td>
<td>29</td>
<td>19</td>
<td>54</td>
</tr>
<tr>
<td>Physiology</td>
<td>14</td>
<td>22</td>
<td>30</td>
<td>20</td>
<td>55</td>
</tr>
<tr>
<td>Life Span Development</td>
<td>14</td>
<td>24</td>
<td>34</td>
<td>22</td>
<td>72</td>
</tr>
<tr>
<td>Public Health</td>
<td>15</td>
<td>26</td>
<td>40</td>
<td>23</td>
<td>76</td>
</tr>
<tr>
<td>Pharmacology</td>
<td>15</td>
<td>27</td>
<td>42</td>
<td>25</td>
<td>78</td>
</tr>
<tr>
<td>• Principles of Pharmacology</td>
<td>15</td>
<td>27</td>
<td>42</td>
<td>25</td>
<td>78</td>
</tr>
<tr>
<td>• Medication Administration</td>
<td>16</td>
<td>28</td>
<td>44</td>
<td>30</td>
<td>85</td>
</tr>
<tr>
<td>• Emergency Medications</td>
<td>16</td>
<td>29</td>
<td>46</td>
<td>32</td>
<td>87</td>
</tr>
<tr>
<td>Airway Management, Respiration, and Artificial Ventilation</td>
<td>17</td>
<td>30</td>
<td>47</td>
<td>33</td>
<td>90</td>
</tr>
<tr>
<td>• Airway Management</td>
<td>17</td>
<td>30</td>
<td>47</td>
<td>33</td>
<td>90</td>
</tr>
<tr>
<td>• Respiration</td>
<td>18</td>
<td>33</td>
<td>50</td>
<td>36</td>
<td>94</td>
</tr>
<tr>
<td>• Artificial Ventilation</td>
<td>18</td>
<td>37</td>
<td>57</td>
<td>39</td>
<td>100</td>
</tr>
<tr>
<td>Section Title</td>
<td>Education Standards Page Number</td>
<td>EMR Instructional Guidelines Page Number</td>
<td>EMT Instructional Guidelines Page Number</td>
<td>AEMT Instructional Guidelines Page Number</td>
<td>Paramedic Instructional Guidelines Page Number</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>Patient Assessment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Scene Size Up</td>
<td>19</td>
<td>41</td>
<td>60</td>
<td>42</td>
<td>102</td>
</tr>
<tr>
<td>• Primary Assessment</td>
<td>20</td>
<td>44</td>
<td>63</td>
<td>43</td>
<td>105</td>
</tr>
<tr>
<td>• History-Taking</td>
<td>20</td>
<td>48</td>
<td>66</td>
<td>45</td>
<td>107</td>
</tr>
<tr>
<td>• Secondary Assessment</td>
<td>20</td>
<td>50</td>
<td>71</td>
<td>46</td>
<td>118</td>
</tr>
<tr>
<td>• Monitoring Devices</td>
<td>21</td>
<td>53</td>
<td>76</td>
<td>47</td>
<td>131</td>
</tr>
<tr>
<td>• Reassessment</td>
<td>21</td>
<td>54</td>
<td>78</td>
<td>48</td>
<td>133</td>
</tr>
<tr>
<td><strong>Medicine</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Medical Overview</td>
<td>22</td>
<td>56</td>
<td>80</td>
<td>49</td>
<td>134</td>
</tr>
<tr>
<td>• Neurology</td>
<td>23</td>
<td>57</td>
<td>84</td>
<td>53</td>
<td>138</td>
</tr>
<tr>
<td>• Abdominal and Gastrointestinal Disorders</td>
<td>24</td>
<td>59</td>
<td>87</td>
<td>56</td>
<td>142</td>
</tr>
<tr>
<td>• Immunology</td>
<td>25</td>
<td>61</td>
<td>89</td>
<td>58</td>
<td>148</td>
</tr>
<tr>
<td>• Infectious Diseases</td>
<td>26</td>
<td>62</td>
<td>91</td>
<td>60</td>
<td>151</td>
</tr>
<tr>
<td>• Endocrine Disorders</td>
<td>27</td>
<td>63</td>
<td>93</td>
<td>63</td>
<td>163</td>
</tr>
<tr>
<td>• Psychiatric</td>
<td>28</td>
<td>65</td>
<td>96</td>
<td>65</td>
<td>166</td>
</tr>
<tr>
<td>• Cardiovascular</td>
<td>29</td>
<td>68</td>
<td>99</td>
<td>68</td>
<td>169</td>
</tr>
<tr>
<td>• Toxicology</td>
<td>30</td>
<td>70</td>
<td>104</td>
<td>73</td>
<td>203</td>
</tr>
<tr>
<td>• Respiratory</td>
<td>31</td>
<td>73</td>
<td>107</td>
<td>77</td>
<td>210</td>
</tr>
<tr>
<td>• Hematology</td>
<td>32</td>
<td>74</td>
<td>109</td>
<td>80</td>
<td>217</td>
</tr>
<tr>
<td>• Genitourinary/Renal</td>
<td>33</td>
<td>75</td>
<td>110</td>
<td>82</td>
<td>220</td>
</tr>
<tr>
<td>• Gynecology</td>
<td>34</td>
<td>76</td>
<td>112</td>
<td>84</td>
<td>226</td>
</tr>
<tr>
<td>• Non-traumatic Musculoskeletal Disorders</td>
<td>34</td>
<td>77</td>
<td>113</td>
<td>85</td>
<td>229</td>
</tr>
<tr>
