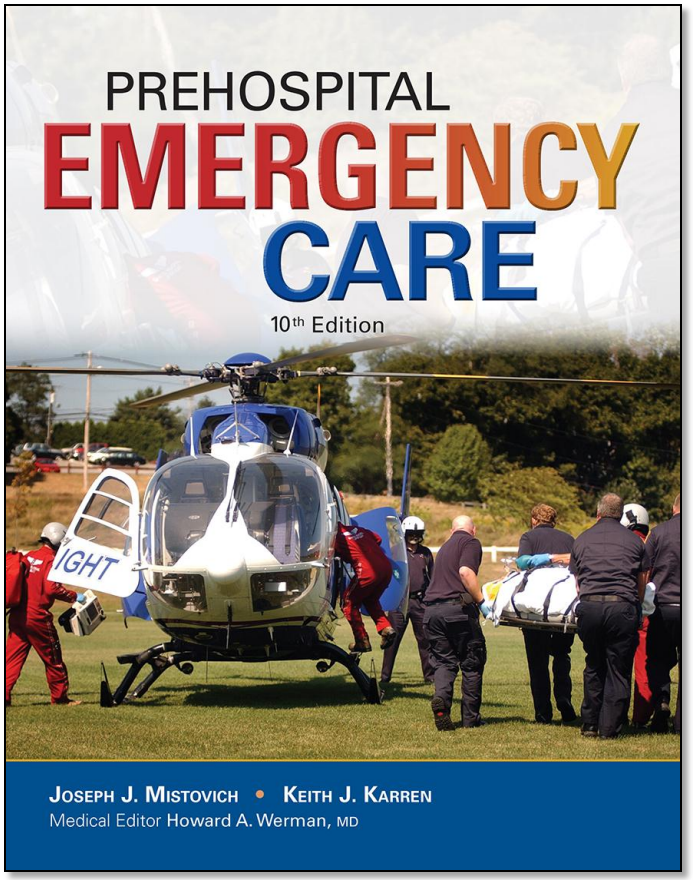
PREHOSPITAL EMERGENCY CARE

TENTH EDITION



CHAPTER 38

Part II
Pediatrics

Learning Readiness

- EMS Education Standards, text p. 1024

Learning Readiness Objectives

- Please refer to pages 1024 and 1025 of your text to view the objectives for this chapter.

Learning Readiness Key Terms

- Please refer to page 1025 of your text to view the key terms for this chapter.

Setting the Stage

- Overview of Lesson Topics
  - Specific Respiratory and Cardiopulmonary Conditions
  - Other Medical Conditions and Emergencies
  - Pediatric Trauma
  - Child Abuse and Neglect
  - Special Care Considerations

Case Study Introduction

EMTs Deb Maestes and Ben Allen arrive on the scene of an 8-year-old who was struck by a car while riding her bicycle. The patient is lying in the street, shivering and crying. Deb can see immediately that her skin is pale and mottled, and there is swelling and deformity of her left thigh.

Case Study

- What is your general impression of this patient?
- What injuries should be suspected with this mechanism of injury?
- How should treatment of this patient be prioritized?

Introduction

- Trauma is the leading cause of fatal injuries in children under the age of 14.
- Of medical problems, respiratory problems are the most serious.

Introduction

- Assessment of a child is somewhat different, but the basic treatment goals are the same.
- Emergency care focuses on managing airway, ventilation, oxygenation, and circulation.

Respiratory and Cardiopulmonary Conditions

- Croup
  - Infection of the upper airway
  - Common between 6 months and 4 years of age
  - Causes swelling beneath the glottis
  - Presents with a "seal bark" cough
  - Severe attacks can lead to respiratory distress.

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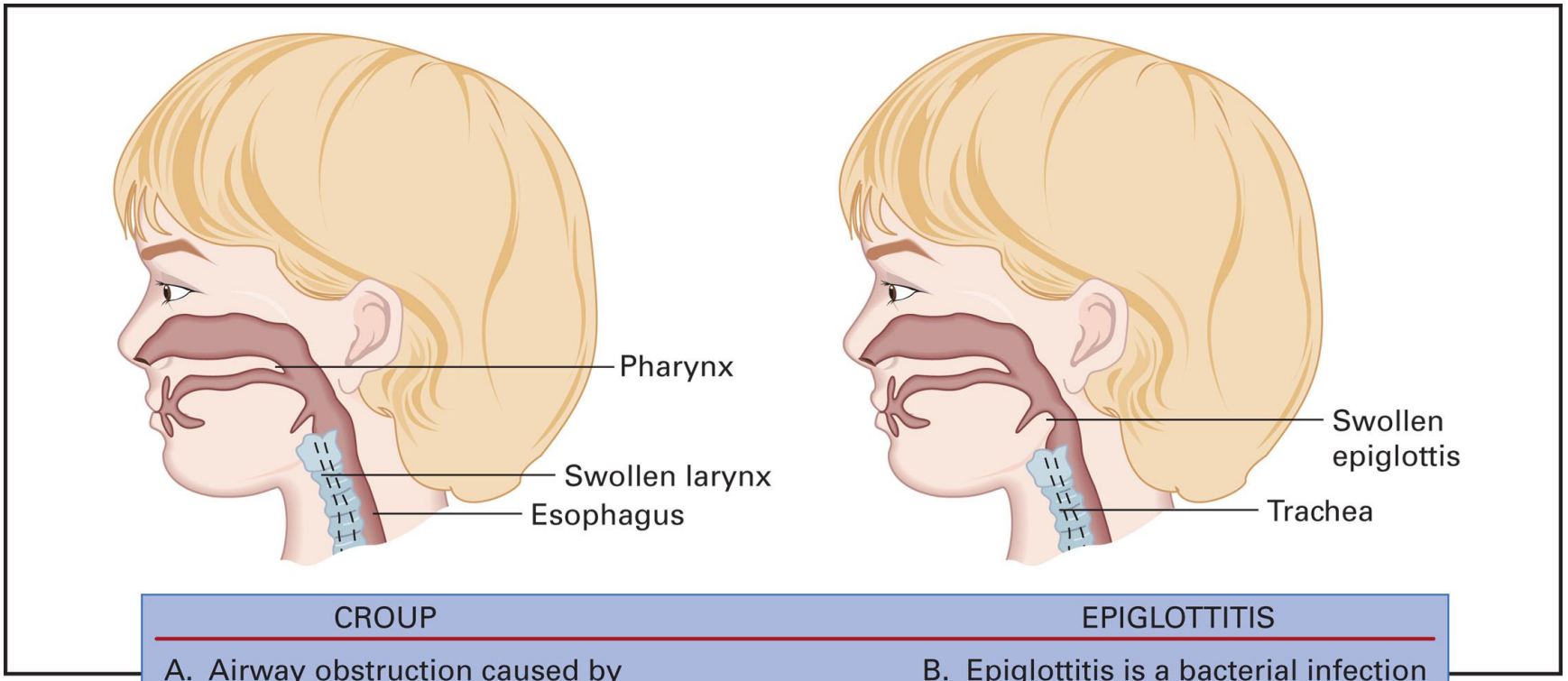
Pathophysiology of pediatric croup and epiglottitis.



CROUP	EPIGLOTTITIS
A. Airway obstruction caused by croup, a viral illness that causes swelling of the larynx lining.	B. Epiglottitis is a bacterial infection that produces severe swelling of the epiglottis.

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Respiratory and Cardiopulmonary Conditions

- Croup
  - Emergency medical care
    - Administer oxygen, humidified if possible, to maintain an SpO2 greater than or equal to 94%.
    - Keep the patient in a position of comfort.
    - Transport without agitating the patient.

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Respiratory and Cardiopulmonary Conditions

- Epiglottitis
  - Bacterial infection that causes swelling of the epiglottis
  - Untreated, it has a 50% mortality rate.
  - Rapid onset with a high temperature

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Respiratory and Cardiopulmonary Conditions

- Epiglottitis
  - Signs and symptoms
    - Pain on swallowing
    - High fever; "toxic" ill-appearance
    - Drooling
    - Mouth breathing
    - Changes in voice quality, pain with speaking

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Respiratory and Cardiopulmonary Conditions

- Epiglottitis
  - Signs and symptoms
    - Tripod position
    - Chin and neck thrust outward
    - Inspiratory stridor
    - Respiratory distress
    - Stillness as the attack worsens

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Respiratory and Cardiopulmonary Conditions

- Epiglottitis
  - Emergency medical care
    - Do not place anything in the child's mouth.
    - Position of comfort
    - Oxygen by nonrebreather mask or blow-by

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Respiratory and Cardiopulmonary Conditions

- Epiglottitis
  - Emergency medical care
    - If the airway is completely obstructed, perform positive pressure ventilation.
    - Consider ALS backup.
    - Transport.

