NATIONAL CONTINUED COMPETENCY PROGRAM
EMR EDUCATION UPDATE

Revised October 1, 2016
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EMERGENCY MEDICAL RESPONDERS
AIRWAY, RESPIRATION, & VENTILATION
VENTILATION
ADULT & PEDIATRIC PATIENTS: EXPECTED DURATION ½ HOUR

INSTRUCTOR PREPARATIONS

- Review National EMS Education Standards
- Review relevant material in an EMR text
- Assemble skills laboratory materials:
  - Airway management trainer
  - Bag Valve Mask Resuscitator
  - Oropharyngeal Airways and tongue blades
  - Nasopharyngeal Airways
  - Oxygen source

LEARNING OBJECTIVES

- Differentiate between adequate and inadequate breathing
- Differentiate between respiratory distress and respiratory failure
- Explain when to oxygenate and when to ventilate a patient

LESSON CONTENT

I. Respiratory distress vs. failure
   a. Respiratory conditions are dynamic
      i. Range from minor respiratory distress to respiratory arrest
      ii. Can be acute, chronic, or chronic with acute exacerbation
      iii. Signs/symptoms are dynamic and may change over time depending on the state of patient’s disease process
   b. Many patients with respiratory diseases need only comfort care
   c. Important to know when exactly to provide an intervention (such as artificial ventilation) in order to increase the likelihood of patient improvement
   d. In respiratory failure, inadequate alveolar ventilation exhibited by
      i. Decrease in or excessively high respiratory rate
         1. Reduces tidal volume and amount of air available for alveolar gas exchange
      ii. Decrease in tidal volume (or both)
      iii. Patients in respiratory failure are severely ill
   e. Must recognize the transition of a respiratory disease from distress to failure
      i. Deterioration in mental status, confusion, loss of gag reflex
      ii. Accessory muscle use, head bobbing, grunting, nasal flaring
      iii. Decrease in SpO2
      iv. Cyanosis
      v. Hypercarbia

II. Airway adjuncts
   a. Reference: Red Cross—Airway Adjuncts
   b. Oropharyngeal (OPA)
      i. Indications
         1. Respiratory distress/failure
         2. Unconscious, unresponsive patient
      ii. Contraindications
         1. Gag reflex
         2. Presence of oral trauma (broken teeth, recent oral surgery, etc.)

III. Positioning of the pediatric patient for artificial ventilation
   a. Sniffing position
b. Pad behind shoulders

<table>
<thead>
<tr>
<th>EMR VENTILATION SKILLS</th>
<th>Successful</th>
<th>Unsuccessful</th>
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<tbody>
<tr>
<td>1. Place an OPA</td>
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<tr>
<td>2. Ventilate an apneic patient (simulated)</td>
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<td>a. Minimum of two minutes</td>
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<td>b. Maintain a mask seal</td>
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<tr>
<td>c. Appropriate rate (10-12 breaths/ min)</td>
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<td>d. Appropriate volume for patient size</td>
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<tr>
<td>e. Monitor chest rise</td>
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<td>f. No insufflation of stomach, if applicable</td>
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<tr>
<td>3. Suction the upper airway</td>
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</table>

The adjunct and ventilation skills should be practiced as a simulation case. A scenario should be presented which requires the learner to differentiate between a patient that requires supplemental oxygenation and one that requires ventilation.
INSTRUCTOR PREPARATIONS

- Review National EMS Education Standards
- Review relevant material in an EMR text
- Assemble skills laboratory materials:
  - Airway management trainer
  - Oxygen cylinder and regulator
  - Nasal Cannula
  - Non-rebreather mask
  - Oxygen therapy skills evaluation form

LEARNING OBJECTIVES

- Discuss the set-up and safe use of oxygen therapy equipment
- Differentiate between the features and indications of oxygen therapy devices including nasal cannula and non-rebreather mask
- Demonstrate the proper set-up and administration of oxygen by nasal cannula and non-rebreather mask on a simulated or real patient.

LESSON CONTENT

I. AHA Guidelines recommend that oxygen therapy for patients with suspected acute coronary syndrome (ACS) and stroke should be guided by measured oxygen levels (SpO2). In the absence of SpO2 measurements, it is reasonable to administer oxygen 2 L/min via nasal cannula for patients with signs and symptoms of ACS or stroke
  a. Presenting with dyspnea
  b. When signs and symptoms of shock or heart failure are present
II. If the patient with ACS or stroke has signs and symptoms of dyspnea, shock, or heart failure, it is reasonable to administer high flow oxygen via non-rebreather mask
  a.

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<tr>
<th>EMR OXYGENATION SKILLS</th>
<th>Successful</th>
<th>Unsuccessful</th>
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<tbody>
<tr>
<td>1. Demonstrate safe handling of oxygen cylinders</td>
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<tr>
<td>2. Assemble and disassemble a portable oxygen cylinder</td>
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<td>3. Determine full and empty/residual PSIs</td>
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<tr>
<td>4. Apply nasal cannula to live or simulated patient</td>
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</table>
### INSTRUCTOR PREPARATIONS
- National EMS Education Standards
- Review current AHA Guidelines

### LESSON OBJECTIVES
- Identify the signs associated with Return of Spontaneous Circulation (ROSC)

### LESSON CONTENT

<table>
<thead>
<tr>
<th>I. Recognition of Return of Spontaneous Circulation (ROSC)</th>
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<tbody>
<tr>
<td>a. CPR must be continued until signs of life are observed</td>
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<tr>
<td>i. Patient breathing</td>
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<td>ii. Patient movement</td>
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</tbody>
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<table>
<thead>
<tr>
<th>II. Optimizing ventilation and oxygenation in the post cardiac arrest patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Avoid excessive ventilation (over-bagging)</td>
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<tr>
<td>i. Reduces cardiac output</td>
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<tr>
<td>ii. Decreases cerebral blood flow</td>
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<thead>
<tr>
<th>III. System of care</th>
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<tbody>
<tr>
<td>a. Most deaths following ROSC occur within the first 24 hours</td>
</tr>
<tr>
<td>b. Transport to the most appropriate facility</td>
</tr>
<tr>
<td>i. May include transport or transfer to an alternate facility, such as:</td>
</tr>
<tr>
<td>1. STEMI/PCI Center</td>
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<tr>
<td>2. Cardiac Center</td>
</tr>
<tr>
<td>3. Therapeutic Hypothermia Centers</td>
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</tbody>
</table>

