

CEPCP

Professional Development: **Pediatrics** Module 1

## Acknowledgments

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## **COURSE OBJECTIVES AND LEARNING OUTCOMES**

On completion of this continuing medical education module, the participant should be able to:

- Identify characteristics of pediatric patients seen in prehospital emergency settings
  - Describe how pediatric developmental stages affect a child's reaction to illness, injury and pain
  - Provide examples of specific emergency care interventions for a pediatric patient based on various developmental stages
  - Describe general approaches to interviewing, history taking and assessing pediatric patients at various developmental stages
  - Describe general approaches to assessing and managing:
    - A stable child
    - A sick child
    - A child with special needs
  - Describe general approaches to managing pediatric patients and their families
  - Provide examples for preparing a child and their families for emergency treatments and procedures
  - Provide examples of age-appropriate distraction and coping techniques for pediatric patients at various developmental stages
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## THE PEDIATRIC PATIENT

Emergencies involving children account for a very small percentage of ambulance calls and provide very limited opportunities for prehospital personnel to develop and practice their skills in pediatric care. As a result, paramedics typically experience a greater level of stress and anxiety when responding to a pediatric call than with the “usual” adult call.

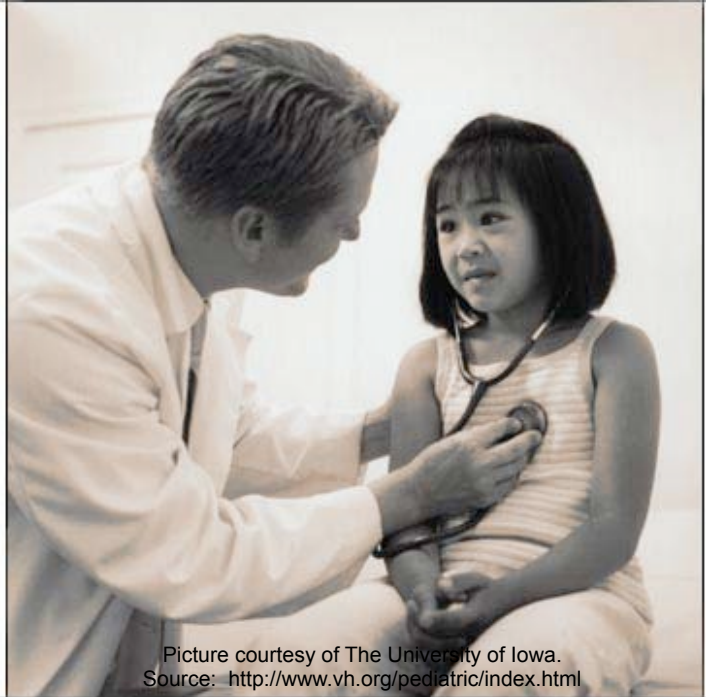
Paramedic programs have very short training periods allotted to pediatric emergency care and, coupled with limited exposure in clinical settings, this truly emphasizes the need for continuous and recurrent education in order to build a solid knowledge base and good technical skills.

For some paramedics, pediatrics may seem difficult, demanding and sad, as emergencies involving children often deal with serious illness, injury or death. In addition, it becomes tremendously frustrating when we feel powerless in managing pain and suffering in a small child; let alone dealing with parents that may be overwhelmed with fear, anxiety and grief.

Pediatrics is special and it is unique. It is the science of growth and development and demands a deep appreciation of the unique nature of childhood and adolescence, as well as the inherent impact that disease and injury can have on children at various developmental stages, both physically and psychologically. Successfully treating pediatric patients is also dependant upon a commitment to families. A child's health and well-being has many facets that remain dynamic and that impact on many people.

As paramedics, we should be amazed and humbled by children's incredible resiliency and ability to overcome trauma, life-threatening

disabilities and diseases. We've all heard the saying, *“Children are not small adults”*. Based on a child's physical immaturity and their developing psychosocial and communication skills, it becomes increasingly important to have a winning approach that will facilitate the assessment in order to provide vital information



Picture courtesy of The University of Iowa.  
Source: <http://www.vh.org/pediatric/index.html>

that will determine the most appropriate management in an emergency situation.

In the first of a series of two modules, this CME will target prehospital pediatric assessment. We will examine the variances in children at various stages of development and we will provide assessment skills that will address the unique aspects and needs of these different children.

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## EPIDEMIOLOGY OF PEDIATRIC EMERGENCIES

As many paramedics will attest, their time spent on the study of pediatrics has been far from optimal. It wasn't until the mid-1970s that the specialized prehospital and hospital-based emergency care needs of children began to be addressed in the health care system. The unique attributes of children began to take on additional importance with the realization that pediatric growth and development variables had a significant impact on how a child would present both in states of illness and injury. Since then, the characteristics of pediatric patients and the study of their unique illness and injury patterns are gradually being established. However, as a result of these initial inequities, the exact epidemiology<sup>1</sup> of pediatric emergencies has been hard to determine. A number of factors have also emerged which have had an impact on how pediatric patients use Emergency Medical Services and hospital emergency departments.

- Not all communities have pediatric hospitals or pediatric specialty services and as a result, these children may have to be transferred to a tertiary care pediatric facility.
- Children with chronic illnesses are now living longer than previously and into adulthood as a direct result of technological advancements. Consequently, these children are more susceptible to developing emergency conditions such as respiratory failure and sepsis. Paramedics caring for these children may feel challenged by the child's dependence on medical technology such as home oxygen, home ventilators,

artificial airways and long-term central venous access devices.