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Respiratory and Cardiopulmonary Conditions

- Asthma
  - Long-term inflammatory process characterized by increased mucus production and acute narrowing of the airways
  - Bronchiolar smooth muscle contracts and the airways are narrowed

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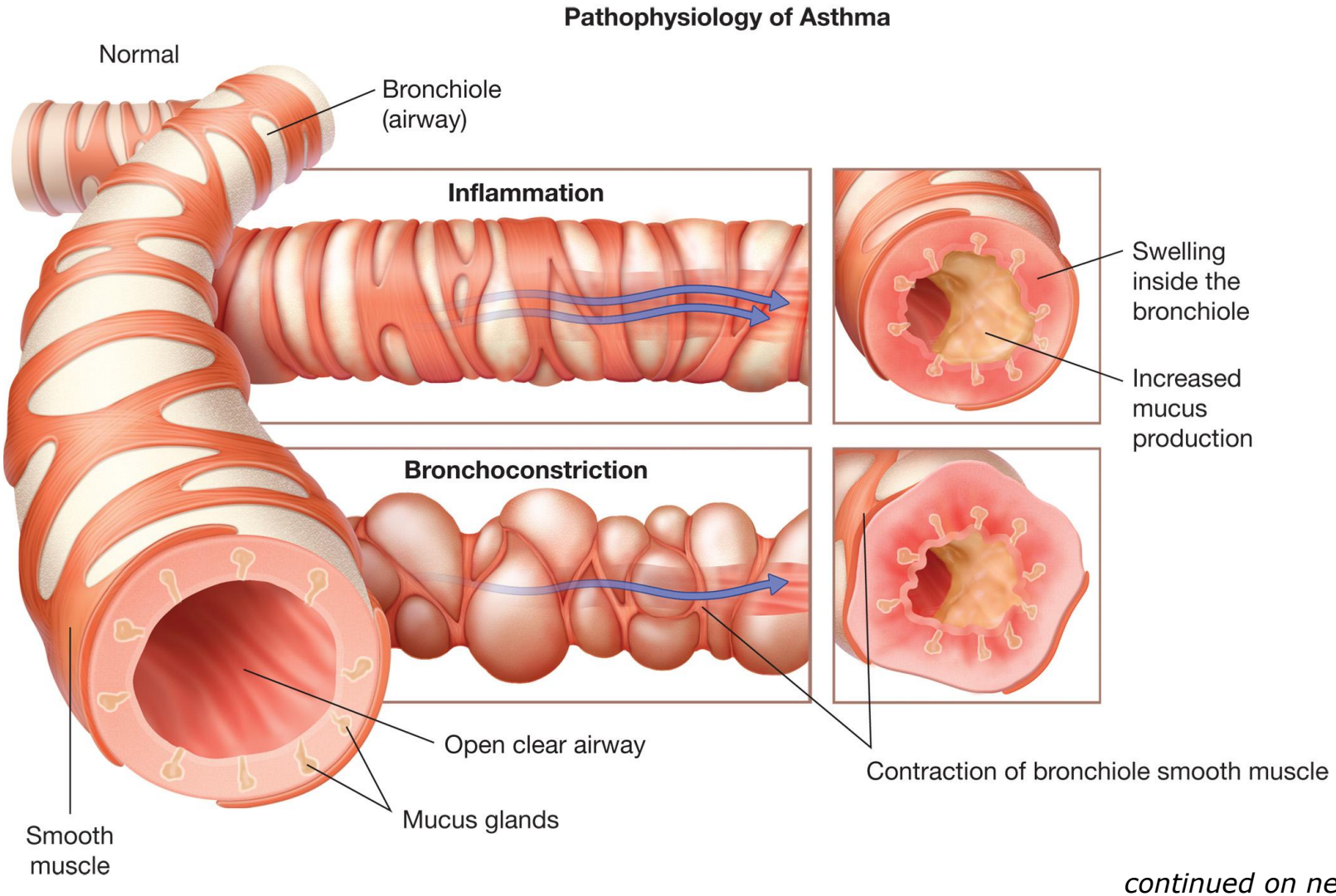
Pathophysiology of asthma. Inflammation inside the bronchiole, an increase in the production of thick, sticky mucus, and bronchiole smooth muscle contraction (bronchoconstriction) lead to a reduced bronchiole internal diameter and a higher airway resistance.



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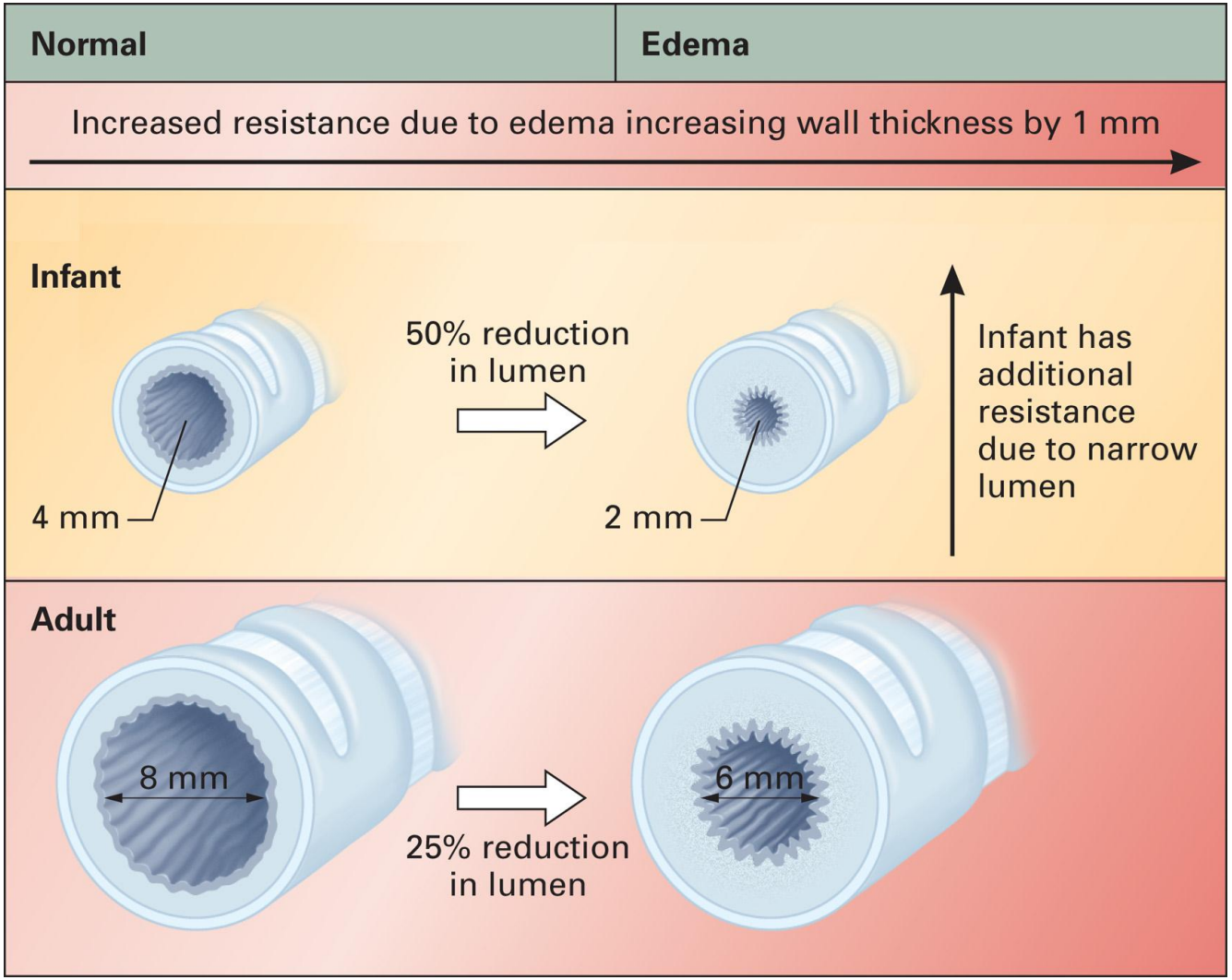
Effects of edema on airway resistance in the infant compared to the adult.



