

Emergency First Responder

Paediatrics



Objectives

By the end of this session you should be able to:

- Manage a paediatric patient



Age Categories

- Infancy - birth to 1 year
- Toddler - 1 to 3 years
- Preschooler - 3 to 5 years
- School age - 6 to 12 years
- Adolescent (teenager) - 13 to 18 years



Anatomic and Physiologic Differences



- Recognition of anatomic and physiologic differences between adults and children is a critical component of trauma care
- Children may present with **subtle signs** or symptoms of serious injury



Anatomical Differences

- Head
 - Proportionately larger to body than an adults
- Airway & Respiratory system
 - Proportionately large tongue
 - Small airway
 - Trachea more flexible - avoid hyperextension
 - Infants are obligate nasal breathers
 - Immature respiratory muscles
 - Increased elasticity of the ribs



Anatomical Differences

- Surface area
 - Children have a greater surface area relative to their body mass compared to adults
- Abdominal muscles
 - Developing
- Small blood volume
 - Small volumes lost can be detrimental
- Shock
 - Early signs difficult to detect
 - Normal blood pressure in early shock
 - 40% of blood volume lost when hypotension occurs
 - Progress rapidly





Assessment

- General Impression
 - Paediatric Assessment Triangle
- Assess Responsiveness
- Determine Chief Complaint
- C - Control catastrophic bleeding
- A - Airway
- c - c-Spine
- B - Breathing
- C - Circulation
- D - Disability
- E - Expose



+C



The Sick Child

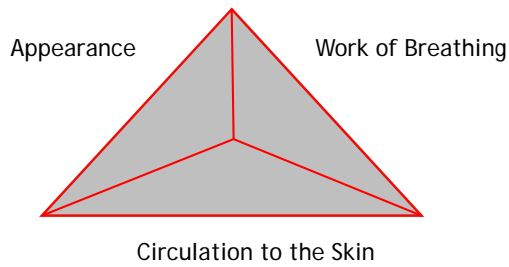
- Handling
 - "Floppy"
 - Lethargic
 - Irritable
- Raised temperature
- Not feeding
- Disinterested
 - Not themselves
- Rapid pulse
- Rapid respiration



+C



Paediatric Assessment Triangle



+C



Appearance

- T - Tone
- I - Interactiveness
- C - Consolability
- L - Look / Gaze
- S - Speech / Cry



+C



Work of Breathing

- Abnormal airway sounds
 - Grunting
 - Wheeze
 - Stridor
- Abnormal positioning
 - Tripod Position
- Retraction
 - Muscles of chest and neck
- Flaring
 - Nostrils
- Restless

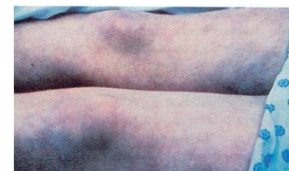


+C



Circulation to the Skin

- Pallor
- Mottling
- Cyanosis
- Cap Refill



+C



Circulation Considerations

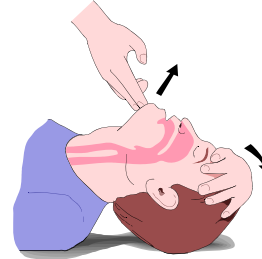
- Children cool quickly - keep warm especially during the examination
- Capillary refill assessment on the forearm or knee is more accurate
- Signs of shock are unlikely until 25% of blood volume is lost
- **DO NOT** wait for signs of Shock to develop - prevent them



+C



Initial Assessment - Airway



+C



Initial Assessment - Breathing

- Warning Signs
 - Under 6 years - Rate < 20
 - 6 to 15 years - Rate < 15
 - Respiratory Failure > 60



+C



Initial Assessment - Circulation

Infant	100 - 160
Toddler	90 - 150
Preschooler	80 - 140
School Child	70 - 120
Adolescent	60 - 100