- Violence against children occurs both in the family and the community. These injuries have a significant impact on pediatric morbidity and mortality.
- Worldwide there still remains a significant percentage of young children who are not fully immunized. These children are at risk of contracting serious communicable diseases that can develop serious complications; examples include rubella, measles, and pertussis.
- Fewer than 10% of EMS calls<sup>2</sup> are for pediatric patients. One reason for this is that some parents would rather transport their seriously ill or injured child by private vehicle rather than wait for an ambulance to respond. Consequently, some very ill pediatric patients may present to the emergency department (ER) without the benefit of prehospital care.

### Pediatric Illness

The presentation of pediatric illnesses varies significantly according to the age, season, and time of day. Patients requesting EMS or presenting to the ER tend to be higher during evening hours and in the winter months<sup>3</sup>. Wheezing-related illnesses, respiratory distress, fever, abdominal pain, gastroenteritis, vomiting, diarrhea, and seizures tend to be the most common complaints when emergency care is summoned. A small percentage of children requiring emergency care have a life-threatening condition, and of those

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<sup>1</sup> The study of the causes, distribution, and control of diseases and injuries in populations.

<sup>2</sup> Emergency Nurses Pediatric Course Provider Manual, pages 11 - 13 (Epidemiology)

<sup>3</sup> Hospital for Sick Children – Toronto, ER Peak Utilization Report

children, most are younger than 6 years of age and have a corresponding respiratory or CNS component<sup>4</sup>.

The following, either alone or in combination, are among the typical characteristics of life-threatening illness in children. The illness may:

- Involve initial subtle signs of illness that progress to a condition that requires emergency intervention
- Have relatively rapid onset with precipitous deterioration
- Frequently involve the respiratory system or CNS
- Require rapid intervention

- Suffocation and choking
- Penetrating trauma (rare)
- Child maltreatment

Similar to adult trauma, boys tend to have a higher rate of injury-related emergencies than girls. The prevalence of specific injuries varies among age groups. Variations in injury patterns result from differences in cognitive, perceptual, motor, and language abilities among the different age groups and levels of development.

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## Pediatric Trauma

Trauma has a greater impact on pediatric morbidity and mortality than any disease. Injuries account for over 40% of hospital visits by children, and treatment for these injuries is the leading cause of hospitalization in children under 14 years of age.

The most prevalent pediatric injuries include minor trauma, such as sprains, lacerations, contusions, fractures and mild head injury. However, children are also at risk for disabling and life-threatening injuries. Causes of pediatric trauma include:

- Falls are a leading cause of unintentional injury in children under 10 years of age
- Motor vehicle crashes
- Bicycle crashes and collisions
- Drowning
- Thermal mechanisms (fire, flames and scalds have a significant impact on pediatric morbidity and mortality)
- Poisonings
- Sports and recreational activities (including risk-taking behavior)

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<sup>4</sup> Emergency Nurses Pediatric Course Provider Manual, pages 12 - 13 (Epidemiology)

## DEVELOPMENTAL PHYSIOLOGY AND AGE-SPECIFIC ASSESSMENT APPROACHES

The following provides a brief overview of normal physiological and psychological milestones at various stages in a child's development as well as the appropriate approach for these stages.

### The Neonate

(Birth to 28 days)

- The neonate is totally dependant on caregivers to meet his/her needs.
- Neonates spend most of their time sleeping or eating (due to high metabolic demands of growth and development).
- They respond to surroundings by reflex action.
- By 29 weeks of gestation they have well-developed pain sensory pathways (cortical and sub-cortical centers which are involved in the perception of pain) as are the neurological systems for the transmission and modulation of pain sensation.
- Infants begin the process of learning through exploration, and do so by sucking, chewing and biting.
- Weight loss is common immediately after birth (5 to 10 % of birth weight may be lost in the first few days of life). Birth weight is regained by the first week.
- At this stage, the infant does not experience stranger or separation anxiety.
- Younger neonates are easily consoled with a pacifier and older neonates are easily distracted by light or repetitive noise.



[news.bbc.co.uk/](http://news.bbc.co.uk/)



University of South Alabama,

### ***Approach to Assessing and Managing the Neonate***

Neonates are relatively easy to assess, since they can be approached without concern that an examiner's presence will upset the child.

- The exam can be done in a parent's arms or on a table since there is no separation anxiety.
- The assessment can be done in a "head-to-toe" or "toe-to-head" manner.
- Try to approach the child slowly, gently and calmly while avoiding loud voices or noises that may startle and frighten the child. This will lead to crying which will make the assessment difficult.
- Vary the sequence of assessments according to the child's activity level. When the infant is quiet and calm, auscultate the lungs and obtain the respiratory rate as well as an apical heart rate.
- Neonates, unlike older children, are unable to anticipate pain but will react during a painful procedure.
- Complete the most distressing components of the examination last (e.g., if the neonate is quiet, auscultate last). When assessing a neonate, try to warm your hands and stethoscope to decrease the stress.

## The Infant

(1 Month to 12 Months of Age)

This is a stage of rapid physical and psychosocial growth and development. Infants understand and experience the world through their bodies and are comforted by being held, cuddled, rocked, or by familiar touches and smells.