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Respiratory and Cardiopulmonary Conditions

- Asthma
  - Signs and symptoms
    - Shortness of breath
    - Chest tightness
    - Wheezing
    - Nonproductive, "tight" cough

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Respiratory and Cardiopulmonary Conditions

- Questions to ask in the history
  - How long has the child been wheezing?
  - How much fluid has he taken during this period?
  - Has he had a recent cold or other infection?

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Respiratory and Cardiopulmonary Conditions

- Questions to ask in the history
  - Has he had any medication for this attack? What is it? When? How much?
  - Does he have any known allergies to drugs, foods, pollens, or other inhalants?
  - Has he visited an emergency department recently? Has he ever been hospitalized for an asthmatic attack?

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Respiratory and Cardiopulmonary Conditions

- In the assessment, pay attention to:
  - Position
  - Mental status
  - Vital signs
  - Skin color and condition
  - Respirations

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Respiratory and Cardiopulmonary Conditions

- Asthma
  - Emergency medical care
    - Oxygen, humidified if possible, to maintain an SpO_2 greater than or equal to 94%.
    - Positive pressure ventilation, if breathing is inadequate.

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Respiratory and Cardiopulmonary Conditions

- Asthma
  - Emergency medical care
    - Allow the child to assume a position of comfort.
    - If the child has a prescribed inhaler, consult medical direction for permission to administer it.
    - Transport.

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Respiratory and Cardiopulmonary Conditions

- Asthma
  - Emergency medical care
    - Status asthmaticus is a life-threatening emergency; request ALS, if possible.

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Respiratory and Cardiopulmonary Conditions

- Bronchiolitis
  - The mucosal layer of the bronchioles is inflamed by a viral infection, often RSV.
  - This produces wheezing and other signs and symptoms of asthma.
  - There usually is a low-grade fever.

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Respiratory and Cardiopulmonary Conditions

- Bronchiolitis
  - Emergency medical care
    - Oxygen, humidified if possible, to maintain an SpO_2 greater than or equal to 94%.
    - Positive pressure ventilation, if breathing is inadequate.

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Respiratory and Cardiopulmonary Conditions

- Bronchiolitis
  - Emergency medical care
    - Let the child assume a position of comfort.
    - Transport, monitoring pulse rate and mental status.

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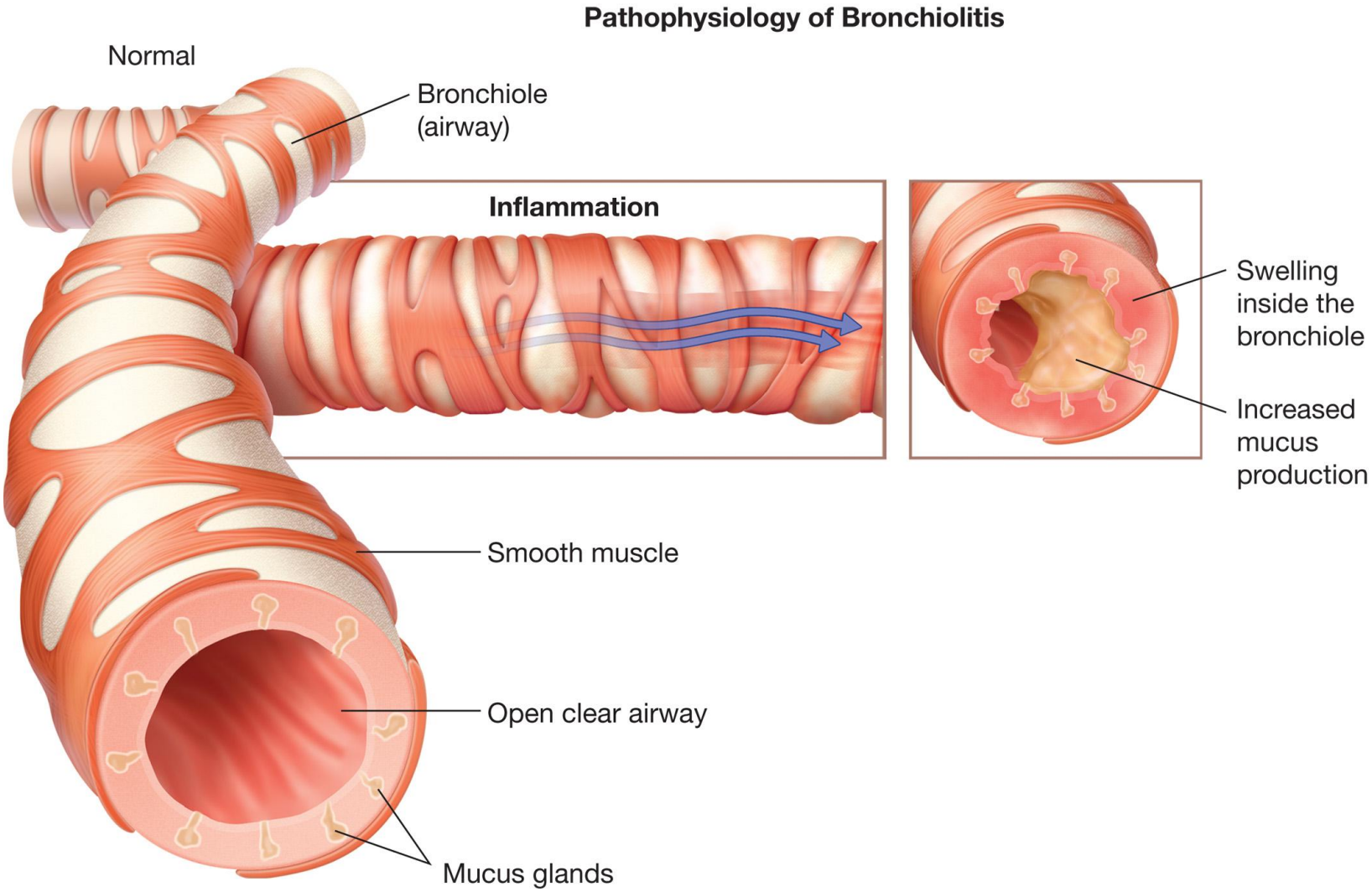
Pathophysiology of bronchiolitis. Inflammation inside the bronchiole and an increase in the production of thick, sticky mucus from an infection lead to a reduced bronchiole internal diameter and a higher airway resistance.



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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Infection in the lungs can obstruct the airways and lead to respiratory compromise.
  - Signs include shortness of breath, chest tightness, diminished breath sounds, and cough.