<td>• Diseases of the Eyes, Ears, Nose, and Throat</td>
<td>35</td>
<td>78</td>
<td>114</td>
<td>86</td>
<td>231</td>
</tr>
<tr>
<td><strong>Shock and Resuscitation</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>35</td>
<td>79</td>
<td>115</td>
<td>87</td>
<td>233</td>
<td></td>
</tr>
<tr>
<td><strong>Trauma</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Trauma Overview</td>
<td>35</td>
<td>82</td>
<td>122</td>
<td>94</td>
<td>244</td>
</tr>
<tr>
<td>Section Title</td>
<td>Education Standards Page Number</td>
<td>EMR Instructional Guidelines Page Number</td>
<td>EMT Instructional Guidelines Page Number</td>
<td>AEMT Instructional Guidelines Page Number</td>
<td>Paramedic Instructional Guidelines Page Number</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>----------------------------------------</td>
<td>----------------------------------------</td>
<td>------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td><strong>Trauma con't</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Bleeding</td>
<td>35</td>
<td>82</td>
<td>122</td>
<td>94</td>
<td>244</td>
</tr>
<tr>
<td>• Chest Trauma</td>
<td>37</td>
<td>85</td>
<td>128</td>
<td>98</td>
<td>255</td>
</tr>
<tr>
<td>• Abdominal and Genitourinary Trauma</td>
<td>38</td>
<td>86</td>
<td>131</td>
<td>104</td>
<td>262</td>
</tr>
<tr>
<td>• Orthopedic Trauma</td>
<td>39</td>
<td>87</td>
<td>135</td>
<td>108</td>
<td>267</td>
</tr>
<tr>
<td>• Soft Tissue Trauma</td>
<td>40</td>
<td>89</td>
<td>142</td>
<td>110</td>
<td>272</td>
</tr>
<tr>
<td>• Head, Facial, Neck and Spine Trauma</td>
<td>41</td>
<td>93</td>
<td>147</td>
<td>115</td>
<td>279</td>
</tr>
<tr>
<td>• Nervous System Trauma</td>
<td>42</td>
<td>96</td>
<td>155</td>
<td>118</td>
<td>283</td>
</tr>
<tr>
<td>• Special Considerations in Trauma</td>
<td>42</td>
<td>97</td>
<td>160</td>
<td>121</td>
<td>288</td>
</tr>
<tr>
<td>• Environmental Trauma</td>
<td>43</td>
<td>99</td>
<td>164</td>
<td>127</td>
<td>293</td>
</tr>
<tr>
<td>• Multi-System Trauma</td>
<td>43</td>
<td>103</td>
<td>170</td>
<td>128</td>
<td>299</td>
</tr>
<tr>
<td><strong>Special Patient Populations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Obstetrics</td>
<td>44</td>
<td>104</td>
<td>174</td>
<td>132</td>
<td>303</td>
</tr>
<tr>
<td>• Neonatal Care</td>
<td>45</td>
<td>107</td>
<td>177</td>
<td>133</td>
<td>308</td>
</tr>
<tr>
<td>• Pediatrics</td>
<td>46</td>
<td>108</td>
<td>178</td>
<td>134</td>
<td>327</td>
</tr>
<tr>
<td>• Geriatrics</td>
<td>47</td>
<td>112</td>
<td>189</td>
<td>135</td>
<td>345</td>
</tr>
<tr>
<td>• Patients With Special Challenges</td>
<td>48</td>
<td>114</td>
<td>197</td>
<td>136</td>
<td>362</td>
</tr>
<tr>
<td><strong>EMS Operations</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Principles of Safely Operating a Ground Ambulance</td>
<td>48</td>
<td>115</td>
<td>200</td>
<td>139</td>
<td>377</td>
</tr>
<tr>
<td>• Incident Management</td>
<td>49</td>
<td>117</td>
<td>202</td>
<td>140</td>
<td>378</td>
</tr>
<tr>
<td>• Multiple Casualty Incidents</td>
<td>49</td>
<td>118</td>
<td>203</td>
<td>141</td>
<td>379</td>
</tr>
<tr>
<td>• Air Medical</td>
<td>49</td>
<td>120</td>
<td>205</td>
<td>142</td>
<td>380</td>
</tr>
<tr>
<td>• Vehicle Extrication</td>
<td>49</td>
<td>122</td>
<td>207</td>
<td>144</td>
<td>381</td>
</tr>
<tr>
<td>• Hazardous Materials Awareness</td>
<td>49</td>
<td>125</td>
<td>210</td>
<td>147</td>
<td>384</td>
</tr>
<tr>
<td>• Mass Casualty Incidents Due to Terrorism and Disaster</td>
<td>50</td>
<td>126</td>
<td>211</td>
<td>148</td>
<td>385</td>
</tr>
</tbody>
</table>
## 2. National EMS Education Standards Related to Pediatrics: Matrix