- Common fears (especially in older infants) include a fear of separation. Younger infants will demonstrate stranger anxiety; older ones will display separation anxiety.
- An infant's bond with parents will be strong and the child will often cry when separated from the parent.
- Childhood illnesses usually develop during this stage and include febrile seizures, vomiting, dehydration, diarrhea, croup and bronchiolitis.
- Despite the appearance of alertness and understanding, the infant has no capacity for rational understanding of events.
- Older infants will mirror behavior they see around them. If the caregiver is hysterical, the child may act the same way.



Mayo Foundation for Medical Education and Research

### ***Approach to Assessing and Managing the Infant***

The infant can be more difficult to assess than the neonate. Infants and young children are more comfortable and feel secure sitting on the parent's lap.

- It is better to start with the “across the room” assessment and obtain the history from a distance, before starting a physical exam so that child does not perceive your presence as an immediate threat.
- Stay low and at eye level with the child, and talk in a calm and reassuring manner.
- It may be easier to assess the child while he/she is being held by the caregiver to decrease the potential for separation anxiety.
- The caregiver can hold the infant in their lap facing away from you, if possible, during the assessment. As the infant becomes more trusting, he/she can face you and “help” during the assessment.
- Assessment should proceed “toe-to-head”.
- Vary the sequence of assessments with the infant's activity level. When the infant is quiet and calm, auscultate the lungs and obtain the respiratory rate as well as an apical heart rate.
- Complete the most distressing components of the examination last. When assessing the infant, using warm hands and a warm stethoscope will be less distressing.
- Avoid placing IV lines into the infant's favoured extremity since this will add to the stress if the infant will not be able to suck their fingers, hands or thumbs.



## The Toddler

(1 Year to 2 Years of Age)

- At this stage, the child begins to walk and coordinate gross motor function.
- The child grasps objects and brings them to their mouth to determine shape and texture.
- The child continues to develop fine and gross motor skills and is very curious. The development of these motor skills is not consistent with an understanding of dangers. This correlates with a higher number of traumatic injuries in this age group compared to other age groups.
- Language skills also begin to develop, toddlers may not speak very well but it is believed that they understand more than they can say.
- This stage (terrible twos: from 12 months to three years) is also consistent with the child's negativism and insistence on expressing their need for autonomy and doing things without help.
- Most toddlers resist logic and are difficult to reason with.
- The bonds with the parents are still very strong and the parents have the greatest success with comforting the toddler when he/she is hurt or frightened.
- The toddler is very mobile and opinionated, and may be terrified of strangers.
- Older toddlers may remember earlier experiences with doctors or nurses and be very fearful about being examined.



Texas A&M University Health Science Center

### ***Approach to Assessing and Managing the Toddler***

- Approach the toddler gradually while avoiding physical contact until absolutely necessary, or until the child is comfortable and trusting of the healthcare provider.
- Stay low and at eye level with the child. Talk in a calm and reassuring manner.
- Incorporate play while assessing the child, e.g., "Show me your belly button", "Did I hear you swallowed a teddy bear?" "Will you let me listen so I can hear that teddy bear in your tummy?"
- Encourage the caregiver to hold the child against them during the posterior chest assessment then have the child turn for the front. Alternatively, you can ask the caregiver to hold the stethoscope on the child while you listen. (You may need to secure the caregiver's hand to avoid distortion.)
- Always provide the child with one or two choices (not several). "Would you like me to listen to your tummy (chest) or your back first?" This provides the child with some sense of control.
- Always tell the child when the assessment is complete and praise them for being good.

## The Preschooler

(3 to 5 Years of Age)

- Gross motor, fine motor and language skills improve markedly.
- Preschoolers are filled with fantasies and ideologies. They often confuse coincidence with causation and may have difficulty distinguishing fantasy from reality.
- Many will have misconceptions about illness, injury and body functions. For example, they may explain to you that the food they eat “goes right to my belly button”.
- These preschoolers do not have a good sense of time and space.
- Preschoolers during this stage begin to fantasize, and may develop fears for no explainable reason.
- They often have imaginary playmates they confide in and “grow” with.
- Common fears for this age group include body mutilation, loss of control, death, darkness, and being left alone.



### ***Approach to Assessing and Managing the Preschooler***

- Use simple terms to explain procedures and choose words carefully, using language that is appropriate for their age. Be careful to assess the child’s understanding of “adult” terms and correct ideas that may be unclear.
- Use games or distraction when necessary. This includes singing a favourite “Sesame Street” song, getting the child to describe their favourite toy, or their favourite game.
- If possible, ask the preschoolers if they would like to be on a caregiver’s lap for the assessment.
- Enlist the preschoolers “help” and allow him/her to handle equipment.
- Set limits on behavior and ALWAYS praise good behavior.
- Use dressings or bandages freely as this will promote the preschooler’s feelings of body integrity.

## The School-Aged Child

(6 to 12 Years of Age)

- These children are very talkative and analytical.
- Their concept of time and space has improved.
- They are able to understand the concept of cause and effect. (If I run out into the street, I can get hit by a car and get killed.)
- By nine years of age, they are usually able to understand simple explanations about their bodies and generally like to be involved in their own care; however, not all ideas about their bodies are correct.
- This child may not always understand what it means to have a particular illness or injury.
- Common fears include separation from parents and friends, loss of control, pain, and physical disability.
- Older school-aged children are often afraid to talk about their feelings and usually hide their thoughts and may not be able to put their feelings and thoughts into words.