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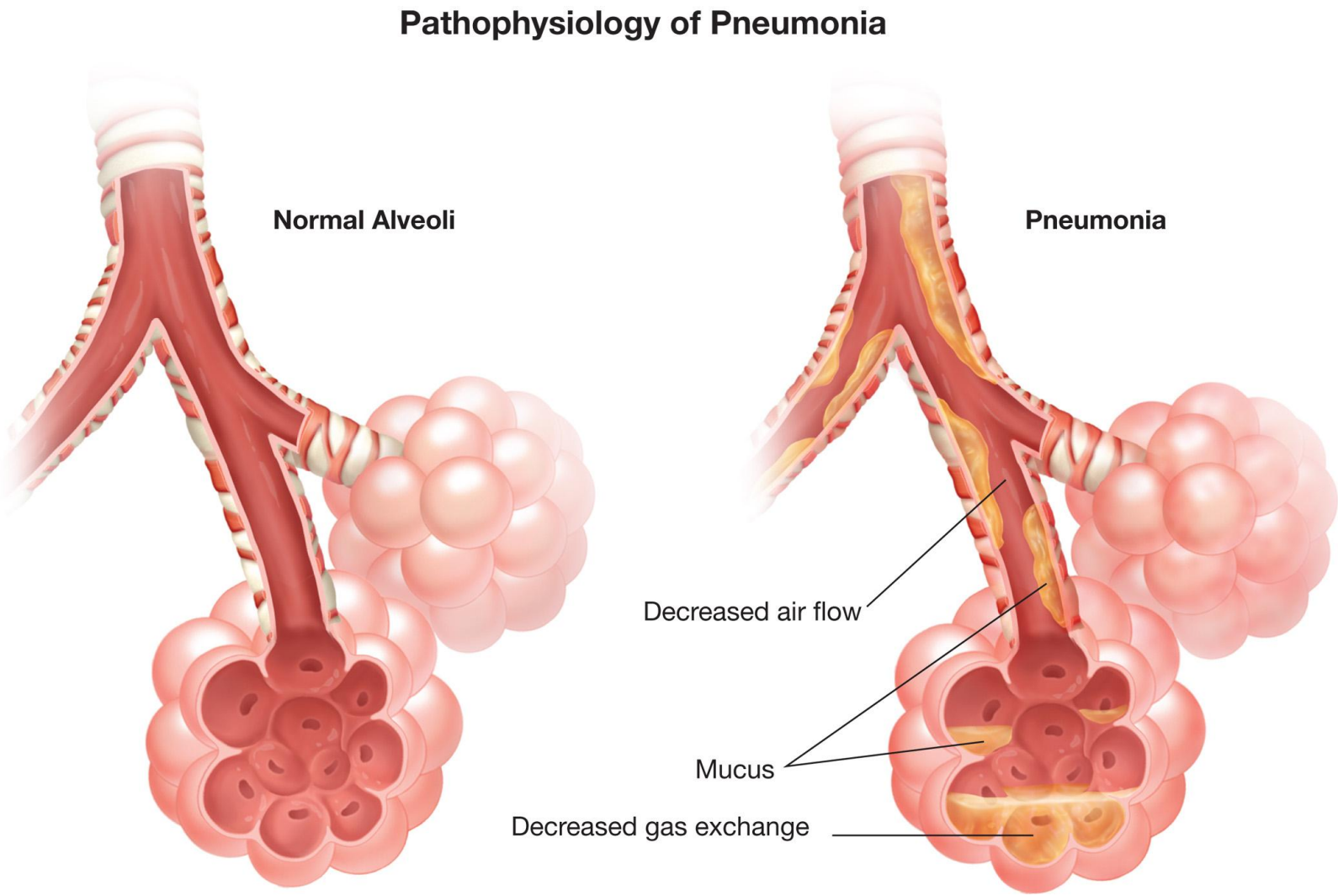
Pathophysiology of pneumonia. Mucus inside the bronchioles leads to a reduced airflow, and mucus in the alveoli cause poor gas exchange.



Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Assessment
    - Position
      - The child may lie on his side with his knees drawn up or assume a tripod position.
      - With severe respiratory distress, the child will be exhausted.
      - Children under 2 years of age may lie on the back and may not show agitation.

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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Assessment
    - Mental status
      - Drowsiness with intermittent periods of restlessness

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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Assessment
    - Vital signs
      - Pulse rate may increase, but bradycardia is a sign of respiratory failure and potential for cardiac arrest.
      - Blood pressure may fall due to sepsis and shock.
      - Monitor the SpO_2.

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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Assessment
    - Skin
      - Look for evidence of dehydration.
      - Look for cyanosis.

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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Assessment
    - Respirations
      - Diminished breath sounds
      - Possible wheezes or crackles

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Respiratory and Cardiopulmonary Conditions

- Pneumonia
  - Emergency medical care
    - Oxygen, humidified if possible, to maintain an SpO_2 greater than or equal to 94%.
    - Positive pressure ventilation, if breathing is inadequate.
    - Let the child assume a position of comfort.
    - Transport.

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Respiratory and Cardiopulmonary Conditions

- Congenital heart disease
  - Can be due to abnormal valves, vessels, or chambers

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Respiratory and Cardiopulmonary Conditions

- Congenital heart disease
  - May present with:
    - Inadequate pulmonary blood flow with cyanosis and hypoxia
    - Excessive pulmonary blood with congestive heart failure, hypoperfusion, and shock
    - Respiratory distress with or without cyanosis or shock

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Respiratory and Cardiopulmonary Conditions

- Congenital heart disease
  - Emergency medical care
    - Maintain an open airway.
    - Oxygen to maintain an SpO_2 greater than or equal to 94%.
    - Positive pressure ventilation, if the breathing is inadequate.
    - Support the cardiovascular system as necessary; consider ALS support.

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Respiratory and Cardiopulmonary Conditions

- Shock
  - Causes include hypovolemic, obstructive, distributive, and cardiogenic.
  - Common findings include diarrhea, dehydration, trauma, vomiting, blood loss, infection, and abdominal injuries.
  - Less common causes of shock are allergic reactions, poisoning, or cardiac events.

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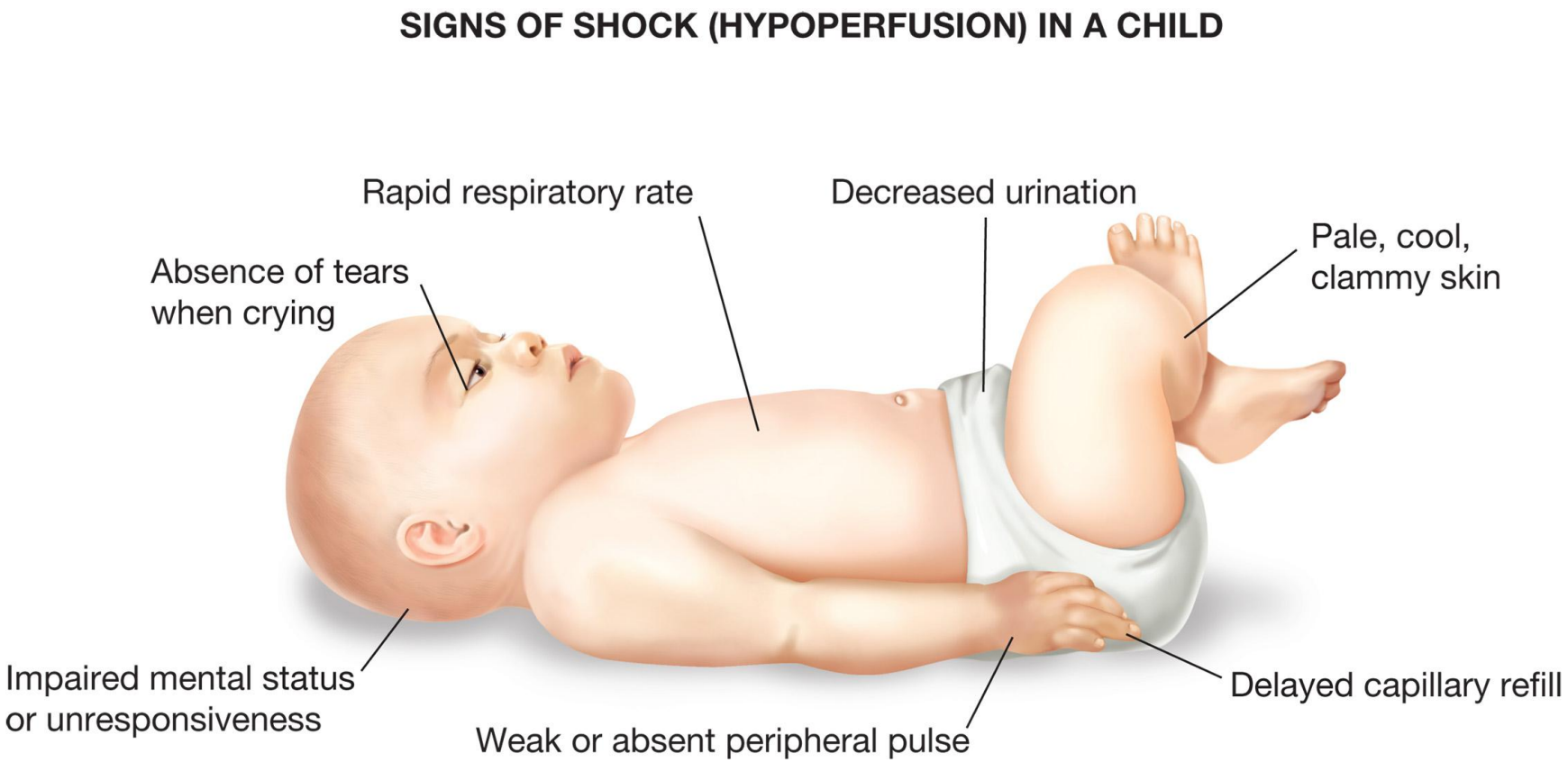
Signs of shock (hypoperfusion) in a child.



Respiratory and Cardiopulmonary Conditions

- Shock
  - Emergency medical care
    - Maintain an open airway.
    - Oxygen, to maintain an SpO_2 greater than or equal to 94%.
    - Positive pressure ventilation, if breathing is inadequate

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Respiratory and Cardiopulmonary Conditions

- Shock
  - Emergency medical care
    - Control any bleeding
    - Supine position
    - Keep the patient warm
    - Transport

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Figure 38-30 Emergency care protocol: pediatric shock.