### EMR POST RESUSCITATION SKILLS
- none
INSTRUCTOR PREPARATIONS

- National EMS Education Standards
- American Heart/Stroke Association—FAST

LESSON OBJECTIVES

- Identify the options for out-of-hospital stroke assessment tools
- Explain oxygen administration during a stroke emergency

LESSON CONTENT

I. Stroke
   a. Definitive care for the stroke patient is delivered at a hospital that specializes in the management for stroke patients.
   b. Optimal out-of-hospital care for the stroke patient is recognition and rapid transport.
   c. Pediatric strokes, while rare, do happen

II. Out-of-hospital stroke assessment tool
   a. Specific tool used will be determined by local protocol
      i. Examples include
         1. Cincinnati Prehospital Stroke Scale, 1999
         2. Los Angeles Prehospital Stroke Screen-LAPSS, 2000
   b. Signs and Symptoms assessed by these tools
      i. Symmetry of the face
      ii. Weakness of extremities
      iii. Speech difficulties
      iv. Coordination
   c. Communicate assessment findings to the hospital while en route
      i. Allows for early activation of the stroke team

III. Management of stroke patients
   a. Provide supportive care
   b. Consider 2 L/min O₂ via nasal cannula instead of O₂ via high flow mask
      i. High flow oxygen decreases cerebral blood flow
   c. Rapid transport to an appropriate receiving facility
   d. Important to accurately determine when the last time that the patient was seen normal

EMR STROKE SKILLS

| none |
INSTRUCTOR PREPARATIONS
- National EMS Education Standards
- Review current AHA Guidelines

LESSON OBJECTIVES
- State the chain of survival
- Describe the current techniques of one and two-rescuer CPR
- Demonstrate the current techniques of one and two-rescuer CPR

LESSON CONTENT
I. Chain of survival
   a. There are 5 links in the adult Chain of Survival
      i. Immediate recognition of cardiac arrest and activation of the emergency response system
      ii. Early cardiopulmonary resuscitation (CPR) with an emphasis on chest compressions
      iii. Rapid defibrillation
      iv. Effective advanced life support
      v. Integrated post-cardiac arrest care
   b. A strong chain of survival can improve chances of survival and recovery for victims of heart attack, stroke, and other emergencies.

II. Optimal chest compressions
   a. Compress at a rate of 100 – 120/min
   b. The number of compressions per minute is an important determinant of return of spontaneous circulation (ROSC) and good neurological outcomes
   c. Heel of one hand over the center of the patient’s chest (lower half of the sternum) and the heel of the other hand over the first so the hands are overlapped and parallel
   d. Compress at least 2 inches (5 cm)
      i. Shallow compressions are associated with lower cardiac arrest survival
   e. Do not compress more than 2.4 inches (6 cm)
      i. Non-life threatening injuries may occur
   f. Allow complete recoil of chest between compressions
   g. Minimize interruption
      i. Ventilation/Compression Ratio
         1. 2 breaths after every 30 compressions if no advanced airway is in place
         2. 1 breath every 6 seconds with continuous compressions if an advanced airway is present
         3. Each breath should take about 1 second
         4. Ventilate with only enough volume to observe chest rise
   h. High performance CPR
      i. Coordinated manner with other practitioners (e.g., pit crew CPR)
      ii. Function as a team, including team training
   i. Mechanical CPR devices
      i. Per AHA Guidelines, there is no clear benefit on the use of mechanical CPR devices vs. manual chest compressions in patients with cardiac arrest; however, mechanical compression devices should be considered in settings...
where compressions may be challenging or dangerous for a provider (e.g., in an ambulance during transport)

<table>
<thead>
<tr>
<th>EMR CARDIAC ARREST SKILLS</th>
<th>Successful</th>
<th>Unsuccessful</th>
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</thead>
<tbody>
<tr>
<td>1. Assess patient breathing and responsiveness simultaneously</td>
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<td></td>
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<tr>
<td>2. Assess patient carotid pulse</td>
<td></td>
<td></td>
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<tr>
<td>3. Perform chest compressions adequately</td>
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<tr>
<td>4. Demonstrate proper application and utilization of an AED</td>
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<tr>
<td>5. Apply AED pads correctly on a pregnant patient</td>
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<tr>
<td>6. Utilize crew resource management techniques</td>
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<tr>
<td>a. Switch CPR every two minutes</td>
<td></td>
<td></td>
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<tr>
<td>b. Pit Crew CPR</td>
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</tbody>
</table>
### INSTRUCTOR PREPARATIONS

- National EMS Education Standards
- Review current AHA Guidelines

### LESSON OBJECTIVES

- Describe the current techniques of one and two-rescuer CPR
- Demonstrate the current techniques of one and two-rescuer CPR

### LESSON CONTENT

#### I. Techniques of single rescuer CPR

**a. Infant (less than one year of age)**

- 2-fingers just below the inter-mammary (nipple) line
- 100 – 120 compressions per minute
  - Number of compressions per minute is an important determinant of return of spontaneous circulation and good neurological outcomes
- Compress 1/3 the anterior-posterior diameter of the chest (about 1 ½ inches)
- Allow complete recoil of chest between compressions
- Minimize interruption
- **Ventilation/Compression Ratio**
  - Compressions combined with ventilations greatly improve infant and children resuscitation outcomes
  - Two breaths after every 30 compressions
  - Ventilate with enough volume to observe chest rise

**b. Child (1 year of age until onset of puberty)**

- 100 – 120 compressions per minute
- Use one or two hands on the lower half of the sternum
- Compress 1/3 the anterior-posterior diameter of the chest (approximately 2 inches)
- Allow complete recoil of chest between compressions
- Minimize interruption
- **Ventilation/Compression Ratio**
  - Compressions combined with ventilations greatly improve infant and children resuscitation outcomes
  - Two breaths after every 30 compressions
  - Ventilate with enough volume to observe chest rise

#### II. Techniques of 2-Rescuer CPR

**a.** Rescuer fatigue can lead to inadequate rate, depth and recoil in CPR in minutes, even when the rescuer does not feel fatigued

**b.** When performing 2-Rescuer CPR, rotate the rescuer who is performing compressions with the rescuer who is performing ventilations at least every two minutes.

