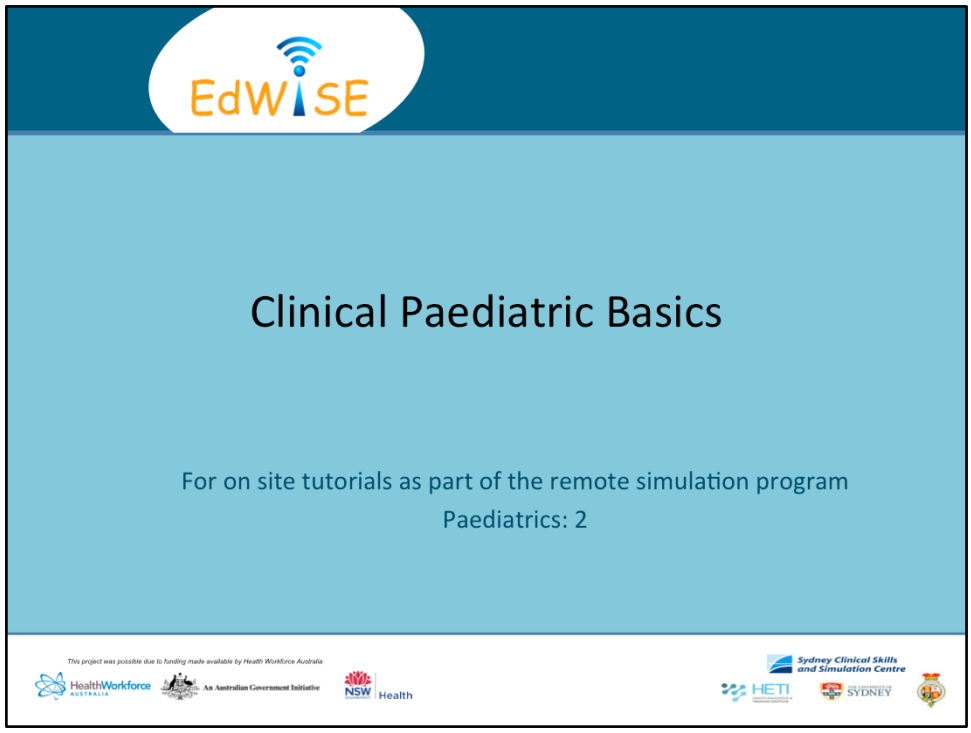
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Clinical Paediatric Basics
For on site tutorials as part of the remote simulation program
Paediatrics: 2
This project was possible due to funding made available by Health Workforce Australia