### ***Approach to Assessing and Managing the School-Aged Child***

- As often as possible, provide the child with the option of having a parent present during the assessment.
- Speak directly to the child and include the caregiver.
- The child should be able to tolerate a head-to-toe assessment and will likely provide good answers to simple history questions.
- The examiner should always remain calm and provide simple explanations throughout the entire process.
- Be honest. Explain procedures and describe how the child can assist with their assessment and care.
- ALWAYS provide privacy and before uncovering any area, tell the child what needs to be assessed and why.

## The Early and Middle Adolescent

(11 to 18 Years of Age)

- Adolescents are acutely aware of their bodies, their appearance and of how they are perceived. Anything that differentiates them from their peers can be perceived as a tragedy.
- Psychosomatic complaints are common.
- They have a deep desire for independence from their families, which can lead to periods of dissension.
- Peers are vital for psychological support and social development. Sexual interests are common.
- Adolescents may display a great variability in their reactions to trauma and illness. They may respond by being calm, mature and helpful or can become hysterical and uncooperative.
- This child may be overly modest or may be provocative.
- The adolescent may provide reliable information or intentionally withhold it. In some cases, he/she may even provide false information for fear of retribution or adverse health outcomes.
- Adolescents often take part in risk-taking behaviors and feel that they are “invincible”.
- Some may fear permanent injury, disfigurement, or “being different” as a result of the illness or injury. They may overreact to injuries that change their appearance, no matter how trivial.



### ***Approach to Assessing and Managing Early and Middle Adolescent***

- Always begin by introducing yourself to the patient and family. Approach adolescents with respect as you would approach an adult.
- Where possible, sit in front of the patient to obtain the history while avoiding interruptions.
- Be honest and non-judgmental. Do not be condescending and avoid using medical terminology without providing appropriate explanations.
- Encourage the adolescent to ask questions and to participate in his or her own care.
- Address the adolescent's concerns as well as the concerns of the parent(s).
- Be especially cautious to ALWAYS provide privacy and, before uncovering any area, inform the adolescent what needs to be assessed and why.
- When appropriate, interview the patient with the parents out of the room, especially if the patient seems hesitant to reveal complete details because of the presence of the parents.
- In the case of a female adolescent, it is a good idea to have one of the parents present when you perform a physical exam.
- Respect confidentiality and privacy.
- Provide reassurance, when appropriate, regarding injuries affecting appearance or function.



## APPROACHES TO ASSESSING AND MANAGING THE STABLE AND UNSTABLE CHILD

### General Approach to the Stable Child



Baltimore County Public Library, [www.bcplonline.org](http://www.bcplonline.org)

Assessments and interventions must be tailored to each child in terms of age, size, development and metabolic status.

- Begin by addressing the child by his or her name and address the parents by Mr. or Mrs.
- When speaking to the child, refer to the parents as either Mom or Dad.
- Always be cordial and compassionate, and smile if appropriate to the situation.
- Providing privacy is essential to a successful assessment outcome.
- Use a kind, but firm and direct approach and always provide demonstrations.
- ALWAYS be honest with the child and explain what you are going to do BEFORE YOU DO IT.
- Keep your voice at an even and quiet tone. Don't raise your voice or yell.
- Speak slowly; use simple age-appropriate terms.
- Use toys or a penlight as distracters; make a game of assessment.

- Keep children with their caregiver(s); encourage assessment while the caregiver is holding the child. Whenever appropriate, transport the child and caregiver together.
- Kneel down to the level of the child when possible.
- Be cautious in the use of touch. In the stable child, make as many observations as possible before touching (and potentially upsetting) the child or before beginning a painful procedure.
- ALWAYS acknowledge positive behavior and give praise to the child after procedures. Rewards such as stickers or handshakes can be appropriate and are often helpful.

### General Approach to the Sick Child

The approach to assessing and managing a very sick child varies greatly from the child who is not in need of emergency care.

***RULE # 1 WITH A SICK  
CHILD:***

***DON'T STAY AND PLAY,  
LOAD AND GO!  
TREAT IN TRANSIT***

## Identifying High Priority Patients

Examples include but may not be limited to the following:

- Children with a poor general impression who look ill or are severely injured.
- Children with an immediate life-threatening condition where the ABCs have not been successfully reversed or definitively altered during resuscitative efforts.
- Children who had airway / ventilatory impairment, are now intubated or who may require ventilatory assistance with a BVM.



AHA, Pediatric Advanced Life Support

- Children who were hemodynamically unstable and have received temporizing measures (e.g., pleural decompression for tension pneumothorax).
- Children who appear to have a high probability of deteriorating at any time.
- Poisoning or overdose of an unknown substance or a known caustic substance.
- Children with an altered mental status of unknown origin and who do not respond to naloxone or glucose.

## Transport Decisions

The assessment process should not continue until all life-threatening conditions have

received initial interventions to the extent possible in the field. If a patient has an uncorrectable respiratory compromise or signs of shock, *begin transport immediately*. Scene time for severely ill or injured children should be kept to an absolute minimum.

The following presentations are considered to warrant *immediate* transport regardless of the appearance of the child:

- A child with a decreased level of awareness or responsiveness to a stimuli
- Fever in child < 3 months of age including all septic-looking children
- Ingestion of toxic substances or materials
- History of alterations of or loss of consciousness including seizures
- History of high impact trauma including a fall greater than the height of the child
- Potential anaphylaxis
- Evidence of maltreatment of the child or sexual assault



## General Approach to the Child with Special Needs

The term “special needs” is commonly used but poorly understood. It is often defined as any type of condition with the potential to interfere with normal growth and development. Special needs children include those with physical disabilities, developmental or learning disabilities, technological dependencies, and chronic illnesses. As noted earlier, children who are technologically dependant may have a wide range of supports including home ventilators, a tracheostomy, gastric tubes, apnea monitors, and continuous parenteral or enteral nutrition.