+C



Respiratory Problems

- Respiratory Distress
- Respiratory Failure
 - Epiglottitis
 - Croup
 - Asthma



+C



Respiratory Distress

- Increased respiratory rate
- Nasal flaring
- On inspiration
 - Intercostal & Subcostal retraction
 - Supraclavicular retraction
- Audible breathing noises
- See-saw respirations
- Sitting up - Tripod

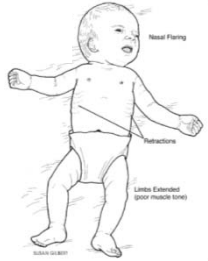


+C



Respiratory Failure

- Respiratory rate over 60
- Cyanosis
- Reduced muscle tone
 - Floppy!
- Altered mental status
- Poor peripheral perfusion
- Grunting



+C



Respiratory Management

- Ensure a clear airway
 - Suction - yankeur only under direct visualisation
 - Oropharyngeal airway
- Administer oxygen
 - Non-rebreather mask
- Ventilate if necessary
 - 20 breaths per minute
- Provide CPR if necessary



+C



Epiglottitis



- 3 years to 6 years
- Bacterial infection
- Swelling of the epiglottis
- Rapid onset
- Sick child
 - Fever
- Respiratory distress
 - Stridor / wheeze
 - Drooling
- Now a rare condition



+C



Epiglottitis Treatment

- Keep the child calm
- **DO NOT examine the throat**
 - Distress will cause laryngeal spasm and potential for respiratory arrest!
- Ensure a clear airway
 - wipe drool etc
- Administer oxygen
 - flow by if mask not tolerated
- Monitor closely and **URGENT** removal to Hospital
Be Prepared to Resuscitate

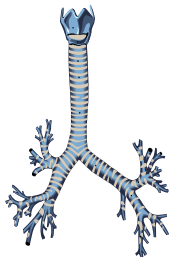


+C



Croup

- 6 months to 4 years old
- Laryngotracheobronchitis
(LAR-ingo-traik-e-o-bronkitis)
- Viral infection
- Acute onset
- Harsh barking cough
- Respiratory distress

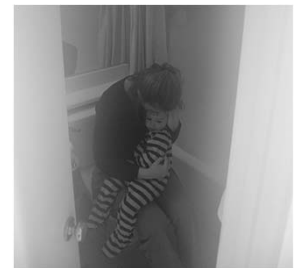


+C



Croup Treatment

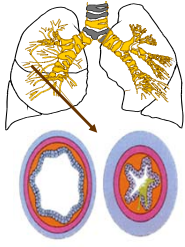
- Steam
- If severe
 - Clear Airway
 - Ventilate if necessary
 - Oxygen
 - Medical advice



+C



Asthma



Recurrent Reversible Airway Obstruction

- Muscle spasm of the air passages
- Swelling of the lining of the air passages
- Trigger Factors
 - Allergies
 - Infections
 - Exercise



Acute Asthma Attack Recognition



- Breathing
 - Difficult
 - Increased rate
- Wheezing
- Coughing
- Difficulty speaking
- Cyanosis
- Anxiety & confusion
- Unconsciousness



Acute Asthma Attack Treatment



- Reassure
- Sit up
- Administer oxygen
- Take their own inhaler
 - "Blue reliever" (salbutamol)
- Get help if:
 - Getting worse
 - No relief with inhaler after 5 minutes



Fever



- Normal temperature **37C (98.6F)**
 - Infection
 - Bacterial
 - Viral
- Any illness may cause a high temperature



Fever Management



- Cool the child
 - Light clothing
 - Cool room
 - Tepid sponging
 - Fluids to drink
- May wish to take paracetamol
- Fever is a Symptom
 - What is the source?
- Seek medical advice if concerned
- Beware of Hypothermia



Febrile Convulsions

Due to a **sudden** rise in a child's temperature

- Recognition
 - 6 months to 6 years
 - Unresponsive
 - Muscle jerking/spasm with back arched
 - Facial twitching, upturned eyes
 - Face flushed