HealthWorkforce AUSTRALIA
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Sydney Clinical Skills and Simulation Centre
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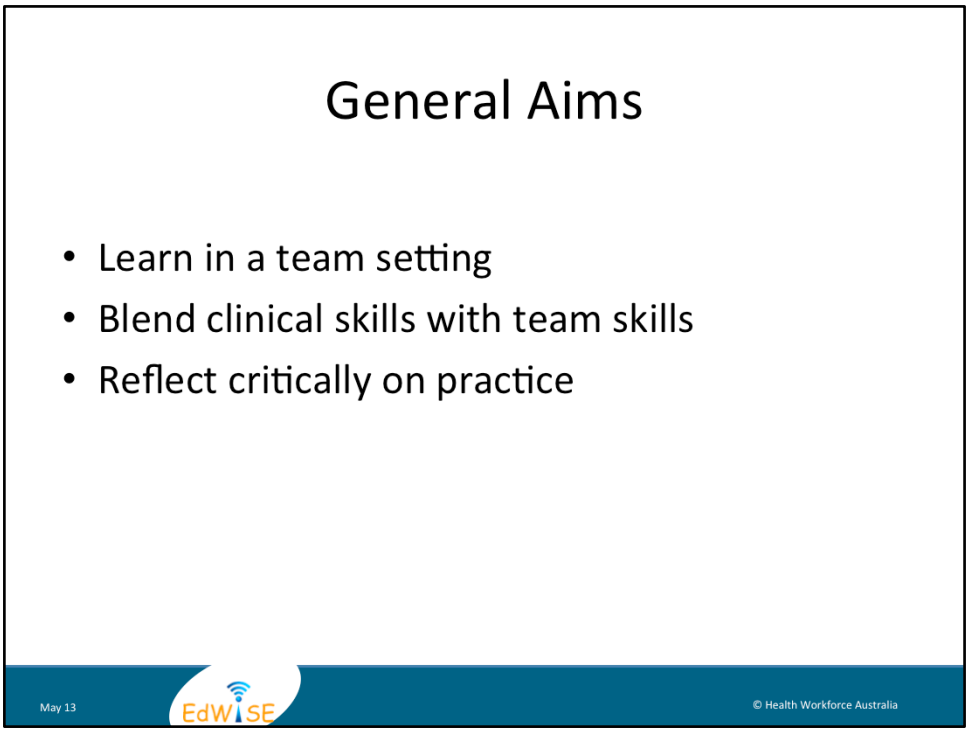
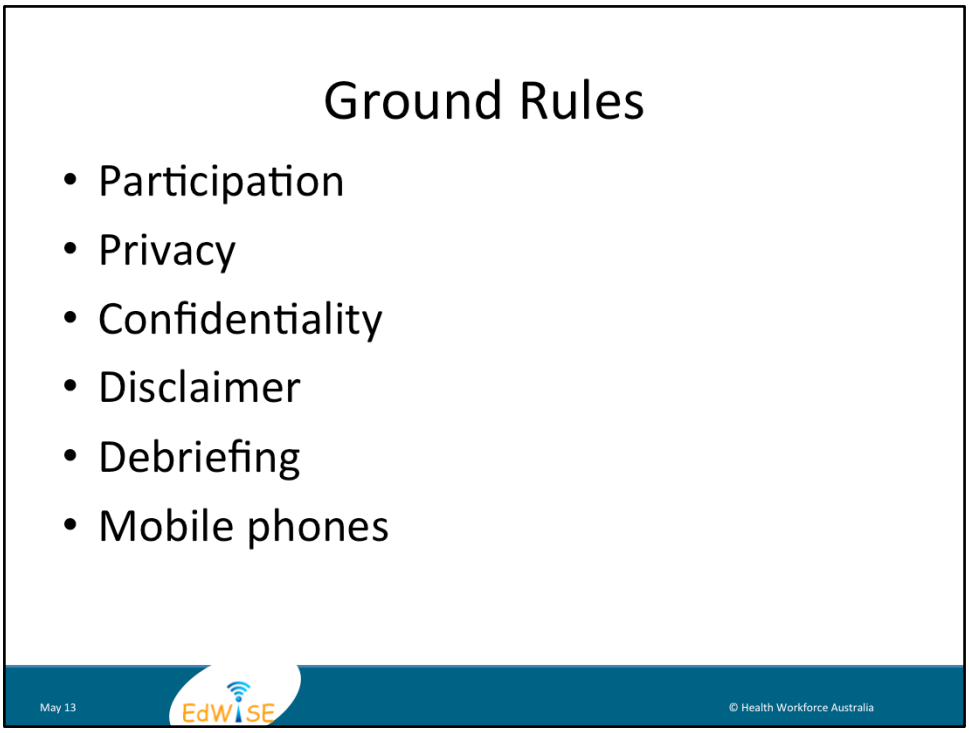
Introductions