Emergency Care Protocol

PEDIATRIC SHOCK

1. Establish and maintain an open airway, extending the head only enough to allow an open airway and avoid hyperextension.
2. Suction secretions.
3. Provide positive pressure ventilation with supplemental oxygen connected to the ventilation device at a rate of 12–20 ventilations/minute if breathing is inadequate.
4. If breathing is adequate, administer oxygen via nonrebreather mask at 15 lpm; consider blow-by oxygen in infants and very young children.
5. If shock is due to blood loss, control any external bleeding with direct pressure. If internal bleeding is suspected, transport immediately and expeditiously.
6. Keep the patient warm. If hypothermia is suspected, wrap the patient in warm blankets and place the ambulance heater on high. Cover the infant or child's head. (Note: All patients in shock should be kept warm.)
7. Consider calling advanced life support.
8. Expedite transport.
9. Perform a reassessment every 5 minutes.

Respiratory and Cardiopulmonary Conditions

- Cardiac arrest
  - Almost all cardiac arrests in children result from airway obstruction or respiratory distress leading to respiratory arrest.
  - Shock is also a cause.
  - Aggressively manage both respiratory problems and shock before they progress to cardiac arrest.

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Respiratory and Cardiopulmonary Conditions

- Cardiac arrest
  - Begin chest compressions if there are signs of poor perfusion and a heart rate <60.

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Respiratory and Cardiopulmonary Conditions

- Cardiac arrest
  - Signs of cardiac arrest include:
    - Unresponsiveness
    - Gasping or no respiratory sounds
    - No audible heart sounds
    - Chest is not moving
    - Pallor or cyanosis
    - Absent pulse

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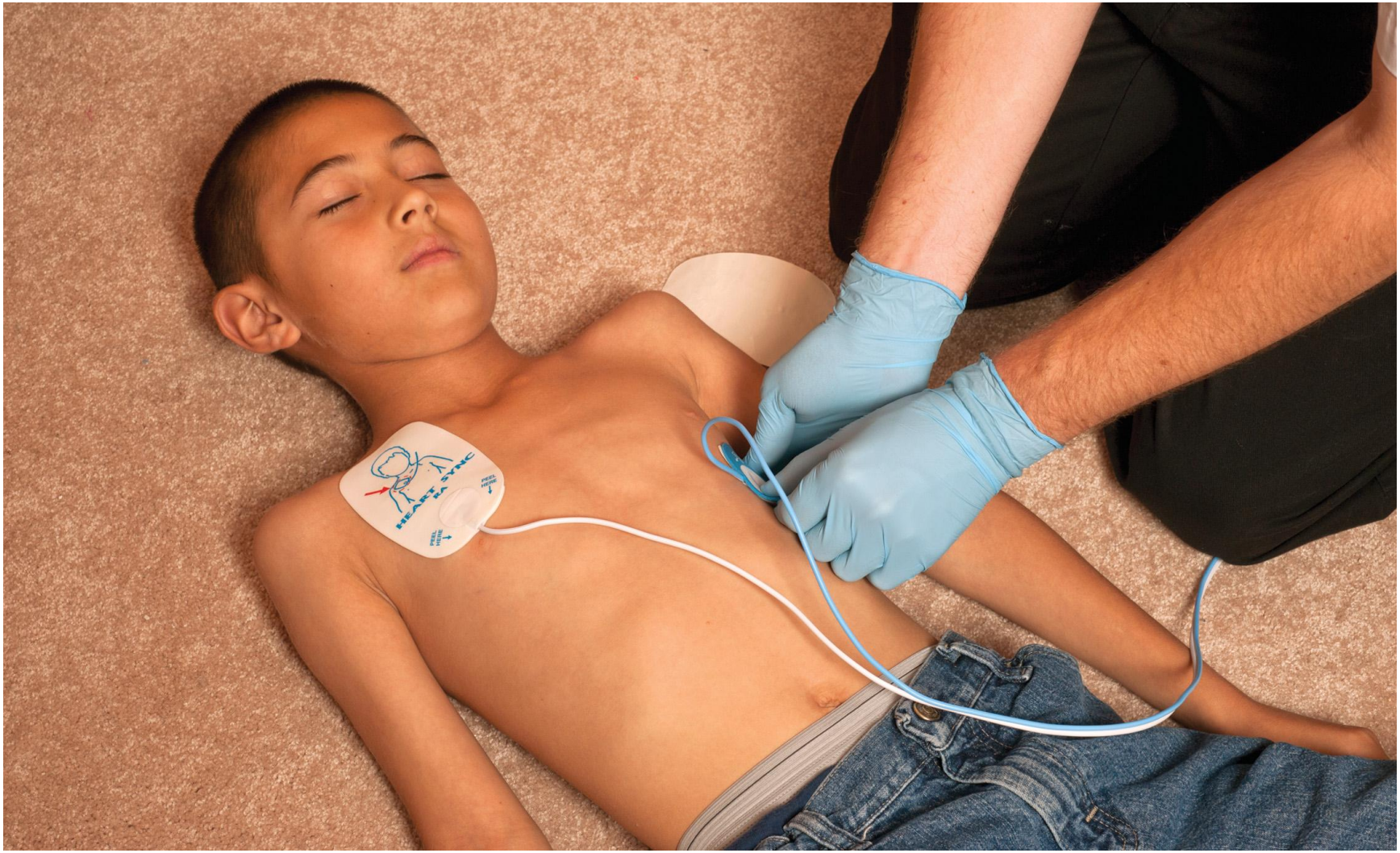
Respiratory and Cardiopulmonary Conditions

- Cardiac arrest
  - Emergency medical care
    - Positive pressure ventilation with supplemental oxygen
    - CPR and AED
    - ALS backup
    - Rapid transport

AED applied to a child.



Click on the condition that is most consistent with a child who is found sitting up, remaining very still, with a high fever, drooling, and inspiratory stridor.

A. Epiglottitis

B. Croup

C. Pneumonia

D. Bronchiolitis

Other Medical Conditions and Emergencies

- Seizures
  - Causes include:
    - Fever
    - Epilepsy
    - Head injury
    - Meningitis
    - Hypoxia

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Other Medical Conditions and Emergencies

- Seizures
  - Causes include:
    - Drug overdose
    - Electrolyte abnormalities
    - Brain tumors
    - Hypoglycemia

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Other Medical Conditions and Emergencies

- Seizures
  - Assessment
    - Muscular rigidity or twitching
    - Dilated pupils
    - Irregular breathing
    - Incontinence
    - Cyanosis
    - Excessive salivation

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Other Medical Conditions and Emergencies

- Seizures
  - History
    - History of prior seizures?
    - If so, is this the normal pattern?
    - Has the child taken prescribed medications, if he has any?
    - Duration of unconsciousness?
    - Description of seizure activity?

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Other Medical Conditions and Emergencies

- Seizures
  - Emergency medical care
    - Maintain an open airway.
    - Oxygen, to maintain an SpO2 greater than or equal to94%.
    - Positive pressure ventilation, if breathing is inadequate.
    - Position the patient on his side.
    - Be prepared to suction.
    - Transport.

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Other Medical Conditions and Emergencies

- Seizures
  - Emergency medical care
    - Status epilepticus is a seizure lasting more than 5 minutes, or recurring seizures without a recovery period.
    - This is a life-threatening emergency.
    - Protect the airway, provide positive pressure ventilation, and transport.