Children with chronic illnesses include those with digestive allergies, diabetes, traumatic brain injury, epilepsy, and cerebral palsy among others. The most common emergency encountered with these patients is respiratory-related and so familiarity with respiratory emergency interventions/adjuncts/treatment is appropriate. Special needs children may require hospitalization and may depend on EMS for transfer to a specialized health care facility. When caring for these children, use age appropriate guidelines.

Regardless of the underlying condition, assess the child in a systematic and thorough manner. Use the parents or caregivers as medical resources when suitable. Be prepared for differences in airway anatomy, physical development, cognitive development and possibly existing surgical alterations or mechanical adjuncts. Communicate with the child in an appropriate manner for their developmental stage and maintain communication with the parents.



- Try to get an understanding of the child's baseline in order to assist in determining the significance of altered physical findings.
- Parents and or caregivers are the best source of information for:
  - Medication,
  - Baseline vitals
  - Functional level (normal reasoning and thinking)
  - Likely medical complications
  - Equipment operation and troubleshooting
  - Emergency procedures specific to that child

## UNDERSTANDING PAIN AND DISTRESS RESPONSES IN CHILDREN

In many cases when a child is ill or injured, specific responses occur when that child experiences pain. Pain is described as an unpleasant sensory and emotional experience that is associated with actual or potential tissue damage, whether external or internal. Children often describe pain in the following manner: "owed", "oher", "boo", or simply by crying or screaming! Pain in children is manifested differently depending on the child's age. Below is a synopsis of signs of pain in children at different ages.

### ***Physiologic Signs of Pain in the Neonate and Infant***

A neonate will express pain by a variety of presentations. These include:

- Changes in facial expression
- Changes in pitch, frequency and duration of a cry
- Changes in body movements and color

#### **Facial Expression Indicating Signs of Pain in the Neonate and Infant** *(Most reliable sign)*

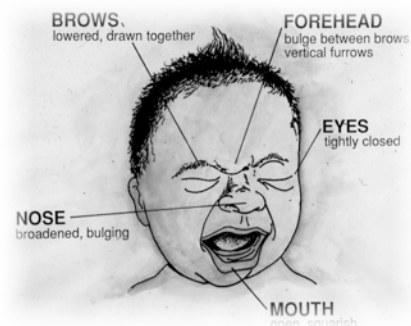
- Eyes tightly closed or opened
- Mouth opened, squarish-shaped mouth
- Furrowing or bulging of brow
- Quivering of chin
- Deepened nasolabial fold

#### **Vocalizations of Pain in the Neonate and Infant**

- Crying (often with apneic spells)
- Whimpering, groaning, moaning

#### **Body Movements with Signs of Pain in the Neonate and Infant**

- Agitation
- Listlessness
- Changes in sleep/wake cycles
- Changes in activity level
- Limb withdrawal, swiping, or thrashing
- Rigidity or flaccidity
- Clenching of fists



Physiologically, these signs are manifested in the following manner:

- Changes in heart rate, respiratory rate, and blood pressure
- Shallow respirations
- ↓ vagal nerve tone (shrill cry)
- ↓ Pallor or flushing
- Diaphoresis, palmar sweating
- ↓ O<sub>2</sub> saturation
- ECG changes



CATEGORIES	0	1	2
<b>Face</b>	No particular expression or smile	Occasional grimace or frown, withdrawn, disinterested	Frequently to constantly quivering chin, clenched jaw
<b>Legs</b>	Normal position or relaxed	Uneasy, restless or tense	Kicking or legs drawn up
<b>Activity</b>	Lying quietly, normal position, moves easily	Squirming, shifting back and forth, tense	Arched, rigid or jerking
<b>Cry</b>	No cry (awake and alert or asleep)	Moans or whimpers, occasional complaints	Crying steadily, screams or sobs, frequent complaints
<b>Consolability</b>	Content and relaxed	Reassured by occasional touching, hugging or being talked to, can be distracted	Difficult to console and comfort
<i>Each of the 5 categories is scored from 0 - 2, which results in a total score between 0 and 10. (Always consider situational effects)</i>			

### ***Physiologic Signs of Pain in the Toddler, the Older Child and the Adolescent***

The toddler will typically present with changes in activity. He or she may become quieter, less active, and verbalize pain non-specifically, while being more moody. The child may refuse to do normally enjoyable activities and the older child may verbalize specifics about pain or may refuse to do so altogether. Older children and adolescents also need observation as they have non-verbal signs similar to younger kids. In general, the following are physiological manifestations of pain:

- Tachycardia
- Tachypnea
- Increased blood pressure

The preceding manifestations are caused by:

- Increased release of catecholamines
- Increased release of glucagon
- Increased release of corticosteroids

### Physiological Indications of Acute Pain in Children

- Dilated pupils
- Increased perspiration
- Increased rate/ force of heart rate
- Increased rate/depth of respirations
- Increased blood pressure

There may be a recent history depicting:

- Decreased urine output
- Decreased peristalsis of GI tract
- Increased basal metabolic rate

### Specific Behaviors that Indicate Local Body Pain

- Pulling ears
- Rolling head from side to side
- Lying on side with legs flexed on abdomen
- Limping

Refusing to move a body part

### Verbal Indications of Pain

- Much less common in children than in adults
- May not understand terms such as “pain”
- May speak globally, such as “I don’t feel good”

May deny pain for fear of injection

May cry, scream, groan, or moan

May use a variety of words to describe pain such as “owee”, “boo-boo”, “ouch”, “hurt”, etc.