Very quick round the room to assess stage of professional development for each participant.



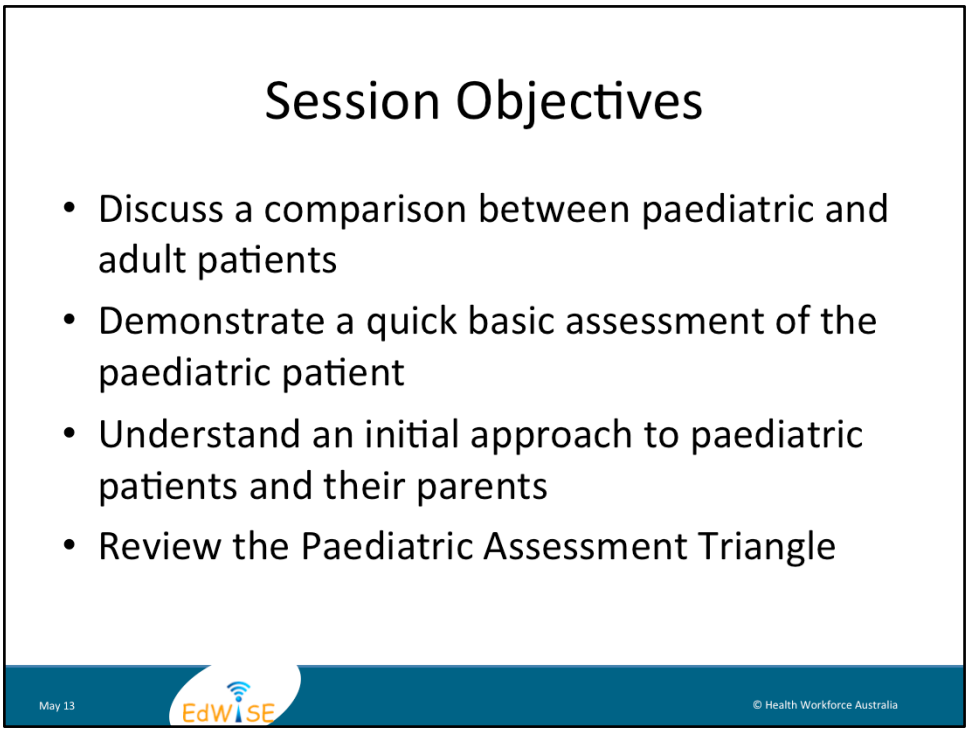
Speakers' notes

- This session, and package as a whole, involves learning together. Learning with the teams that you work with helps that team to function more efficiently and effectively. It allows you to learn from each other, explore different perspectives and to understand the importance of all members of the team.
- We are targeting higher level learning – applied skills and performance in contextualised events. This is through team discussion and also through working through simulated scenarios as a team. It also allows you to put into practice knowledge attained from the eLearning and other solo learning environments.
- To review and reflect upon our own practice and current best practice standards. During our feedback sessions we will facilitate this but we would also encourage you to reflect on your practice and experience after these sessions.



Speakers notes

- Challenge of video conferencing tips: don't change your seat, speak up nice & clearly
- Details collected and de-identified for reporting purposes
- Signed form, don't speak outside about how people performed as not necessarily indicative of real life. This is a chance to try new things, don't tell anyone about the scenarios as they are used again on subsequent courses.
- We try to use best evidence practice and strive to include as up-to-date material as possible. Please do refer to your local policies, guidelines and protocols.
- Debriefing is a chance to reflect upon what we did and how that translates to the workplace. Please use this time to explore the complexities of performance and decision making. Please contribute, we will all learn from each other's experiences.
- Like most things in life, the more that you put in the more you will take away with you.
- It is an open forum where everyone's ideas and thoughts are to be valued.
- If you could please switch your phones off or to silent or vibrate for the duration of the course.



These are the objectives for the session including the powerpoint slides and the simulated learning events.