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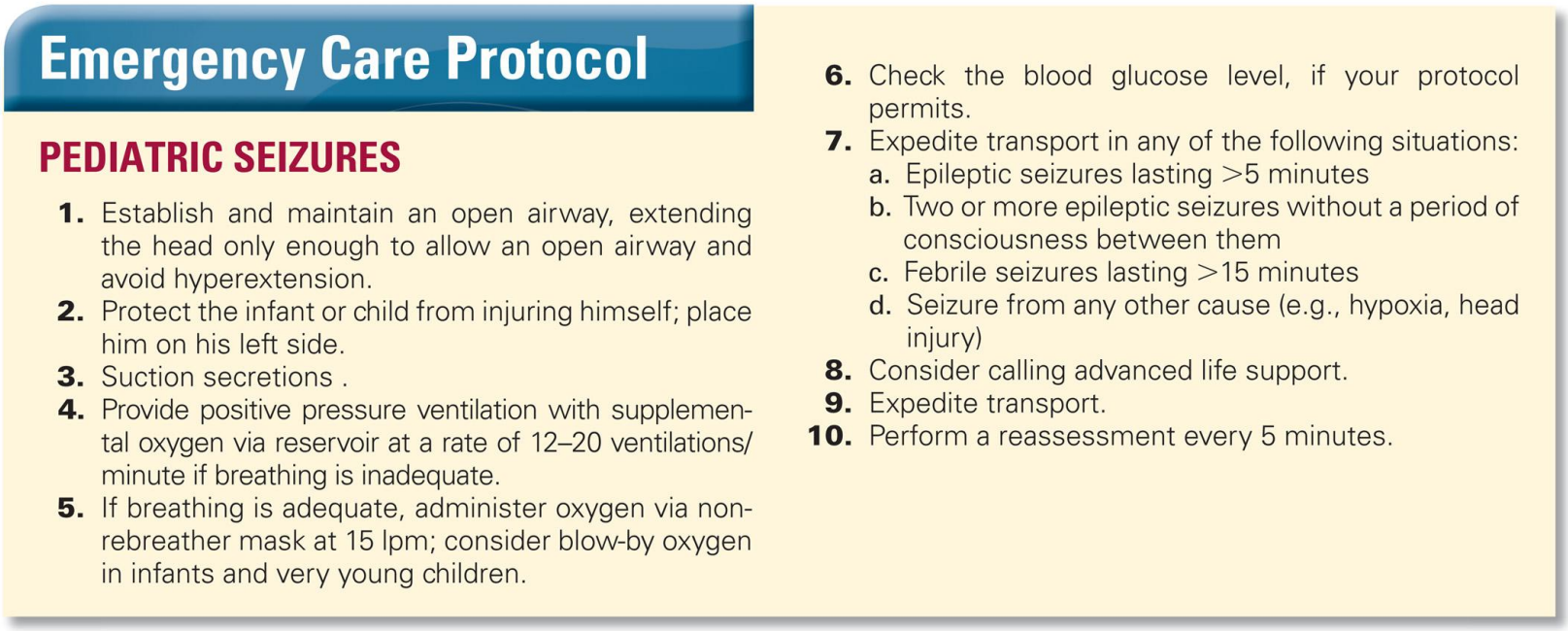
Figure 38-34 Emergency care protocol: pediatric seizures.



Emergency Care Protocol

PEDIATRIC SEIZURES

1. Establish and maintain an open airway, extending the head only enough to allow an open airway and avoid hyperextension.
2. Protect the infant or child from injuring himself; place him on his left side.
3. Suction secretions .
4. Provide positive pressure ventilation with supplemental oxygen via reservoir at a rate of 12–20 ventilations/minute if breathing is inadequate.
5. If breathing is adequate, administer oxygen via nonrebreather mask at 15 lpm; consider blow-by oxygen in infants and very young children.
6. Check the blood glucose level, if your protocol permits.
7. Expedite transport in any of the following situations:
   a. Epileptic seizures lasting >5 minutes
   b. Two or more epileptic seizures without a period of consciousness between them
   c. Febrile seizures lasting >15 minutes
   d. Seizure from any other cause (e.g., hypoxia, head injury)
8. Consider calling advanced life support.
9. Expedite transport.
10. Perform a reassessment every 5 minutes.

Other Medical Conditions and Emergencies

- Altered mental status
  - There are many underlying causes, including hypoglycemia.
  - Check the blood glucose level, if possible.
  - The goals are to manage threats to airway, breathing, oxygenation, and circulation.

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Other Medical Conditions and Emergencies

- Altered mental status
  - Emergency medical care
    - Maintain an open airway
    - Oxygen, to maintain an SpO_2 greater than or equal to 94%
    - Positive pressure ventilation, if breathing is inadequate
    - Position the patient on his side
    - Be prepared to suction
    - Transport

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Other Medical Conditions and Emergencies

- Drowning
  - Most drownings are "dry" drownings.
  - Be aware of associated trauma and hypothermia.
  - Secondary drowning syndrome may occur.
  - If there is uncertainty about the submersion time, give the benefit of the doubt and attempt resuscitation.

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Other Medical Conditions and Emergencies

- Drowning
  - Emergency medical care
    - Remove the patient from the water.
    - Suspect spinal injury.
    - Maintain an open airway.
    - Oxygen, to maintain an SpO_2 greater than or equal to 94%.

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Other Medical Conditions and Emergencies

- Drowning
  - Emergency medical care
    - Positive pressure ventilation, if breathing is inadequate
    - Place the patient on his side, if possible.
    - Be prepared to suction.
    - Provide CPR and use the AED, if needed.
    - Transport.

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Emergency care protocol: pediatric drowning.

Emergency Care Protocol

PEDIATRIC DROWNING

1. Remove the infant or child from the water. If diving was involved in children or adolescents, consider in-line spinal stabilization and complete spinal immobilization.
2. Establish and maintain an open airway, extending the head only enough to allow an open airway and avoid hyperextension.
3. Suction secretions.
4. Provide positive pressure ventilation with supplemental oxygen connected to the ventilation device at a rate of 12–20 ventilations/minute if breathing is inadequate.
5. Perform chest compressions if no pulse is present. Apply the AED. Contact medical direction otherwise for orders. If hypothermia is suspected, deliver only one defibrillation.
6. If breathing is adequate, administer oxygen via nonrebreather mask at 15 lpm; consider blow-by oxygen in infants and very young children.
7. If hypothermia is suspected, remove wet clothing, wrap the patient in warm blankets, and place the ambulance heater on high. Cover the infant or child's head.
8. Consider calling advanced life support.
9. Expedite transport.
10. Perform a reassessment every 5 minutes.

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Other Medical Conditions and Emergencies

- Fever
  - Fevers of 104° F–105° F are concerning.
  - Causes include infection and heat exposure.
  - Seizures and dehydration may occur.

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Other Medical Conditions and Emergencies

- Fever
  - Emergency medical care
    - Maintain an SpO_2 greater than or equal to 94%.
    - Remove excess layers of clothing.
    - If elevated temperature is a result of heat exposure, cool the patient, but take care to avoid inducing shivering.
    - Be alert for seizures.

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Emergency care protocol: pediatric fever.

Emergency Care Protocol

PEDIATRIC FEVER

1. Establish and maintain an open airway, extending the head only enough to allow an open airway and avoid hyperextension.
2. Suction secretions.
3. Provide positive pressure ventilation with supplemental oxygen via reservoir at 12–20 ventilations/minute if breathing is inadequate.
4. If breathing is adequate, administer oxygen via non-rebreather mask at 15 lpm; consider blow-by oxygen in infants and very young children.
5. Febrile seizures > 15 minutes are a dire emergency and require expeditious transport and consideration for advanced life support.
6. Consider calling advanced life support.
7. Transport.
8. Perform a reassessment every 5 minutes.

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Other Medical Conditions and Emergencies

- Meningitis
  - Infection of the lining of the brain and spinal cord
  - May be rapidly fatal