The following chart represents the recommended pediatric content as presented in the *Education Standards* (pages 45-47).

<table>
<thead>
<tr>
<th>TOPIC</th>
<th>EMR</th>
<th>EMT</th>
<th>AEMT</th>
<th>Paramedic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Neonatal Care</strong></td>
<td>Simple depth, simple breadth</td>
<td>EMR Material Plus:</td>
<td>Same as Previous Level</td>
<td>AEMT Material Plus:</td>
</tr>
<tr>
<td></td>
<td>• Newborn care</td>
<td>Fundamental depth, foundational breadth</td>
<td></td>
<td>Complex depth, comprehensive breadth</td>
</tr>
<tr>
<td></td>
<td>• Neonatal resuscitation</td>
<td>Assessment and management</td>
<td></td>
<td>• Anatomy and physiology of neonatal circulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Newborn</td>
<td></td>
<td>• Assessment of the newborn</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Neonatal resuscitation</td>
<td></td>
<td>Presentation and management</td>
</tr>
<tr>
<td>Pediatrics</td>
<td>Simple depth, simple breadth</td>
<td>EMR Material Plus:</td>
<td>Same as Previous Level</td>
<td>AEMT Material Plus:</td>
</tr>
<tr>
<td></td>
<td>Age-related assessment findings, and age-related assessment and treatment modifications for pediatric-specific major diseases and/or emergencies</td>
<td>Fundamental depth, foundational breadth</td>
<td></td>
<td>Complex depth, comprehensive breadth</td>
</tr>
<tr>
<td></td>
<td>• Upper airway obstruction</td>
<td>Age-related assessment and management</td>
<td></td>
<td>• Anatomy and physiologic variations</td>
</tr>
<tr>
<td></td>
<td>• Lower airway reactive disease</td>
<td>and treatment modifications for pediatric</td>
<td></td>
<td>• Age-related and developmental stage related</td>
</tr>
<tr>
<td></td>
<td>• Respiratory distress/failure/arrest</td>
<td>specific major diseases and/or emergencies</td>
<td></td>
<td>assessment and treatment modifications of the</td>
</tr>
<tr>
<td></td>
<td>• Shock</td>
<td></td>
<td></td>
<td>pediatric-specific major or common diseases</td>
</tr>
<tr>
<td></td>
<td>• Seizures</td>
<td></td>
<td></td>
<td>and/or emergencies:</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Complex depth, comprehensive breadth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Foreign body (upper and lower) airway obstruction</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Bacterial tracheitis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Asthma</td>
</tr>
<tr>
<td>TOPIC</td>
<td>EMR</td>
<td>EMT</td>
<td>AEMT</td>
<td>Paramedic</td>
</tr>
<tr>
<td>--------------</td>
<td>------------------------------------------</td>
<td>------------------------------------------</td>
<td>-------------------------------------------</td>
<td>---------------------------------------------------------------------------</td>
</tr>
<tr>
<td>con’t</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Fundamental depth, foundational breadth*
3. Review of Pediatric Content: Instructional Guidelines

The following list supports the NEMSES by identifying a focus for pediatric content and is extracted from the Instructional Guidelines at each responder level:

**Emergency Medical Responder (EMR)**

The EMR Instructional Guidelines can be found [here](#).