**c. Infant (less than one year of age)**

- Two thumb encircling hands technique, just below the inter-mammary (nipple) line
- 100 – 120 compressions per minute
- 1/3 the anterior-posterior diameter of the chest (about 1 ½ inches)
- Allow complete recoil of chest between compressions
- Minimize interruption
- **Ventilation/Compression Ratio**
1. Resuscitation outcomes in infants and children are best if compressions are combined with ventilations
2. Two breaths after every 15 compressions
3. Ventilate with only enough volume to see chest rise

d. Child (one year of age until onset of puberty)
   i. Use one or two hands on the lower half of the sternum
   ii. 100 – 120 compressions per minute
   iii. 1/3 the anterior-posterior diameter of the chest (about 2 inches)
   iv. Allow complete recoil of chest between compressions
   v. Minimize interruption

e. Ventilation/Compression Ratio
   i. Resuscitation outcomes in infants and children are best if compressions are combined with ventilations
   ii. Two breaths after every 15 compressions
   iii. Ventilate with only enough volume to see chest rise

<table>
<thead>
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<th>EMR PEDIATRIC CARDIAC ARREST SKILLS</th>
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<th>Unsuccessful</th>
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<tbody>
<tr>
<td>1. Assess patient breathing and responsiveness simultaneously</td>
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<tr>
<td>2. Assess patient carotid pulse</td>
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<td></td>
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<tr>
<td>3. Perform chest compressions adequately</td>
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<tr>
<td>4. Apply and utilize an AED appropriately</td>
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<tr>
<td>5. Utilize crew resource management techniques</td>
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<tr>
<td>a. Switch CPR every two minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. Pit Crew CPR</td>
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</tbody>
</table>
INSTRUCTOR PREPARATIONS
- National EMS Education Standards
- 2EMS Spinal Precautions and the use of the long backboard, 2013
- 3Centers for Disease Control and Prevention: HEADS UP

LESSON OBJECTIVES
- Identify the signs and symptoms of a patient with a traumatic brain injury (TBI)
- Differentiate between the various levels of a TBI
- Discuss the current research and practices for the use of selective spinal immobilization

LESSON CONTENT
I. Signs and symptoms of Traumatic Brain Injury (TBI) may include any or all of the following:
   a. Physical
      i. Headache
      ii. Nausea
      iii. Vomiting
      iv. Balance problems
      v. Dizziness
      vi. Visual problems
      vii. Fatigue
      viii. Light sensitivity
      ix. Noise sensitivity
      x. Numbness/tingling
   b. Cognitive
      i. Mental fogginess
      ii. Feeling slowed down
      iii. Difficulty concentrating
      iv. Difficulty remembering
   c. Emotional
      i. Irritability
      ii. Sadness
      iii. Heightened emotions
      iv. Nervousness
   d. Sleep
      i. Drowsiness
      ii. Sleeping less than/more than usual
      iii. Trouble falling asleep

II. Care and Education of the Concussion Patient
   a. If you suspect your patient has a concussion, transport him/her to the appropriate facility
   b. If the patient (or family) refuses transport, educate them regarding the following warning signs and, if any are present, explain the importance of seeking medical attention
      i. One pupil larger than the other
      ii. Drowsiness or cannot be awakened
      iii. A headache that gets worse and does not go away
      iv. Weakness, numbness, or decreased coordination
      v. Repeated vomiting or nausea
<table>
<thead>
<tr>
<th>EMR CNS SKILLS</th>
<th>none</th>
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</thead>
<tbody>
<tr>
<td>vi. Slurred speech</td>
<td></td>
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<tr>
<td>vii. Convulsions or seizures</td>
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<td>viii. Difficulty recognizing people or places</td>
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<td>ix. Increasing confusion, restlessness, unusual behavior, or agitation</td>
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<tr>
<td>x. Loss of consciousness (even brief)</td>
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</tbody>
</table>
**INSTRUCTOR PREPARATIONS**
- *National EMS Education Standards*
- Review current AHA Guidelines

**LESSON OBJECTIVES**
- State the stages of labor
- Explain the procedures for normal child delivery in the out-of-hospital setting
- Determine the need for neonatal resuscitation during delivery
- Discuss the management principles of neonatal resuscitation
- Describe the routine care of a newborn not requiring resuscitation