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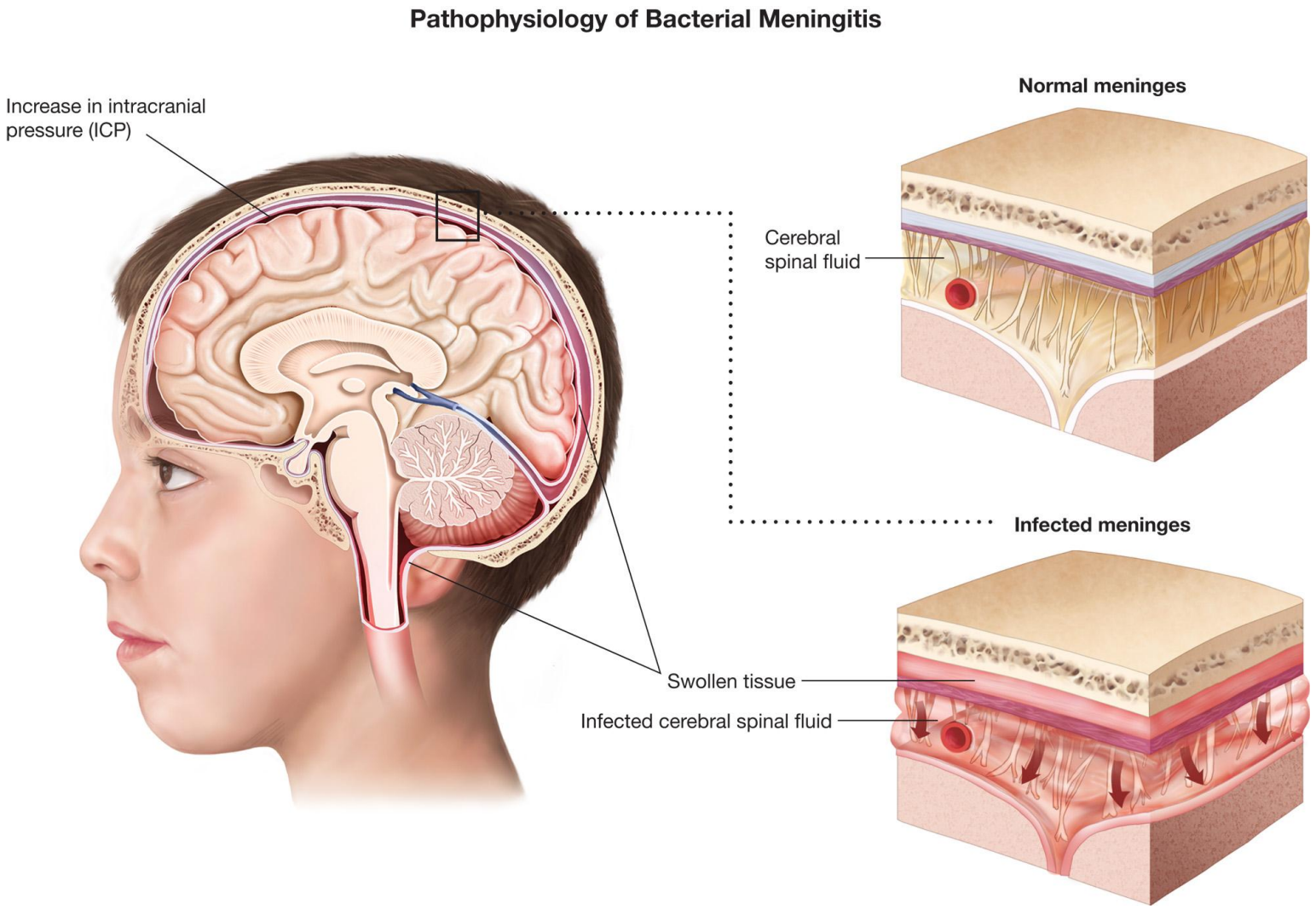
Pathophysiology of bacterial meningitis. Meningitis causes the meningeal tissue to swell inside the skull and around the spinal cord, causing an increase in pressure inside the skull and compression of the brain.



Other Medical Conditions and Emergencies

- Meningitis
  - Signs and symptoms
    - Recent ear or respiratory tract infection
    - High fever
    - Lethargy, irritability
    - Vomiting

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Other Medical Conditions and Emergencies

- Meningitis
  - Signs and symptoms
    - Loss of appetite
    - The fontanelle may be bulging unless the child is dehydrated.
    - Movement is painful.
    - Rash may or may not be present.

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Other Medical Conditions and Emergencies

- Meningitis
  - Emergency medical care
    - Wear a mask, gloves, and possibly a gown
    - Complete the assessment rapidly and transport to the hospital

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Other Medical Conditions and Emergencies

- Meningitis
  - Emergency medical care
    - If the child is in shock, maintain an open airway, administer oxygen to maintain an SpO_2 greater than or equal to 94%, if breathing is inadequate, begin positive pressure ventilation

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Other Medical Conditions and Emergencies

- Gastrointestinal disorders
  - Conditions include gastroenteritis, which can lead to dehydration, and appendicitis.
  - If appendicitis is suspected, maintain an SpO_2 greater than or equal to 94%, place the patient in a position of comfort, anticipate vomiting, transport.

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Other Medical Conditions and Emergencies

- Poisoning
  - Children younger than 4 years of age account for 46% of poison exposures.
  - A thorough secondary assessment is critically important.
  - Gather as much information as possible about the type of overdose prior to transport.

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Other Medical Conditions and Emergencies

- Poisoning
  - Emergency medical care
    - Contact medical direction or poison control.
    - If activated charcoal is order, the dose is 1 gram/kg.
    - Maintain an open airway and adequate ventilation and oxygenation.
    - Transport, with frequent reassessment of mental status, airway, and breathing.

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Other Medical Conditions and Emergencies

- Apparent life-threatening event (ALTE)
  - An episode that is frightening to the observer
  - Characterized by some combination of apnea, color change, marked change in muscle tone, choking, or gagging
  - Event is usually transient.

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Other Medical Conditions and Emergencies

- ALTE
  - Emergency care
    - Maintain an open airway, and adequate breathing and oxygenation.
    - Positive pressure ventilation for inadequate breathing.
    - Transport.

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Other Medical Conditions and Emergencies

- Sudden infant death syndrome (SIDS)
  - Sudden and unexpected death of an infant in which an autopsy fails to identify the cause of death
  - Peak incidence at 2 to 4 months
  - Exact cause is unknown
  - Cannot be diagnosed in the field

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Other Medical Conditions and Emergencies

- For suspected SIDS, determine the following:
  - Physical appearance of the infant
  - Position of the infant in the crib
  - Physical appearance of the crib
  - Presence of objects in the crib
  - Unusual or dangerous items in the room

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Other Medical Conditions and Emergencies

- For suspected SIDS, determine the following:
  - Appearance of the room/house
  - Presence of medication, even if it is for adults

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Other Medical Conditions and Emergencies

- For suspected SIDS, determine the following:
  - Circumstances concerning discovery of the unresponsive child
  - Time the infant was put to bed or fell asleep
  - Problems at birth

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Other Medical Conditions and Emergencies

- For suspected SIDS, determine the following:
  - General health
  - Any recent illnesses
  - Date and result of last physical exam

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Other Medical Conditions and Emergencies

- SIDS
  - Emergency medical care
    - Attempt resuscitation unless rigor mortis or dependent lividity is present.
    - Encourage caregivers to talk.
    - Do not provide false reassurances.
    - Transport.
    - Use caution in communication.

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Other Medical Conditions and Emergencies

- SIDS and family members
  - Reactions vary, but shock and disbelief are common.
  - Making decisions may be difficult for the parents.
  - Be supportive.
  - Be aware of your own emotions.

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Other Medical Conditions and Emergencies

- SIDS and family members
  - Allow parents to be present during resuscitation attempts.

Pediatric Trauma

- Thousands of children die from unintentional injury and more are permanently disabled.
- 50% of deaths from trauma occur within the first hour after an injury.
- The primary killer of American children is the automobile.
- Many of the deaths and injuries are preventable.

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Pediatric Trauma

- Mechanisms of injury
  - Unrestrained vehicle passengers are prone to head and neck trauma.
  - Front seat passengers may be injured by airbags.
  - Restrained passengers are prone to abdominal and lumbar injuries.

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Pediatric Trauma

- Mechanisms of injury
  - Bicyclists struck by cars are prone to head, spinal, and abdominal injuries.
  - Pedestrians struck by cars are prone to head, chest/abdominal, and lower extremity injuries.
  - With shallow-water diving, suspect head and neck injuries.

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Pediatric Trauma

- Mechanisms of injury
  - Burns may be more severe because the child's skin is thinner; airway swelling may be more severe than in adults.
  - Sports injuries often involve the head and neck.
  - Child abuse is a cause of trauma.

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Pediatric Trauma

- Trauma and pediatric anatomy
  - Head injuries are because of the relatively larger size of the child's head compared to the body.
  - Signs of head injury include:
    - Nausea, vomiting, altered mental status
    - Respiratory arrest
    - Facial and scalp injuries

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Head injuries are common in children because of the relatively large size of the child's head.

Be aware that children with facial injuries are especially vulnerable to airway compromise.

Pediatric Trauma

- Trauma and pediatric anatomy
  - The ribs are more pliable, making rib fractures less likely, but internal injuries more likely.
  - The abdominal muscles do not offer as much protection against blunt trauma.

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Pediatric Trauma

- Trauma and pediatric anatomy
  - Use appropriately sized equipment for extremity injuries.
  - Children younger than 5 years suffer more severe consequences from burns; they are more at risk for hypothermia and fluid loss.

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Pediatric Trauma

- Emergency medical care
  - Care is focused on airway management, breathing, oxygenation, and circulation.