1. Preparatory: Medical/Legal and Ethics *(page 15)*
   a. (I.C.) Consent, Implied
   b. (I.E.) Pediatrics, Parental control
2. Anatomy and Physiology
   a. (III.) Age-Related Variations *(page 20)*
3. Patient Assessment: History-Taking
   a. (IV.A.) Age-Related Variations, Pediatric *(page 49)*
4. Medicine: Abdominal and Gastrointestinal Disorders
   a. (VI.A.) Age-Related Variations, Pediatrics *(page 60)*
5. Medicine: Endocrine Disorders
   a. (II.A.) Age-Related Variations, Pediatrics *(page 64)*
   a. (I) General Considerations *(page 108)*
   b. (II) Assessment Process *(pages 108-110)*
   c. (III) Seizures *(page 111)*
   d. (IV) Sudden Infant Death Syndrome (SIDS) *(page 111)*

**Emergency Medical Technician (EMT)**

The EMT Instructional Guidelines can be found [here](#), and incorporate objectives from all previous levels with additional content related to:

1. Anatomy and Physiology
   a. (III.) Age-related Variations for Pediatrics *(page 28)*
2. Medicine: Neurology
   a. (IV.A.) Age-Related Variations, Pediatrics *(page 85)*
3. Medicine: Abdominal and Gastrointestinal Disorders *(page 88)*
   a. (VI.) Consider Age-Related Variations
   b. (VII.) Pediatrics
4. Medicine: Hematology
   a. (V.A.) Consider Age-Related Variations, Pediatrics *(page 109)*
5. Medicine: Gynecology  
   a. (V.A.) Age-Related Variations, Pediatrics (page 112)

6. Shock and Resuscitation  
   a. (VIII.J.1.) Age-Related Variations, Pediatrics (page 120)

7. Special Patient Populations, Pediatrics  
   a. (I.) Anatomy and Physiology (page 178)  
   b. (II.) Airway Compared to an Adult (page 178)  
   c. (III.) Chest and Lungs Compared to an Adult (pages 178-179)  
   d. (IV.) Abdominal Difference (page 179)  
   e. (V.) Extremities Compared to an Adult (page 179)  
   f. (VI.) Integumentary (page 179)  
   g. (VII.) Respiratory System Compared to an Adult (page 179)  
   h. (VIII.) Nervous System and Spinal Column Compared to an Adult (pages 179-180)  
   i. (IX.) Metabolic Differences Compared to an Adult (page 180)  
   j. (X.) Growth and Development (pages 180-183)  
   k. (XI.) Assessment (pages 183-186)  
   l. (XII.) Specific Pathophysiology, Assessment, and Management (pages 186-188)

**Advanced EMT (AEMT)**  
The AEMT Instructional Guidelines can be found here, and incorporate objectives from all previous levels with additional content related to:

1. Anatomy and Physiology  
   a. (III.) Age-Related Variations (page 18)

2. Pharmacology: Principles of Pharmacology  
   a. (II.F.2.b.) Medical Legislation, Development of Pharmaceuticals, Special Considerations, Pediatrics (page 25)

3. Pharmacology: Emergency Medications  
   a. (II.) Special Considerations in Pediatrics (page 32)

   a. (IV.) Consider Age-Related Variations in Pediatric Patients (page 35)

5. Airway Management, Respiration, and Artificial Ventilation: Respiration  
   a. (VII.) Age-Related Variations in Pediatric Patients (page 38)

6. Airway Management, Respiration, and Artificial Ventilation: Artificial Ventilation
a. (IV.) Consider Age-Related Variations in Pediatric Patients (page 41)

7. Patient Assessment: Secondary Assessment
   a. (II.) Special considerations for Pediatric Patients (page 46)

8. Medicine: Neurology
   a. (IV.A.) Age-Related Variations for Assessment & Management, Pediatrics (page 54)

9. Medicine: Abdominal and Gastrointestinal Disorders
   a. (VI.) Consider Age-Related Variations for Pediatric Assessment & Management (page 57)
   b. (VII.) Pediatrics (page 57)

10. Medicine: Immunology
    a. (VI.) Age-Related Considerations (page 59)

11. Medicine: Infectious Disease
    a. (IV.) Consider Age-Related Variations in Pediatric Patients as They Relate to Assessment & Management of Patients With a Gastrointestinal Condition or Emergency (page 61)