Comparison of Adults and Children

- CHILDREN ARE *NOT* JUST LITTLE ADULTS

- Consider
  - Anatomy
  - Physiology
  - Psychology

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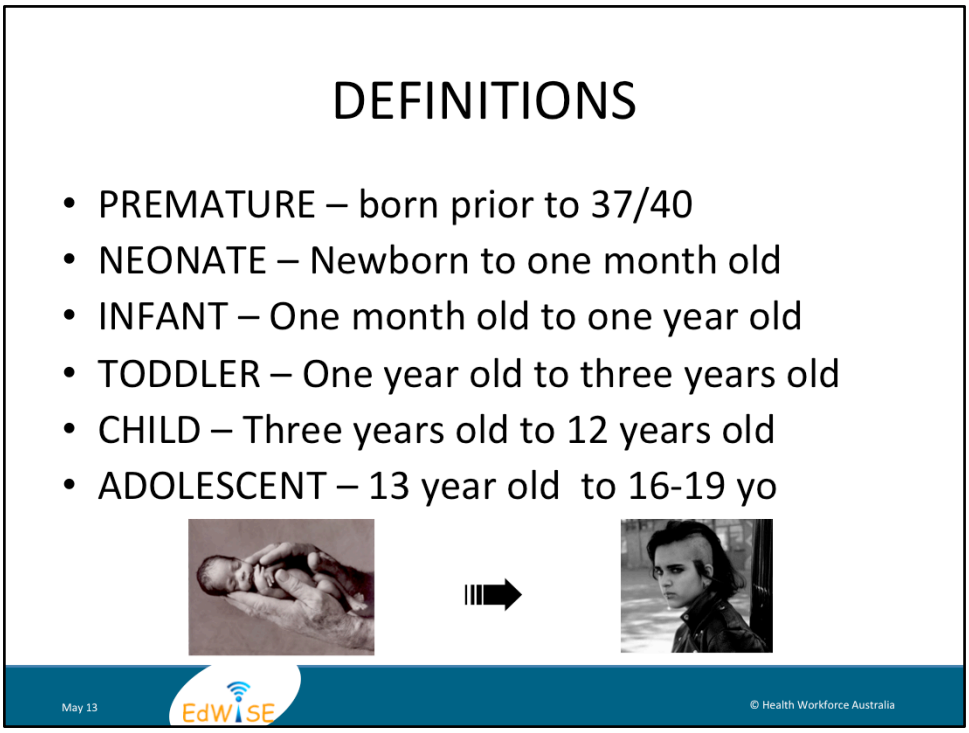
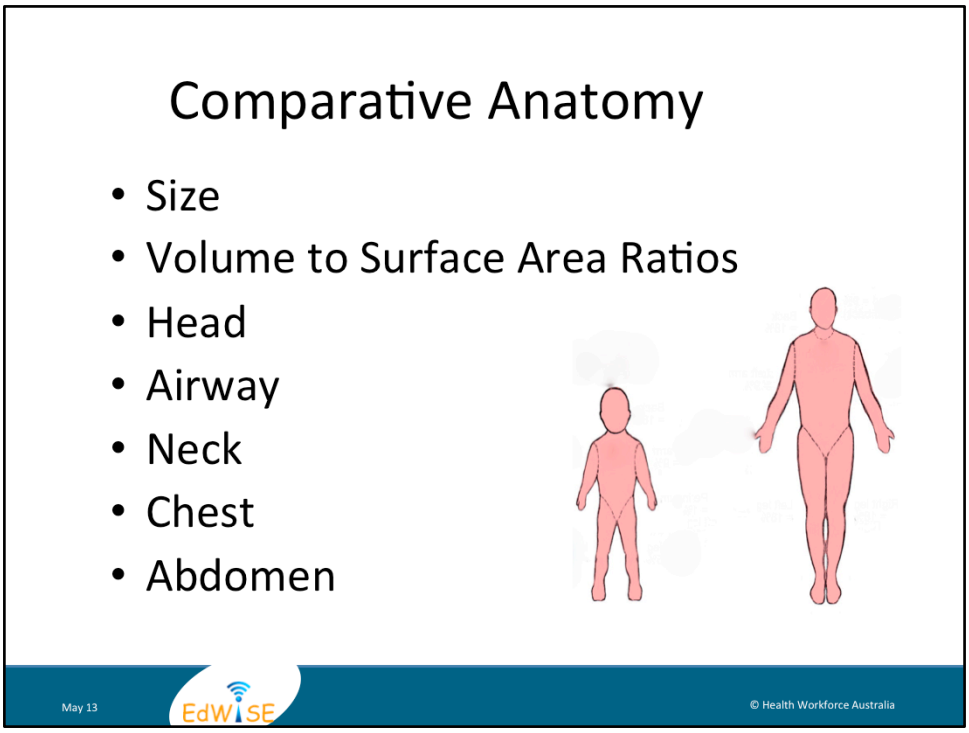
In this presentation we shall compare children and adults in relation to both the differences and the similarities that present.
It is important to remember that children are not just little adults, but are a continuum of changes that is heading towards adulthood.
Considerations of the anatomy, physiology and psychology in managing these patients, and their families, is essential for paediatric clinical management.



There are definitions of the paediatric population based on age, these allow us to define the variations in management based on the expected physiology and anatomy of the age group of the child. The available paediatric guidelines and protocols are often based on these categories. The lines become a little blurred as children get older, as size and maturity will have increasing variation.



There are many anatomical differences between the adult and the paediatric population, these change as the child grows and develops. These anatomical differences have real and important implications for clinical practice.

Size-everything is smaller. Therefore equipment should be sized appropriately and tasks may be more challenging due to the smaller size of the patient.

Volume to Surface Area ratios - there is a larger surface area compared to mass, therefore children lose heat quickly, especially from the head.

Head- is larger compared to body and the occiput is large, forcing the neck to flex and potentially occlude the airway. Positioning of the head in relation to the body should be an early consideration in airway management.