Febrile Convulsion Treatment



- Protect the child
- Lower the temperature
 - Remove clothing
 - Cool room
 - Tepid sponging
- After the seizure
 - Check **A - B - C - D - E**
 - Oxygen
 - Recovery position
- Seek medical advice: ? source
Beware of Hypothermia



+C



Seizures in Infants

- Poisoning
- Unknown cause
- Shock
- Hypoglycaemia
- High Fever
- Head Injury
- Hypoxia
- Infections
- Epilepsy



+C



Management of Seizures

Find out:

- Has it happened before?
- How long did it last?
- What part of the body was affected?
- NOI - Has the child had a fever?
- MOI - Has there been a head injury?
- Is the child receiving medication, specifically for seizures?
- Are there any signs of hypoxia?



+C



Management of Seizures

- Protect the Child
- Maintain an open airway
- Treat any injuries caused by the seizure
- Recovery position if spinal injury not suspected
- Be prepared in case the child vomits
- Provide oxygen
- Treat for shock
- Arrange for medical assistance



+C



Meningitis

Inflammation of the linings surrounding the brain

- Causes
 - Viral, Bacterial
- Prevention
 - Vaccination
- Early recognition
 - Advice cards, Tumbler test



+C



Tumbler Test



+C



Meningitis

Urgent Medical Attention

COMMON SYMPTOMS OF MENINGITIS & SEPTICAEMIA

BABIES & TODDLERS

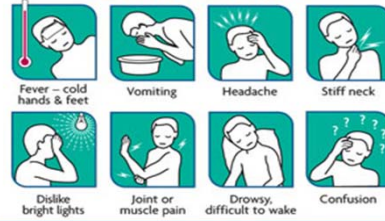


+C



Meningitis

CHILDREN & ADULTS



If you are concerned get medical help IMMEDIATELY



+C



Paediatric Trauma

- In the UK, 700 Children die annually as a result of accidents
- Half of these are from MVC's (Head Injuries)
- Majority are cycle and pedestrian incidents
- Burns and falls are the main cause of death in home accidents



+C



Kinematics

- Size
 - In an MVC the **impact point is higher on the body** after hitting the bonnet
 - There is a **greater** tendency to be dragged under the vehicle
- Anatomical differences
- Psychological response to danger
 - They turn to face the vehicle
 - "**Frightened rabbit**" response
 - higher proportion of frontal injuries



+C



Treatment

- Control catastrophic bleeding
- Airway control
- Assist ventilations when needed
- Early spinal immobilization
- High flow oxygen
- Patient position supine or lateral recumbent
- Arrange Rapid transport



+C



Child Abuse & Neglect

- Psychological abuse
- Sexual abuse
- Physical abuse
- Neglect



+C



Psychological Abuse

Persistent emotional or verbal abuse that affects a child's positive emotional development, self esteem and emotional well being



+C



Sexual Abuse

Physical sexual contact with or exposure to children and sexual exploitation of children by exposing, displaying or photographing them for sexual purposes or with sexual intent



+C



Physical Abuse

Inflicting any type of physical injury or performing any physical act that harms or disfigures a child



+C



Neglect

Failure of the parents or care givers to provide for the child's basic physical, social, emotional and medical needs



+C



Shaken Baby Syndrome

- Trauma caused by an angry or an extremely frustrated parent or caregiver
- Shakes the baby as a punishment or as an attempt to quiet him/her
- The intent usually is not to harm
- Results in **Intracranial Haemorrhage**
- Rarely it may be caused accidentally
- It is not a result of gentle bouncing



+C



Child Abuse

- Collect information, perform the assessment and provide care without making a judgment or expressing your suspicions, distaste or disbelief
- Remember, the abuser also needs help
- Your suspicions may also be unfounded
- It is not your place to accuse
- Report your suspicions to EMTs or an appropriate authority



+C



Summary

- Paediatric assessment
- Anatomical differences
- Recognition, causes & treatment of breathing difficulty in children
- Causes & Management of Pyrexia



+C



Summary

- Causes and management of seizures
- Pre-hospital emergency care management of trauma in children
- Child abuse



+C