12. Medicine: Endocrine Disorders
    a. (III.1.) Age-Related Considerations, Pediatric Patients (page 64)

13. Medicine: Psychiatric
    a. (VII.A.) Consider Age-Related Variations for Pediatric Assessment & Management, Pediatric Behavioral Emergencies (page 67)

14. Toxicology
    a. (XI.A.) Consider Age-Related Variations for Pediatric Assessment & Management, Pediatric (page 76)

15. Medicine: Respiratory
    a. (III.C.1.) Assessment, Age-Related Considerations, Pediatrics (page 79)

16. Medicine: Hematology
    a. (V.) Age-Related Considerations (page 81)

17. Shock and Resuscitation
    a. (IX.A.) Age-Related Variations, Pediatrics (page 92)

18. Trauma: Bleeding
    a. (II.C.) Special Considerations in Fluid Resuscitation, Pediatrics (page 97)

19. Trauma: Abdominal and Genitourinary Trauma
    a. (VII.A.) Age-Related Variations for Pediatric Assessment & Management, Pediatric (page 107)
20. Trauma: Soft Tissue Trauma  
   a. (XIII.A.) Age-Related Variations, Pediatric (page 114)  

21. Head, Facial, Neck, and Spine Trauma (page 114) age related variations  

22. Trauma: Special Considerations in Trauma  
   a. (II.) Pediatric Trauma (page 123)  

**Instructional Guidelines: Paramedic**  
The Paramedic Instructional Guidelines can be found [here](#), and incorporate objectives from all previous levels with additional content related to:  

1. Patient Assessment: Reassessment  
   a. (IV.A.) Age-Related Considerations, Pediatrics (page 132)  

2. Medicine: Neurology  
   a. (VI.A.) Age-Related Variations, Pediatrics (pages 139-140)  

3. Medicine: Abdominal and Gastrointestinal Disorders  
   a. (IV.A.) Consider Age-Related Variations, Pediatrics (page 145)  

4. Medicine: Gynecology  
   a. (XIV.A.) Age-Related Variations, Pediatrics (page 227)  

5. Shock and Resuscitation  

6. Abdominal and Genitourinary Trauma  
   a. (VIII.A.) Age-Related Variations, Pediatrics (pages 265)  

7. Special Patient Population: Pediatrics  
   a. (I.) Pediatric Anatomical Variations and Assessment (pages 326-330)  
   b. (II.) Growth and development (pages 330-336)  
   c. (III.) Pediatrics: Specific Pathophysiology, Assessment, and Management (pages 336-343)  
   d. (IV.) Abuse and Neglect (page 343)  
   e. (V.) Sudden Infant Death Syndrome (page 343)  

8. Special Patient Population: Patients with Special Challenges  
   a. (VIII.) Pediatrics Developmental Disabilities (pages 364-365)
4. New Course Considerations: Pediatrics

The following represents suggested topics intended to augment the learning objectives included in the *Education Standards*:

- Apparent Life-Threatening Events (ALTE)
- Pediatric pain management
- Safe transport in ambulances (newborns, infants and children)
- Safe removal from car seats
- Acute stress disorders in children
- Unique forms of trauma, recognition of shock (all forms) in children
- Mild head injury recognition and management in children (updated concussion guidelines)
- Response to children in multiple patient incidents;
- Jumpstart triage
- Greater emphasis on pediatric assessments
- Much more practice on pediatric cardiac arrest management
- Pediatric drug administration:
  - dose calculation and drawing up correct amount to deliver
  - vascular access
  - IM injections in children
- Recognition and management of severe allergic reaction
- Toxic exposures
- Children with special healthcare needs
- Autism and autism spectrum disorders
- Care of extremely premature newborns
- Identification of children at risk for sexual assault
- Identification of suspected victims of human trafficking
5. Measuring Instructor and Practitioner Competency

The Institute of Medicine (IOM), in its series on the *Future of Emergency Care* (2007), recommends “Every pediatric- and emergency care-related health professional credentialing and certification body should define pediatric emergency care competencies and require practitioners to receive the level of initial and continuing education necessary to achieve and maintain those competencies.”

In addition, the Education Agenda and the Emergency Medical Services Workforce Planning & Development Guidelines for State Adoption: Core Guidelines *for Strengthening our EMS Workforce* support “An EMS instructor credentialing process ‘will evolve in the future and be part of a national instructor credentialing process and the envisioned national accreditation process. A national instructor credentialing process will help pave the way for reciprocal credentialing in other states’.” While instructor competencies have not yet been identified, the Pediatric Working Group supports the need for continuing efforts in this regard. In the meanwhile, NASEMSO has previously offered state guidelines *for instructor credentialing*. This document represents a template that can be used to assist states describe criteria, roles, education, and experience that may be required for various levels of EMS instructors.