### ***How to Have the Child Locate Pain***

- Marking body parts on a human figure drawing
- Point to area with one finger on self, doll, stuffed animal”

Point to “where mommy or daddy would put a bandage”

### **Pain Assessment and Scoring Preschooler to School Age Child (Wong-Baker Scale)**

*(Always consider situational effects including fear of the examiner, fear of treatment or procedures, or fear of current emergency situation; for example, an MVC)*



## GENERAL APPROACH TO PEDIATRIC PATIENTS AND THEIR FAMILIES

The approach to pediatric patients also includes a consideration of the family. Unexpected health-related emergencies in children can often have a profound impact on both the child and the family, and these events can be extremely stressful for all concerned. The paramedic's approach should employ simple techniques that are directed toward decreasing the anxiety of both parent and child while fostering a non-threatening environment for open communication.

### Cultural Diversity and Traditions

We should also recognize that in today's culturally diverse society, family structures vary and may influence or bias our approach. Consequently, this can lay the foundation for a wide range of assumptions and beliefs that may not be as suitable in addressing the particular needs or health concerns of the child as it relates to different cultural traditions and values. Therefore, the process of performing an effective assessment requires some basic knowledge of various cultural beliefs and origins.

#### ***Communication***

During the initial stages of the interaction with the patient and family, the paramedic must make an early assessment of their ability to understand what is being communicated. One should adopt a body language that demonstrates acceptance and respect. It will often be important to communicate in very simple terms with some degree of animation<sup>5</sup> in order to ensure that the proper message is received.

#### ***Diversity***

Patients from different cultural backgrounds may respond differently to illness and injury.

Consequently, how they describe their symptoms may necessitate a more selective approach by the paramedic.

#### ***Assumptions***

We can often assume things about a patient, their family, their friends and their environment, but these assumptions are often based on our own limited experiences, bias, or generalizations. The practitioner's approach should be with an open mind despite the many distractions and potential biases that can exist.

#### ***Beliefs and Behaviors***

We must approach different cultures and beliefs with an open mind and treat all patients with respect and dignity, regardless of their ethnicity.

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<sup>5</sup> Gestures or descriptions to explain a procedure or to elicit a more defined response

## **Family Presence During Assessment and Management of the Pediatric Patient**

Family members should be able to provide support and comfort to their child during emergency assessments and interventions. In pediatrics, the focus has shifted to “family-centered care” and the inclusion of family members during emergency procedures ultimately promotes a collaborative relationship between all participants involved in the emergency.

Depending on the procedure, one or both parents or a caregiver should be given the option to remain present. If a parent or caregiver chooses to stay during a procedure, the paramedic should provide clear explanations of what the procedure involves and what the expected responses can be. Preparation should include strategies to facilitate the child's coping mechanisms. Encourage the parent or caregiver to provide emotional support to the child and to provide assistance to the health care team if required.

## **Preparing the Child and the Family for Treatments and Procedures**

Proper preparation for a procedure reduces a child's anxiety about the situation, encourages cooperation, and helps to develop coping skills. Preparation will be effective in reducing distress in children who undergo an emergency procedure and can also minimize the amount of crying and resistance during the procedure. Research shows that lowering anxiety levels can actually decrease the sensation of pain felt during uncomfortable procedures. Before a potentially painful procedure, it is important to know that

the child will likely cry and that the preparation may not change the fact that the child will feel some discomfort or pain.

Nevertheless, you should try demonstrating what will happen during the procedure in advance to reduce the child's particular fears and concerns. If time permits, a good method of doing this is to use a doll or other object to “act out” some of the procedure which may help to reveal worries that the child may not be willing to discuss openly. This may also help to reduce anxiety since the child (like most adults) will be more frightened of the unknown than if they know exactly what to expect. Conversely, if a child's fears are unrealistic, you can explain what will actually happen.

If, on the other hand, the child is worried about something that is an unavoidable part of the procedure, do not minimize his or her concerns but rather take time to reassure the child that you and “Mommy or Daddy” will be there to help as much as possible.

Make sure the alert child clearly understands that the procedure is not a punishment but something that needs to be done to help them. Let the child know that it will “hurt for a little while but we are going to make it better”. The most important way you can help the child is through this kind of preparation and also by ensuring there is a familiar caregiver to provide support during the procedure.