**LESSON CONTENT**

<table>
<thead>
<tr>
<th>I. Signs of labor</th>
<th>II. Stages of labor and delivery</th>
<th>III. Patient assessment during labor and delivery</th>
<th>IV. Prepare for delivery</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Bloody show</td>
<td>a. Stage One: onset of contractions until fetus is in the birth canal</td>
<td>a. Monitor and maintain adequate airway, breathing, and circulation</td>
<td>a. Precautions</td>
</tr>
<tr>
<td>b. Ruptured membranes (&quot;water breaks&quot;)</td>
<td>b. Stage Two: birth canal until birth</td>
<td>b. Gain SAMPLE history and obstetric history</td>
<td>i. Gloves</td>
</tr>
<tr>
<td>c. Regular, close contractions</td>
<td>c. Stage Three: deliver the placenta</td>
<td>i. Due date</td>
<td>ii. Gown</td>
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<td>ii. Number of previous deliveries</td>
<td>iii. Eye and face protection</td>
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<td>iii. Any known complications</td>
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<td>iv. Bloody show, water broken</td>
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<td>v. Contractions: regular, duration, etc.</td>
<td>b. Supplies</td>
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<td>i. OB kit (if available)</td>
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<td>ii. Towels</td>
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<td>iii. Sheets</td>
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<td>iv. Bulb syringe</td>
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<td>v. Cord clamps</td>
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<td>vi. Sterile scissors or razor</td>
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<td>vii. Sanitary pads</td>
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<td>viii. Container for placenta (afterbirth)</td>
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<td>ix. Hazardous materials bag</td>
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<td></td>
<td></td>
<td>c. Delivery position</td>
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<td></td>
<td></td>
<td>i. Provide privacy</td>
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<td></td>
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<td>ii. Lay patient on her back</td>
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<td></td>
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<td>iii. Elevate hips</td>
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</tbody>
</table>

- Elevate hips
iv. Bend knees
v. Separate legs (Ask her to relax her legs the best she can.)
vi. Someone support her head if available
d. When the baby crowns and delivers
   i. Do not stick fingers into the vagina
   ii. Support the baby’s head as it delivers
   iii. Address nuchal cord if present
       1. Cephalic presentation but the umbilical cord is around the neck
       2. Common finding during delivery
       3. Rarely associated with adverse outcomes
       4. Management
           a. Attempt to slip the cord over the infant’s head
           b. If unable to slip over the head
              i. Clap the cord
              ii. Cut the cord
   iv. Support the baby’s torso (do not twist or pull)
   v. Keep the head lowered while extremities and torso deliver
      1. Suction mouth and nose
   vi. Once the baby is fully delivered, keep him/her at the level of the birth canal
      until the cord is clamped using sterile equipment
   vii. Deliver the afterbirth (may take a few minutes after the baby delivers)

V. Routine care of the newborn not requiring resuscitation
   a. Assess the newborn
      i. Respirations
      ii. Pulse
      iii. Color (pink, red)
      iv. Cry vs no sound
      v. Movement vs. lethargy
   b. Care for the newborn
      i. Provide supportive care for the healthy newborn
      ii. Dry and warm the baby (wrap in towels or available materials)
      iii. Give the baby to the mother if she is able to hold him/her
      iv. Monitor ABCs

VI. Neonatal resuscitation
   a. Assessment
      i. If “yes” is answered to these three questions, the infant stays with the mother and standard care continues, including maintaining the newborn’s temperature.
         1. Full term gestation?
         2. Good muscle tone?
         3. Breathing or crying adequately?
      ii. If “no” is answered to ANY of the above assessment questions, resuscitation efforts should be attempted in this sequence:
         1. First 30 seconds postpartum
            a. Dry the infant, then, warm and maintain normal temperature
            b. Position airway
            c. Clear secretions
            d. Stimulate
         2. 30-60 seconds postpartum
            a. Heart rate below 100/min or gasping/apnea
               i. Initiate positive pressure ventilation
            b. Labored breathing or persistent cyanosis
i. Position and clear the airway and provide supplementary O₂ as needed

3. After one (1) minute postpartum
   a. Heart rate >100/min
      i. Provide post resuscitation care
   b. Heart rate <100/min
      i. Check chest movement; correct ventilations as needed
   c. Heart rate <60/min
      i. Begin chest compressions coordinated with PPV and 100% O₂

| EMR OB SKILLS | none |
INSTRUCTOR PREPARATIONS

- National EMS Education Standards
- Centers for Disease Control and Prevention

LESSON OBJECTIVES

- Describe drug resistant infections
- State how the transmission of influenza virus (flu) occurs
- Discuss the role of the EMS provider in disease reporting
- Compare an epidemic and pandemic
- Assess the differences between sepsis and septic shock

LESSON CONTENT

I. Anti-microbial resistance
   a. Microbes resist the effects of medications/treatments
      i. Germs are not killed; growth is not stopped
   b. Difficult to treat
   c. Anyone is susceptible; some must be more cautious, such as those with:
      i. Weakened immune systems
      ii. Open skin wounds
      iii. Recent surgery
      iv. Invasive procedures (PICC lines, IVs, in-dwelling catheters, etc.)
   d. Occurrence
      i. World-wide
      ii. Ongoing battles within institutions (hospitals, clinics, etc.)
   e. Common antibiotic resistant infections
      i. MRSA
      ii. VRE
      iii. VRSA
      iv. TB
      v. Clostridium difficile (C-Diff)

II. Influenza (flu)
   a. CDC Information and Statistics
   b. Influenza viruses
      i. Spread from person to person via
         1. Large-particle respiratory droplet transmission
            a. Requires close contact between source and recipient persons
         2. Contact with respiratory-droplet contaminated surfaces
         3. Airborne transmission by small-particle residue of evaporated droplets
      ii. Typical incubation period is 1-4 days (average: 2 days)
      iii. Contagiousness begins the day before symptoms start and lasts 5-10 days
      iv. Children may be contagious several days before becoming symptomatic,
          lasting ten or more days after onset
      v. Severely immunocompromised persons can shed virus for weeks or months
      vi. Influenza vaccines
         1. 60% effective (varies with vaccine and flu strain)
         2. Selected based on forecasts from CDC
         3. Seasonal flu vaccine is usually trivalent (three component)
a. Each component selected to protect one of three main flu viruses

III. Sepsis and Septic Shock
   a. The body’s response to infection.
      i. Life threatening
      ii. Tissue damage
      iii. Organ failure
   b. Septic shock
      i. Sepsis with refractory hypotension or signs of hypo perfusion despite adequate fluid resuscitation
         1. End organ dysfunction
         2. Reduced urinary output
         3. Altered mental status