The National Association of EMS Educators (NAEMSE), in partnership with the Commission on Accreditation of Allied Health Education Programs (CAAHEP) and the Committee on Accreditation of Educational Programs for the Emergency Medical Services Professions (CoAEMSP) offer a 2-day workshop is designed to assist instructors in appropriately evaluating students in all domains as well as complying with CAAHEP accreditation Standards related to student evaluation. This workshop has an online pre-course component that is approximately four hours in length. The following topics are addressed:

- Affective Evaluation
- Simulations & Scenario Oral Evaluation
- Clinical / Internship Evaluation
- Developing a Portfolio Competency Package
- General Item Analysis and Review of Acceptable Reporting
- Principles of Student Evaluation
- Constructing an Evaluation Strategy / Case Studies
- Written Evaluation Tools
• Item Analysis of Written Exams
• Cut Score Determination

More information is available at http://www.naemse.org/CAAHEPworkshop/.
6. Integration With Model Clinical Guidelines

The IOM Future of Emergency Care series encourages the use of evidence-based clinical guidelines to assist providers in decision-making regarding the appropriate care for specific clinical circumstances as their use has been shown to improve the quality of care. New evidence-based protocols and Model Clinical Guidelines for the pediatric patients are emerging as the practice of prehospital emergency medicine continues to evolve. Educational goals and objectives should incorporate the most current evidence-based pediatric protocols and guidelines or, where evidence is lacking, model pediatric guidelines developed by consensus of pediatric emergency medicine specialists, emergency physicians, and EMS field providers.

Monitor the progress of this important body of work at:
7. Recommendations

Special consideration should be given to promote quality EMS education for pediatric populations:

- Individual states are encouraged to use the *National EMS Scope of Practice Model* as a foundation to establish state EMS practitioner levels.

- Individual states are encouraged to use the *Gap Analysis Template* to help define system processes that support the transition of EMS practitioners to the state-adopted scope of practice.

- Individual states are encouraged to use the *Gap Analysis Template, Pediatric Considerations* to help define system processes that support the transition of EMS practitioners to increased competence and proficiency in the care of pediatric populations.

- The *Education Standards* promotes increased flexibility, encourages creativity within each EMS education program and encourages alternative delivery methods. The *Education Standards* do not represent a prescriptive sequence or content grouping for a class presentation. States and/or educational programs will need to determine the sequence for teaching the materials.

- Course outcome evaluations should be based on student competency, not the time to course completion, as this may vary. Time estimates may be provided to guide the planning for presentation of course materials.

- States and/or education programs should re-evaluate student qualifications, co-requisites, or pre-requisites for all EMS practitioner levels.

- States and/or education programs should re-evaluate qualifications, co-requisites, or pre-requisites for EMS instructors.

- States and/or programs should consider co-requisites or pre-requisites for transition courses as well as continuing education offerings to help establish the depth and breadth of content related to the care of pediatric patients.

- Individual states are encouraged to add local or regional verification of pediatric readiness of emergency departments (based on national guidelines) as it relates to education of EMS practitioners and transport of pediatric patients to an appropriate destination.

- Individual states are encouraged to identify an EMS instructor credentialing process. NASEMSO’s EMS Instructor Qualifications are available here:
EMS agencies are encouraged to appoint a pediatric emergency coordinator to provide pediatric leadership for the organization, while ensuring that pediatric continuing education opportunities are available and well attended.

EMS programs may be able to provide increased opportunities for students to practice live ("hands-on") patient assessment techniques through agreements with local day care centers, schools, and health care facilities that serve pediatric populations.

When planning and conducting a new EMS course, the Program Director or Course Coordinator must consider the following related to the field of pediatrics:

- Instructional resources
- Instructor qualifications
- Medical director oversight
- Review and verify integration of the clinical behavior/judgment section of the Education Standards, particularly related to lab and clinical and field activities.
- Include affective evaluation and professional behavior in student assessment
- Program effectiveness evaluation
Appendix A: Writing Educational Goals and Objectives

NASEMSO sincerely thanks Connie Mattera, MS, RN, EMT-P, EMS Administrative Director, Northwest Community Healthcare for enormous contributions to this section.