## ***Prior to the Procedure***

Depending on the urgency of the treatment or procedure, it will be important to limit your explanations to brief and simple terms, because young children such as preschoolers have a limited attention span. Preparation should take place directly before the procedure so that the child doesn't worry about it for the whole duration of the transport. Here are some general guidelines for preparing a child for a procedure:

- Depending on the age of the child, introduce yourself and tell the child your name. Ask the child to call you by your name. This serves as a strong indicator that you are with them at their level and not above them in an authoritative position.
- Explain the procedure in language that the child will understand, use concrete terms, avoid abstract terminology and allow time for the child to respond to your explanations.
- To the best of your ability, describe how what you are about to do will feel.
  - For example, you can say, “Okay, Jennifer, Bob has to put this little straw<sup>6</sup> into your vein. Now the straw is very flimsy like a noodle, but to get it in, I am going to need something a bit stronger. That’s going to pinch for a little while and it might hurt a bit, but it won’t be for very long. And when we’re all done, I’ll leave the little straw in to give medication. After that, you can choose something from of our treasure chest.”
- Be honest with the child about the discomfort they may feel .
- ALWAYS give direct choices such as, “Should we put the “straw” IV in your left or right arm?” or “Which ear should I look at first for you?”
- Stress the benefits of the procedure and anything that the child may find pleasurable afterwards, such as feeling better or going home after everything is “fixed”.
- Make sure the child understands the exact body part to be involved and that the procedure will be limited to that area.
- If the procedure affects part of the body that serves a noticeable function (such as a leg or an arm), explain how the procedure will affect or not affect the function.
- While talking about the procedure with the child, avoid words that have more than one meaning. (You will likely want to avoid the term “needle” when you are referring to the blood pressure cuff gauge!)
- ALWAYS give the child permission to yell, cry, or otherwise express any pain verbally.
- If you think the child has not clearly understood something you are explaining, ask the child if they understand. Be certain that you define all new terms in simple language.
- Have the child practice deep breathing and other comforting activities. If possible, have the child hold the parent’s hand and tell him or her to squeeze it when they feel pain.

## ***During the Procedure***

If at all possible, try to extend the opportunity for a parent to be present during a procedure. The mere presence of a parent can truly help the child, especially if the procedure allows the parent to maintain physical contact. In some cases, however, the parents may not be prepared for the procedure, and they will also require an explanation. Moreover, some parents may feel too uncomfortable to witness a procedure and they will wish to abstain. Some may become ill or anxious and so they should be encouraged to step back while still remaining in the child's line

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<sup>6</sup> Telling the truth is extremely important. Depending on the age of the child, that explanation will usually elicit “the” question, “Is this a needle?” (although not in the younger ones). At that point, we explain that this is the only way to help make the “owie” or sickness go away. We *always* let them know before we “poke” that it will hurt, but to avoid a “big” hurt, we encourage being still, not pulling away and asking mom and dad to help by singing a song or using other age-appropriate distractions.

of Vision. In this case, it would be important for the child to have a favourite toy, doll or teddy to hold during the intervention.

- Ask for the parent whom the child will feel most comfortable with to be present during the procedure. All others should wait outside the area.
- Try to limit the number of strangers entering and leaving the area during the procedure, since this can raise anxiety.
- Analgesia can be used when appropriate in order to reduce the child's level of discomfort.

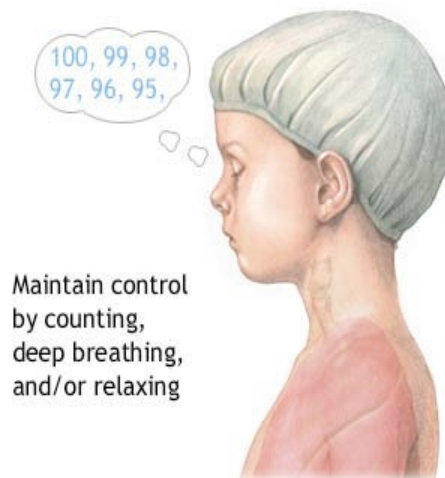
## AGE-APPROPRIATE DISTRACTION/COPING TECHNIQUES

### Non-pharmaceutical Intervention and Coping Techniques

The use of distractions is an excellent way of providing a coping tool and requires little patient or caregiver preparation. Distraction techniques should be age appropriate as well as developmentally appropriate. It is a good idea to ask the child or parent what activities or things the child likes to engage in to begin focusing on a more positive event. In addition, the parent or caregiver should be encouraged to participate actively in the process. "Coping or distraction" kits with a variety of items should be kept handy.

#### **General Distraction Tools**

- Using toys that will captivate the child's attention
- Asking the child to sing or count out loud slowly or to do so faster if needed
- Deep breathing with a focus on inhalation and exhalation
- "Blowing away" the pain (like blowing out candles or blowing bubbles)
- Imagery where the child is talked through a pleasant and enjoyable situation or activity



ADAM.

Research has shown that preparatory interventions are effective in reducing some signs of distress in children, such as crying or resisting the procedure. This led to other findings suggesting that with preparation children report less pain and exhibit less physiologic signs of distress.

## The Neonate/Infant

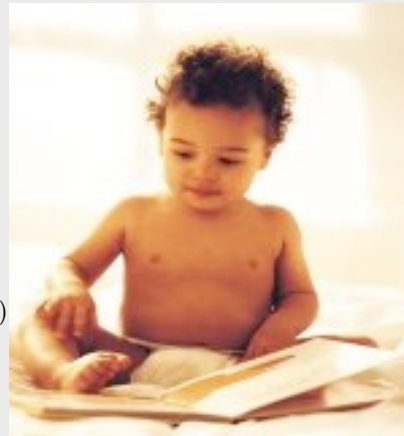
- Positioning
- Swaddling
- Rocking/cuddling
- Touch/massage
- Dim lighting
- Visual distraction
- Sucking
- Sucrose/water solution on pacifier