Airway – the mouth is smaller with a compressible floor, there may be no teeth or the teeth may be loose, the tongue is big, the airway smaller, more mobile and with an anterior larynx where the narrowest part is distal to glottis. A child's trachea is short and the main bronchi more equal angles. These are important factors in managing the airway

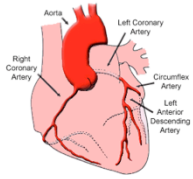
Neck- is shorter, fatter, more flexible. It is possible to kink the trachea with flexion, occlude with extension and once intubated any head movement may dislodge the endotracheal tube.

Chest - horizontal ribs, more compliant chest wall and narrow airways are easier to collapse/obstruct and create increased resistance for ventilation.

Abdomen- with crying children swallow air with can distend the stomach which can

PHYSIOLOGY

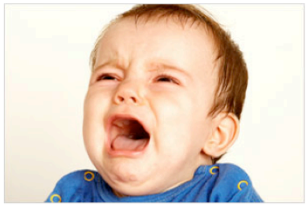
- RESPIRATORY
  - Diaphragmatic breathers
  - Higher metabolic rate
- CARDIOVASCULAR
  - More blood per kg
  - Cardiac output
- OTHER
  - Immature immune system
  - Blood vessels smaller but more resilient

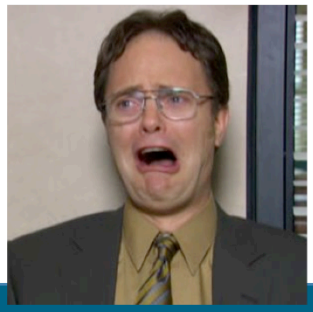


There are many physiological differences between adults and children, these include (but are not limited to)
Respiratory
An increased respiratory rate.
Diaphragmatic breath due to horizontal ribs, children therefore fatigue more easily.
Higher metabolic rate which leads to higher O2 consumption, faster desaturation and increased risk of hypoglycaemia.
The cardiovascular system has more blood per kg, but smaller overall volume, increasing the risk of blood loss. It is important to remember that cardiac output is dependant on heart rate, as the stroke volume in paediatrics is relatively fixed in comparison to the change which can occur in the adult population.

PSYCHOLOGY

- Poor understanding
- Prone to fear/distress
- Verbal Skills
- Parental behaviour
- Parental anxiety
- Child Parent feedback loop





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Hospitals are unfamiliar environments for most, but especially children. It is important to realise the significant psychological differences and variability when managing children in the emergency department. Children are often frightened by unfamiliar things or places and below the age of three children cannot be reasoned with. Children have often limited verbal skills and understanding.

When managing children time should be taken to involve the parents, especially parental anxieties, as there is a clear child parent feedback loop in the majority of circumstances.

Approaching Children

- Appearance & demeanour
- Engaging both child & parent
- Introductions, explanations & time frames
- Eye level, personal space, touch
- Distraction – toys, music, songs, rhymes
- Choice, limit setting, control, rewards
- Humour & stories
- Parental participation