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Pediatric Trauma

- Emergency medical care
  - Establish in-line spine stabilization and open the airway using a jaw thrust.
  - Suction as necessary.
  - Provide oxygen at 15 lpm by nonrebreather mask if ventilations are adequate and any signs of poor perfusion are present.

continued on next slide

Pediatric Trauma

- Emergency medical care
  - Initiate positive pressure ventilation if breathing is inadequate.
  - Provide complete spinal immobilization.
  - Transport.

continued on next slide

Pediatric Trauma

- Infant and child car seats
  - Can protect a properly secured child from injury, particularly with frontal and rear-end collisions
  - More than half of children are improperly secured or not secured at all.

continued on next slide

Pediatric Trauma

- Infant and child car seats
  - If the seat was involved in a moderate-to-severe crash, do not use it to transport the patient.
  - If the crash was minor, the seat may be used.

continued on next slide

Pediatric Trauma

- Minor crash criteria:
  - The vehicle was able to be driven away from the crash site.
  - The vehicle door nearest the safety seat was undamaged.
  - There were no injuries to any of the vehicle occupants.

continued on next slide

Pediatric Trauma

- Minor crash criteria:
  - The air bags did not deploy.
  - There is no visible damage to the safety seat.

continued on next slide

Pediatric Trauma

- If a child must be removed from a car seat, it must be done in a coordinated manner, maintaining in-line stabilization of the spine.
- Do not force a cervical collar that is too large to fit; improvise cervical stabilization, if necessary.

continued on next slide

Pediatric Trauma

- Safe transport of children in ambulances
  - Do tightly secure all monitoring devices and equipment.
  - Do ensure that available restraint systems are used by EMTs and other occupants, including the patient.

continued on next slide

Pediatric Trauma

- Safe transport of children in ambulances
  - Do transport children who are not patients properly restrained in an alternate passenger vehicle whenever possible.

continued on next slide

Pediatric Trauma

- Safe transport of children in ambulances
  - Do not leave monitoring devices and other equipment unsecured in moving EMS vehicles.
  - Do not allow parents, caregivers, EMTs or other passengers to be unrestrained during transport.

continued on next slide

Pediatric Trauma

- Safe transport of children in ambulances
  - Do not have the child/infant held in the parent's, caregiver's, or EMT's arms or lap during transport.
  - Do not allow emergency vehicles to be operated by persons who have not completed an approved emergency driving course.

continued on next slide

Pediatric Trauma

- The NHTSA 2012 recommendations for safe transport are divided into five different situations.
- Ideal recommendations are provided; if they are not achievable, other practical recommendations are provided.

continued on next slide

Pediatric Trauma

- Uninjured child or child who is not ill at the scene of a child who is injured or ill
  - Ideal recommendation:
    - Transport in a vehicle other than the ambulance in an approved child restraint system.

continued on next slide

Pediatric Trauma

- An ill or injured child who does not require continuous or intensive monitoring or intervention
  - Ideal recommendation:
    - Transport the child in a size-appropriate approved child restraint system secured appropriately on the cot.

continued on next slide

Pediatric Trauma

- An ill or injured child who requires continuous or intensive monitoring or intervention
  - Ideal recommendation:
    - Transport the child in a size-appropriate approved child restraint system secured appropriately on the cot.

continued on next slide

Pediatric Trauma

- A child whose condition requires spinal immobilization
  - Ideal recommendation:
    - Secure the child to a size-appropriate spine board and secure the spine board to the cot, head-first, with a tether at the foot.

continued on next slide

Pediatric Trauma

- A child or children requiring transport as part of a multiple-patient transport
  - Ideal recommendation:
    - If possible, transport each as a single patient.

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While maintaining manual in-line stabilization, attach the three-point safety harness and adjust it for proper length.

continued on next slide

Secure the three body straps across the patient at the chest, waist, and above the knees.

continued on next slide

Secure the arms and legs, using the extremity straps. Place straps across the forehead and chin to securely affix the patient's head to the pediatric sleeve.

continued on next slide

Pediatric Trauma

- Injury prevention
  - Preventable childhood injuries account for 44% of deaths between the ages of 1 and 19 years.
  - Injury prevention must be of paramount concern to EMS providers.

Child Abuse and Neglect

- Physical abuse takes place when improper or excessive action is taken so as to injure or cause harm.
- Sexual abuse indicates the involvement of a child in sexual activities for the gratification of an older or more powerful person.

continued on next slide

Child Abuse and Neglect

- Neglect is the provision of inadequate attention or respect to someone who has a claim to that attention.
- Emotional abuse takes place when one person shames, ridicules, embarrasses, or insults another to damage the child victim's self-esteem.

continued on next slide

Child Abuse and Neglect

- The adult who abuses a child often behaves in an evasive manner and may show outright hostility toward the child.
- An abused child usually shows fear and reluctance when asked to describe how the injury occurred.

continued on next slide

Child Abuse and Neglect

- General indications of abuse and neglect
  - Multiple abrasions, lacerations, incisions, bruises, or broken bones
  - Multiple injuries or bruises in various stages of healing
  - Injuries on multiple planes of the body
  - Unusual wounds and pattern injuries
  - A fearful child

continued on next slide

Child Abuse and Neglect

- General indications of abuse and neglect
  - Injuries to non-bumper areas such as the genitals, abdomen, back, buttocks, ears, neck
  - Injuries to the brain or spinal cord that occur when the infant or child is violently shaken

continued on next slide

Child Abuse and Neglect

- General indications of abuse and neglect
  - Injuries that do not match the mechanism of injury described
  - Lack of adult supervision
  - Untreated chronic illnesses

continued on next slide

Child Abuse and Neglect

- General indications of abuse and neglect
  - Malnourishment and unsafe living environment
  - Delay in reporting injuries
  - Implausible explanations based on the child's developmental level

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Bruise on a child's thigh. (© Janet M. Gorsuch, RN, MS, CRNP. Courtesy of Akron Children's Hospital)

continued on next slide

Bruises on buttocks of a preschool child.
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continued on next slide

Marks from a switch on the thigh of a school-age child.
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continued on next slide

A loop mark on a school-age child from being whipped with an electric cord.
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Child Abuse and Neglect

- Emergency medical care
  - Involve law enforcement if the scene is dangerous or you cannot gain access.
  - Do not ask the child what happened while he is in the crisis environment.
  - Perform a head-to-toe exam.
  - Make observations as if the scene is a crime scene.

continued on next slide

Child Abuse and Neglect

- Emergency medical care
  - Take the child to the hospital.
  - Do not question the caregivers about abuse or make accusations.
  - Do not allow the child to be alone with the suspected abuser.
  - EMTs are mandatory reporters of abuse.

continued on next slide

Child Abuse and Neglect

- Emergency medical care
  - Document objectively.
  - Record details.
  - Keep information confidential.

Special Care Considerations

- Emergency Medical Services for Children (EMSC) is designed to ensure that all children have access to appropriate emergency care.
- Established in 1984, and has provided grant funding to all states.

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Special Care Considerations

- Family-centered care
  - Advocates open communication with family members throughout the assessment and management of the child
  - EMS providers must be able to anticipate the physiological and emotional needs of the child.

continued on next slide

Special Care Considerations

- Taking care of yourself
  - Caring for infants and children can be stressful because of lack of experience in treating them, fear of failure, or identifying patients with your own children.

continued on next slide

Special Care Considerations

- To reduce stress:
  - Realize that much of what you know about adults applies to children, with variations in techniques.
  - Practice skills.
  - Focus on the task at hand.

Case Study Conclusion

Ben takes immediate in-line stabilization of the patient's spine, reassuring her as he does so. Deb checks a radial pulse, noting that the patient's skin is cool and her radial pulse is rapid and weak, at a rate of 116.

Deb places an oxygen mask on the patient, then completes a rapid secondary assessment. In addition to the suspected fractured femur, she also suspects an abdominal injury.

continued on next slide

Case Study Conclusion

The EMTs immobilize the patient on a long backboard, and begin transport to the emergency department.

Deb takes special care to keep the patient warm and reassesses vital signs every 5 minutes.

Lesson Summary

- Respiratory problems are a common cause of medical emergencies in pediatric patients.
- SIDS is the sudden, unexpected death of an infant in which an autopsy fails to identify the cause of death.

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Lesson Summary

- Pediatric anatomy causes some differences in patterns of traumatic injury.
- Certain injury patterns and behaviors by a child or caregiver should alert you to the possibility of abuse or neglect.