IV. Emerging Infectious Diseases
   a. Incidence in humans has increased in past two decades
   b. Threatens to continue increasing
   c. Knows no national boundaries
   d. New infections resulting from changes or evolution of existing organisms
   e. Known infections spreading to new geographic areas or populations
   f. Previously unrecognized infections appearing in areas undergoing ecologic transformation
   g. Past infections reemerging
      i. Result of antimicrobial resistance in known agents or breakdowns in public health measures
INSTRUCTOR PREPARATIONS

- National EMS Education Standards
- CDC—Suicide Risk Factors

LESSON OBJECTIVES

- Describe the components of a mental status examination
- State the risk factors for suicide

LESSON CONTENT

1. Mental status examination
   a. Mechanism of injury or nature of illness?
      i. Injuries/illnesses can cause altered behavior
         1. Head injuries
         2. Hypoglycemia
         3. Hypoxia
         4. Stroke
         5. Dementia
      ii. Medication side effects
   b. Mental health history
   c. General appearance
      i. Dress
      ii. Grooming
      iii. Posture
      iv. Wringing of hands
      v. Facial grimaces
      vi. Mannerisms
      vii. Actions
      viii. Violence
   d. Speech
      i. Spontaneous or pressured
      ii. Slow or fast
      iii. Soft or loud
      iv. Understandable or not
      v. Appropriate or inappropriate
         1. Mixed/confused words (word salad)
         2. Full words inappropriately used together
         3. Delusional
      vi. Mood
         1. Depressed
         2. Euphoric
         3. Manic
         4. Anxious
         5. Angry
         6. Agitated
         7. Fearful
         8. Guilty
      vii. Area of thought
         1. Racing thoughts
2. Hallucinations
   a. Auditory
   b. Visual
   c. Somatic (strange body sensations)
3. Obsessive
4. Delusions (false beliefs)
5. Suicidal
6. Unconnected
7. Disturbed or distorted
   viii. Once you have completed a mental status examination, you should report
      1. General appearance
      2. Speech
      3. Mood
      4. Area of thought

II. Patient considerations
   a. Pregnant
   b. Pediatric
   c. Geriatric

III. Agitated Delirium/Excited Delirium (refer to the resources in the instructor preparations section)
   a. Stay calm, and do not cause more harm to the patient
   b. Characterized by a sudden onset of extreme agitation and extremely irrational or combative behavior
      i. Bizarreness, aggressiveness, agitation, ranting, hyperactivity, paranoia, panic
      ii. Reported to result from substance intoxication, psychiatric illness, alcohol withdrawal, head trauma, or a combination of these
      iii. Patient may exhibit hypertension, tachycardia, diaphoresis, dilated pupils, tachypnea, abnormal tolerance to pain, hyperthermia, noncompliance, and endless endurance and strength
      iv. May lead to respiratory and cardiac arrest
         1. Restraints may increase the risk

IV. Suicide/Depression (refer to the resources in the instructor preparations section)
   a. Risk Factors for Suicide
      i. History of depression and other mental disorders
      ii. Previous suicidal gestures/Attempts
      iii. History of family/child abuse (non-accidental trauma)
      iv. Feelings of hopelessness
      v. Unwillingness to seek mental health care (stigma attached)
      vi. Feeling of being isolated from others
      vii. History of impulsive or aggressive behavior
      viii. Inability to access mental health
      ix. Recent diagnosis of a serious illness, especially an illness that signals a loss of independence
      x. Recent loss of a loved one, job, money or social loss
      xi. Access to firearms
      xii. PTSD
      xiii. Alcohol or drug abuse
      xiv. Loss of relationship
      xv. Gives away personal belongings/cherished possessions
      xvi. Physical or mental stress
      xvii. Major physical stress such as surgery and long periods of sleep deprivation
xviii. Expression of a clear plan for committing suicide  
   xix. Ability of the mechanisms to carry out suicide  

<table>
<thead>
<tr>
<th>EMR PSYCHIatrIC SKILLS</th>
<th>Successful</th>
<th>Unsuccessful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate proper verbal de-escalation techniques</td>
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</tbody>
</table>
INSTRUCTOR PREPARATIONS
- National EMS Education Standards
- Poison Control: 1-800-222-1222

LESSON OBJECTIVES
- Identify common synthetic stimulants and natural or synthetic THC
  - Recognize the effects
  - Synthetic stimulants
  - Natural and synthetic THC
- Identify common opioids
  - Recognize the effects
- Explain common treatment options for a person experiencing opioid overdose

LESSON CONTENT
I. Poison control: 1-800-222-1222
II. Toxicological Emergencies
   a. Synthetic stimulants
   b. Tetrahydrocannabinol (THC - natural/synthetic)
   c. Opioid
III. Synthetic Stimulants
   a. Bath Salts
      i. Bliss, Blue Silk, Ivory Wave, White Dove, White Knight, White Lightning
      ii. Usually sold as a powder
         1. White or off-white in color
         2. Can also be sold in capsule
      iii. Usually inhaled nasally
         1. Can also be taken orally, intravenously, or smoked
   b. Methamphetamine
      i. Crank, Crystal Meth, Glass, Ice, Tweak, Yaba
      ii. Usually sold as crystals
         1. White or off-white in color
         2. Yellow/red crystalline powder
      iii. Usually smoked, snorted or injected IV
   c. MDMA (methylenedioxyxymethamphetamine)
      i. Ecstasy, E, XTC, Smarties, Scooby-Snacks, Skittles
      ii. Usually sold in tablets or capsules
         1. Can also be sold in liquid drops, snorted, or smoked
         2. Can be any color
   d. Effects of synthetic stimulants
      i. Psychological
         1. Agitation, insomnia, irritability, dizziness, depression, paranoia, delusions, suicidal thoughts, seizures, and panic attacks
      ii. Somatic (effects on the body)
         1. Hyperthermia (significant with MDMA)
         2. Rapid heart rate - can lead to heart attacks and strokes
         3. Chest pains, nosebleeds, sweating, nausea, and vomiting
IV. Tetrahydrocannabinol (THC)
   a. Natural
### Synthetic
- Characterized by mimicking natural THC
- Can cause psychosis
- K2, spice, black mamba, Bombay blue, genie, zohai
- Similar appearance to natural THC