Photo courtesy of University of Utah Medical

## The Toddler

- Distraction devices (toys/music/videos)
- Security object (blanket/toy/stuffed animal)
- Pacifier
- Touch/massage
- Hugging/holding
- Imagery (imagining something fun and pleasant)
- Play
- Positioning
- Heat/cold application



<http://bestplace.org/images/Stock/>

## The Preschooler

- Distraction devices (toys, games, books, videos, stories)
- Guided imagery
- Massage
- Play therapy
- Hugging/holding
- Positioning
- Heat/cold application



<http://www.edutainingkids.com/articles/giftguidepreschoolers.jpg>

## The School-Aged Child

- Heat/cold application
- Touch/massage
- Play therapy
- Humour
- Distraction devices (music/videos/breathing techniques)
- Positioning
- Exercise
- Hugging/holding
- Imagery (imagining something fun and pleasant)<sup>7</sup>



<http://www.rvymca.org/graphics/>

## The Adolescent

- Imagery
- Heat/cold application
- Relaxation techniques
- Humour
- Breathing techniques
- Prayers
- Distraction (especially music/ videos)
- Positioning



<http://www.childrens-mercy.org/mso/images/upload2/>



## TAKE HOME POINTS

Paramedics should:

- Become knowledgeable about children
- Become knowledgeable about pediatric pain management and coping principles
- Always try to provide a calm environment
- Use appropriate assessment tools and techniques that are age-appropriate
- Anticipate painful experiences and prepare the child and caregiver
- Involve the family in creating solutions for their child's pain
- Place a strong emphasis on parent input. They know the child best and may be most helpful in assisting with the care of their child.



Paramedics may feel like they are taking care of two patients when a parent or guardian is present. Common responses of caregivers to a child's acute illness or injury include disbelief, guilt, and anger.

A child's general appearance can be one of the most important presenting features to consider when determining the need for treatment, the technique to employ, and the response to therapy. Children usually behave in a way consistent with how they truly feel.

A child's general appearance and initial presentation can be more important than the chief complaint; so always *look* at the child and *listen* to the parent.

## BIBLIOGRAPHY

1. American Heart Association. PALS Provider and Instructor Manuals. (Pediatric Advanced Life Support), 2001.
2. Behrman, R.E., R.M. Kliegman, et al. Nelson Textbook of Pediatrics. 14th ed. WB Saunders, 1992. 19-20.
3. Bledsoe, B.E., R.S. Porter and B.R. Shade. Paramedic Emergency Care. 3rd ed. Englewood Cliffs: Brady, 1997. 164-204.
4. Campbell, J.E. and W.A. Toy. "Assessment and Initial Management of the Trauma Patient." Basic Trauma Life Support. 3rd ed. Englewood Cliffs: Brady. 23-46.
5. Carle Foundation Hospital, Urbana, Illinois, and Illinois Emergency Medical Services for Children (EMSC). Pediatric Pain Management in the Emergency Department. Educational Module, 2002.
6. Caroline, N.L. Emergency Care in the Streets. 3rd ed. Boston: Little, Brown and Co., 1987. 39-55.
7. Dieckmann, R., eds. "Pediatric Education for Prehospital Professionals." American Academy of Pediatrics. Sudbury, MA: Jones & Bartlett, 2000. See "Pediatric Assessment," 30-56.
8. Eichelberger, Martin R., Jane W. Ball, Geraldine L. Pratsch, and John R. Clark. Pediatric Emergencies: A Manual for Prehospital Care Providers. 2nd ed. Upper Saddle River, NJ: Prentice Hall, 1998. See "General Pediatric Assessment," 25-46.
9. Emergency Medical Services for Children, National Task Force. "EMS for Children: Recommendations for Coordinating Care for Children with Special Health Care Needs." Annals of Emergency Medicine. 30:3. September 1997.
10. Emergency Medicine Clinics of North America, 7(3), 519-535.
11. Emergency Nurses Pediatric Course (ENPC) Provider Manual. 2nd ed. Park Ridge, Illinois, 1998.
12. Goldbloom, R.B. Pediatric Clinical Skills. New York: Churchill Livingstone Inc., 1992.
13. Henderson, D. P, and J. S. Seidel, eds. "Approach to the Pediatric Patient." Prehospital Care of Pediatric Emergencies, Sudbury, MA: Jones & Bartlett, 1997. 5-13.
14. Illinois Emergency Medical Services for Children (EMSC)
15. Lexi-Comp's Clinical Reference Library Quick Start Version 95.3. Lexi-comp Inc., 1995. 59.
16. Merkel, S.L., et al. "The FLACC: A Behavioral Scale for Scoring Post-operative Pain in Young Children". Pediatric Nursing 23 1997.
17. Nelson, Q.E., et al. Nelson Textbook of Pediatrics. 15th ed. WB Saunders, 1996. Chapter 11: 38-44.
18. Sanders, M.J., "General Patient Assessment." Mosby's Paramedic Textbook. St. Louis: Mosby Lifeline, 1994. 180-217.

19. Simon, Joseph, and A. T. Goldberg. Prehospital Pediatric Life Support. St. Louis, MO: Mosby, 1989. See "Pediatric Assessment," 1–13.
20. The University of Iowa, [http://www.vh.org/navigation/vch/topics/pediatric\\_provider\\_index.html](http://www.vh.org/navigation/vch/topics/pediatric_provider_index.html), Virtual Children's Hospital, <http://www.vh.org/pediatric/>.
21. U.S. DOT, (1994). EMT-Basic Transitional Program, Module 2, 3-11.