### Effects of THC
- Impaired short term memory
- Decreased concentration and attention
- Impaired balance and coordination
- Increased heart rate and blood pressure
- Increased appetite

### Opioids
- Synthetic or semi-synthetic opioids act on the Central Nervous System as a depressant to:
  - Decrease the perception of pain
  - Decrease the reaction to pain
  - Increase pain tolerance
- May be prescribed for acute pain, debilitating pain, or chronic pain as part of palliative care
- May be abused to induce euphoria
- Prolonged use may lead to tolerance and/or addiction
- Common effects:
  - Respiratory depression
  - Drowsiness
  - Constipation
  - Constricted pupils
  - Dry mouth
  - Itching
  - Nausea and vomiting
- Common opioids
  - Heroin
  - Morphine
  - Oxycodone (Percocet®)
  - Codeine
  - Fentanyl
  - Hydrocodone (Vicodin®)
  - Hydromorphone (Dilaudid®)
  - Meperidine (Demerol®)
  - Methadone
- Naloxone (Narcan®)
  - Opioid antagonist
  - Reverse CNS and respiratory depression due to opioid overdose
  - NOT effective against non-opioid drugs
  - First responders and/or bystanders may administer intranasally or via auto-injector

### Pediatric toxicology/ingestion
- Poison Control: 1-800-222-1222
### EMR TOXICOLOGICAL EMERGENCY SKILLS

<table>
<thead>
<tr>
<th></th>
<th>Successful</th>
<th>Unsuccessful</th>
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<tbody>
<tr>
<td>1. Demonstrate the ability to identify patients who need naloxone</td>
<td></td>
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<tr>
<td>2. Demonstrate the administration of an auto-injector or intra-nasal naloxone as appropriate for local protocol</td>
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</tbody>
</table>
### INSTRUCTOR PREPARATIONS
- National EMS Education Standards

### LESSON OBJECTIVES
- Define altered mental status (AMS)
- State common causes of altered mental status
- Define status epilepticus/seizures
- Explain complications associated with seizures

### LESSON CONTENT

#### I. Altered mental status definition and causes
   a. **Definition:** change in a person’s level of awareness
   b. **Causes** (AEIOU-TIPPSS—acronym for assessment of AMS patient)
      - i. Alcohol
      - ii. Epilepsy (seizures)
      - iii. Insulin (diabetic condition)
      - iv. Oxygen (lack of)
      - v. Uremia (kidney failure)
      - vi. Trauma
      - vii. Infection
      - viii. Psychiatric
      - ix. Poisoning (including drug overdose)
      - x. Shock
      - xi. Stroke

#### II. Types of seizures
   a. **Generalized**
      - i. Tonic-clonic
      - ii. Absence
   b. **Partial**
      - i. Simple
      - ii. Complex
   c. **Status epilepticus**
         1. A continuous seizure lasting more than 30 minutes
         2. Two or more seizures without regaining consciousness between any of them
         3. Prolonged seizures last between 5 and 30 minutes
            a. Should be treated as status epilepticus
      - ii. **Complications**
         1. Aspiration
         2. Bone and spine fractures
         3. Brain damage from lack of oxygen and/or depletion of glucose
         4. Dehydration

#### III. Causes
   a. Medication non-compliance
b. Rapid increase in body temperature (febrile)
c. Infection
d. Hypoxia
e. TBI
f. Alcohol or drug withdrawal
g. Stroke
h. Hypoglycemia
i. Eclampsia
j. Seizure disorder
k. Electrolyte disturbances
l. Poisoning

IV. Assessment findings
   a. Spasms/muscle contractions/shaking or tremors
   b. Sweating
   c. Cyanosis during seizure activity
   d. Increased secretions
   e. Incontinence
   f. Postictal state

V. Management
   a. Protect from further injury; position on side to protect airway
   b. Ensure open airway, adequate ventilations, and oxygenation
      i. Consider using an NPA
   c. Provide emotional support; reduce stimulants that may trigger more seizures

| EMR NEUROLOGICAL/SEIZURE SKILLS | none |
### INSTRUCTOR PREPARATIONS
- National EMS Education Standards

### LESSON OBJECTIVES
- Explain the role glucose plays on the cells
- Identify symptoms commonly associated with hypoglycemia
- Identify symptoms commonly associated with hyperglycemia

### LESSON CONTENT

<table>
<thead>
<tr>
<th>I. Glucose</th>
<th>II. Insulin</th>
<th>III. Diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Sugar</td>
<td>a. A “carrier” for glucose to enter cells</td>
<td>a. Condition in which insulin is nonexistent, minimal, or nonfunctioning</td>
</tr>
<tr>
<td>b. Fuel for cells</td>
<td>b. Without treatment it leads to high blood sugar</td>
<td>b. Without treatment it leads to high blood sugar</td>
</tr>
<tr>
<td>c. Proper amounts of glucose in blood ensures proper brain and cell functioning</td>
<td>c. Two types of diabetes</td>
<td>c. Two types of diabetes</td>
</tr>
<tr>
<td>d. Changes in levels may result in altered behavior</td>
<td>i. Insulin dependent diabetes (IDDM, Type 1)</td>
<td>i. Insulin dependent diabetes (IDDM, Type 1)</td>
</tr>
<tr>
<td></td>
<td>1. Early age of onset</td>
<td>1. Early age of onset</td>
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<td></td>
<td>2. Lack of insulin production</td>
<td>2. Lack of insulin production</td>
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<tr>
<td></td>
<td>ii. Non-insulin dependent diabetes (NIDDM, Type 2)</td>
<td>ii. Non-insulin dependent diabetes (NIDDM, Type 2)</td>
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<tr>
<td></td>
<td>1. Later age of onset</td>
<td>1. Later age of onset</td>
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<td></td>
<td>2. Associated with obesity</td>
<td>2. Associated with obesity</td>
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<td></td>
<td>3. Some cases are resolved with weight loss</td>
<td>3. Some cases are resolved with weight loss</td>
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<td></td>
<td>4. Cells are less receptive to insulin</td>
<td>4. Cells are less receptive to insulin</td>
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<td></td>
<td>5. Medication required to improve insulin sensitivity</td>
<td>5. Medication required to improve insulin sensitivity</td>
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<thead>
<tr>
<th>IV. Hypoglycemia</th>
<th>V. Hypoglycemia management</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Rapid onset and changes in mental status</td>
<td>a. Ensure open airway, adequate breathing, circulation, and ability to swallow</td>
</tr>
<tr>
<td>b. Sweating</td>
<td></td>
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<tr>
<td>c. Hunger</td>
<td></td>
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<tr>
<td>d. Rapid pulse</td>
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<tr>
<td>e. Rapid, shallow respirations</td>
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<tr>
<td>f. Seizures, come (late)</td>
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<tr>
<td>g. Bizarre behavior (sudden onset and abnormal for patient)</td>
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</tbody>
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<thead>
<tr>
<th>VI. Hyperglycemia</th>
<th>VII. Hyperglycemia management</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Slow onset and changes in mental status</td>
<td>a. Ensure an open airway, adequate breathing, circulation, and ability to swallow</td>
</tr>
<tr>
<td>b. Rapid breathing, sweet breath odor</td>
<td></td>
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<tr>
<td>c. Dehydration, pale, warm, dry</td>
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<tr>
<td>d. Weakness, nausea, vomiting</td>
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<tr>
<td>e. Weak, rapid pulse</td>
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<tr>
<td>f. Polyuria, polydipsia, polyphagia</td>
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</tbody>
</table>
b. Supportive care  
c. Transport  

<table>
<thead>
<tr>
<th>EMR ENDOCRINE/DIABETES ACTIVITY</th>
<th>Successful</th>
<th>Unsuccessful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Gain familiarity with insulin pumps*</td>
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</table>

*This skill may be practiced using diagrams of various types of insulin pumps. The use of a physical pump is not mandatory.
INSTRUCTOR PREPARATIONS

- National EMS Education Standards

LESSON OBJECTIVES

- Discuss the physiology related to allergies and anaphylaxis
- Differentiate between a mild/localized allergic reaction and anaphylaxis
- Explain the actions of medications used to treat anaphylaxis
  - Epinephrine

LESSON CONTENT

I. Allergic reaction
   a. Hyperactive, localized immune response to an allergen
   b. Some histamine is released
   c. Localized: redness, swelling, hives, itching
   d. May cause nausea, vomiting, and/or diarrhea
   e. Usually requires minimal supportive therapies
   f. Repeat exposures may lead to anaphylaxis (e.g., insect stings, foods, etc.)

II. Anaphylaxis
   a. Multiple body systems are affected, not just a localized reaction like allergies
   b. Life-threatening reaction of the immune system to an allergen
   c. Large quantities of histamine are released throughout the body
   d. Vasodilation and increased capillary permeability
   e. May lead to shock
   f. Bronchoconstriction and mucous production
   g. May lead to respiratory distress
      i. Soft tissue swelling of the upper airway
      ii. Airway obstructions

III. Treatment for Anaphylaxis
   a. Out-of-hospital treatment
      i. Ensure adequate airway, ventilation, and oxygenation
      ii. Administer oxygen
      iii. Assist patient with epinephrine auto-injector if available
      iv. Transport (or arrange for transportation) to an appropriate facility for evaluation

<table>
<thead>
<tr>
<th>EMR IMMUNOLOGICAL EMERGENCIES SKILLS</th>
<th>Successful</th>
<th>Unsuccessful</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demonstrate assisting a patient in administering medication with an auto-injector</td>
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</tbody>
</table>
INSTRUCTOR PREPARATIONS

- National EMS Education Standards
- "National Implementation of the Model Uniform Core Criteria for Mass Casualty Incident Triage 2013 (MUCC)"

LESSON OBJECTIVES

- Relate MUCCs impact on the development of the CDC Field Triage Decision Scheme and SALT
- Analyze the triage methods for
  - SALT
  - START
  - JumpSTART

LESSON CONTENT

I. MUCC (Model Uniform Core Criteria)
   b. A science and consensus-based national guideline that recommends 24 core criteria for all mass casualty triage systems
   c. Used as the basis for CDC Field Triage Decision scheme and SALT (Sort, Assess, Lifesaving Interventions, Treatment/Transport)

II. SALT Triage
   a. Reference: Sort, Assess, Lifesaving interventions, Treatment/transport
   b. Steps to consider during triage
      i. Sort: Global sorting
         1. Obvious life threat
         2. Purposeful movement
         3. Walk
      ii. Individual assessment
         1. Perform lifesaving interventions as indicated
         2. Perform ongoing reassessments
      iii. Treatment and/or transport

III. START (adult triage)
   a. Reference: Simple Triage and Rapid Treatment
   b. Steps to consider during triage
      i. Assess respirations
      ii. Assess perfusion
      iii. Assess mental status
   c. Immediate or delayed transport depends on the assessment findings

IV. JumpSTART (pediatric triage)
   a. Reference: Pediatric MCI Triage Tool
   b. First, triage patients who do not walk independently (based on age)
   c. Steps to consider during triage
      i. Assess respirations
      ii. Assess perfusion
      iii. Assess mental status
   d. Determine immediate or delayed transport based on assessment findings
<table>
<thead>
<tr>
<th>EMR FIELD TRIAGE ACTIVITY</th>
<th>Successful</th>
<th>Unsuccessful</th>
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</thead>
<tbody>
<tr>
<td>1. Triage patients, in accordance with local protocol, using the SALT or the START/JumpSTART algorithm in a simulated multi-casualty scenario</td>
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</tbody>
</table>
INSTRUCTOR PREPARATIONS
- National EMS Education Standards
- 9CDC—Hand Hygiene Guideline
- 10APIC—Guide to Infection Prevention in Emergency Medical Services

LESSON OBJECTIVES
- Identify proper hand washing technique
- Identify appropriate use of alcohol-based hand cleaner
- Discuss the CDC’s recommendations of vaccines for healthcare providers
- Assess eye safety indications and measures

LESSON CONTENT
I. Always wash hands
   a. Before and after patient contact
   b. Before eating
   c. After cleaning the ambulance or equipment
   d. After using the restroom
   e. After nose blowing, coughing, or sneezing

II. CDC Recommendations for washing with soap and water
   a. Reference: 9CDC—Hand Hygiene Guideline
   b. Remove all jewelry
   c. Wet hands with clean running water
   d. Apply soap
   e. Scrub the back of hands
   f. Clean underneath fingernails
   g. Continuously rub hands for at least 20 seconds
   h. Rinse hands well under running water
   i. Dry hands using a clean towel or air dry

III. Alcohol-based hand cleaner/sanitizer
   a. Should contain at least 60% alcohol
   b. Reduces number of germs
   c. Does not eliminate all types of germs
   d. Does not kill viruses
      i. Creates inhospitable environments for viruses to live
   e. Ineffective when hands are visibly dirty
   f. Techniques for using hand sanitizer
      i. Know that soap and water is more effective than hand sanitizer
      ii. Apply to palm of one hand
      iii. Rub hands together
      iv. Rub all surfaces of hands and fingers until dry
      v. Wash hands when soap and water become available

IV. Eye and face protections
   a. Eye protection is recommended by the CDC when workers may be at risk of acquiring infectious diseases via ocular exposure
      i. Adenovirus
      ii. Herpes simplex
      iii. Staphylococcus aureus
      iv. Hepatitis B and C
v. HIV
vi. Rhinoviruses

b. Eye protection devices
   i. Goggles
   ii. Face Shields
   iii. Safety glasses
   iv. Full-face respirators

V. Vaccinations for healthcare providers
   a. Reference: 11 CDC—Vaccines: Healthcare Provider/Professionals
   b. Recommended vaccines (not exhaustive)
      i. Hepatitis B
      ii. Influenza
      iii. MMR (measles, mumps and rubella)
      iv. Varicella
      v. Pertussis
      vi. Consider recommended vaccines for disaster response
   c. Vaccines
      i. Help prevent transmission of certain diseases
      ii. Some are attenuated (weakened or killed) viruses
      iii. Some mimic certain diseases
         i. Produce antibodies in the blood
      iv. Some provide antibodies directly

| EMR HYGIENE SKILLS | none |
INSTRUCTOR PREPARATIONS

- 12Strategy for a National EMS Culture of Safety

LESSON OBJECTIVES

- Define culture of safety
- Identify and explain the six core elements necessary to advance an EMS Culture of Safety
- Identify the role of the EMS providers in establishing a culture of safety within EMS organizations

LESSON CONTENT

I. Define culture of safety
   a. Reference: 12Strategy for a National EMS Culture of Safety
      b. “The enduring value and priority placed on worker and public safety by everyone in every group at every level of an organization. It refers to the extent to which individuals and groups will commit to personal responsibility for safety; act to preserve, enhance and communicate safety concerns; strive to actively learn, adapt and modify (both individual and organizational) behavior based on lessons learned from mistakes; and be rewarded in a manner consistent with these values.”

II. Identify and explain the six core elements necessary to advance an EMS Culture of Safety as described in the 2013 Strategy for a National EMS Culture of Safety
   a. Just Culture
      i. Development of environments in which EMS personnel are safe to report errors
         1. Focus on the various factors that contributed to the error
      ii. Assess risks in order to identify means of overcoming factors that contribute to errors
         1. Systems factors and individual factors are examined in order to make improvements to avoid future errors
      iii. Blaming or punishing is not an option in a Just Culture
   b. Coordinated support and resources
      i. Creation of a guidance and resource coordination body
         1. e.g., EMS Safety Resource Center (EMSSRC)
            a. Purpose is to determine the best way to effectively serve EMS in the support role
            b. Partner with governing bodies to serve as a conduit of information and resources for EMS Safety
            c. No oversight or authority
            d. Suggested support areas:
               i. Outreach and Resources for EMS and other stakeholders
               ii. Resources for Public Outreach
               iii. Measuring Progress and Success
   c. EMS Safety Data System
      i. Data driven decisions and policies related to EMS safety can only be made if all data is accessible on a national level.
      ii. A robust, secure system would allow access to researchers, decision makers, and national stakeholder groups.
iii. Data sets have been identified; data will be analyzed and used to inform future plans, initiatives, processes, and policies in order to protect the health and well-being of EMS personnel, their patients, and the general public
   1. Injuries
   2. Illnesses
   3. Incidents
d. EMS Education Initiatives
   i. Safety starts with EMS leaders and educators and involves everyone
   ii. Initial EMS programs must encourage a culture of safety throughout the program
   iii. Continuing education and new employee onboarding must infuse culture of safety throughout the curricula
c. EMS safety standards
   i. Safety standards for patient and responder safety must be developed using data and evidence
   ii. EMSSRC can coordinate the efforts to combine work and data completed by various EMS stakeholders and projects
f. Requirements for reporting and investigation
   i. Mandates for reporting safety are necessary so a common language and data set can be created to improve responder and patient safety
      1. Steps may include:
         a. Determining what data are already mandated and available
         b. Determining what data are necessary and useful
         c. Learning from those with hands-on experience
         d. Assigning and obtaining authorization for an investigative body
         e. Identifying existing best practices

III. Consider these questions in regards to the policies, practices, and daily operations in your organization/agency:
   a. What changes are needed to encourage the development of a culture of safety?
   b. How are mistakes handled if one is made during a patient care encounter?
   c. How should it be handled if applying the concept of Just Culture?

EMR CULTURE OF SAFETY SKILLS

none
References