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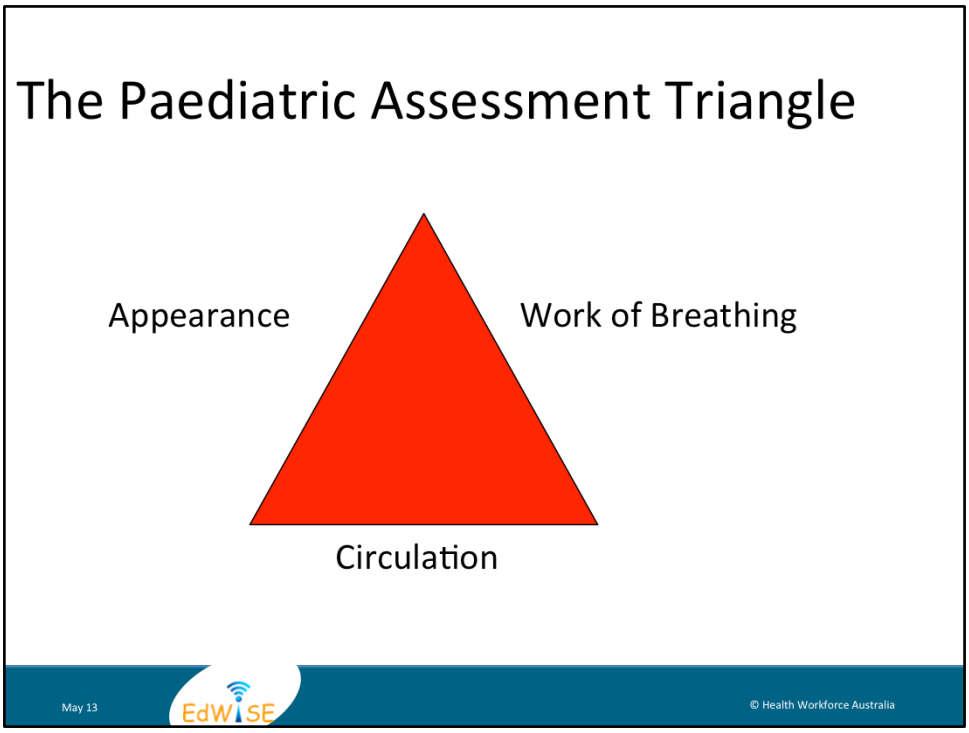
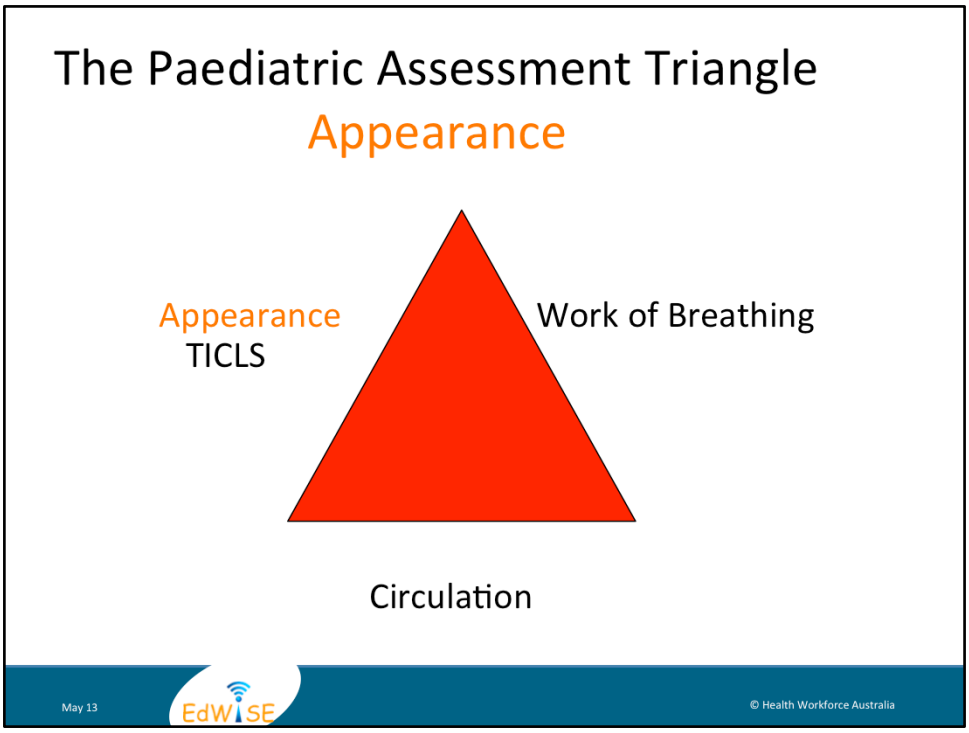
Medical and nursing staff should take care when approaching children as patients. Presenting a calm and friendly demeanour, engaging both the child and the parents is beneficial for the patient/parent/doctor relationship.
The interaction should be appropriate to the child's developmental age, using conversation, toys and music as distraction where required.



The Paediatric Assessment Triangle (PAT) provides rapid visual and auditory assessment of a child.
It consists of three elements- appearance, work of breathing and circulation. This gives you a snap shot of child's wellbeing and allows groups of abnormalities to guide your subsequent investigation and management. The following slides will work through this tool.



It is important to start any paediatric assessment with the general appearance of the child. This should be initially be performed without disturbing the child, which may be distressing and then impede further assessment whilst the child is upset. The general appearance of the child will contribute significantly to clinician gestalt, providing early recognition as to wellness or toxicity.
Appearance can be assessed using the TICLS mnemonic – this aide memoire can be recalled as ”if they’re normal they can be tickled (TICLS)”
Recognition needs to be appropriate to age of the child.

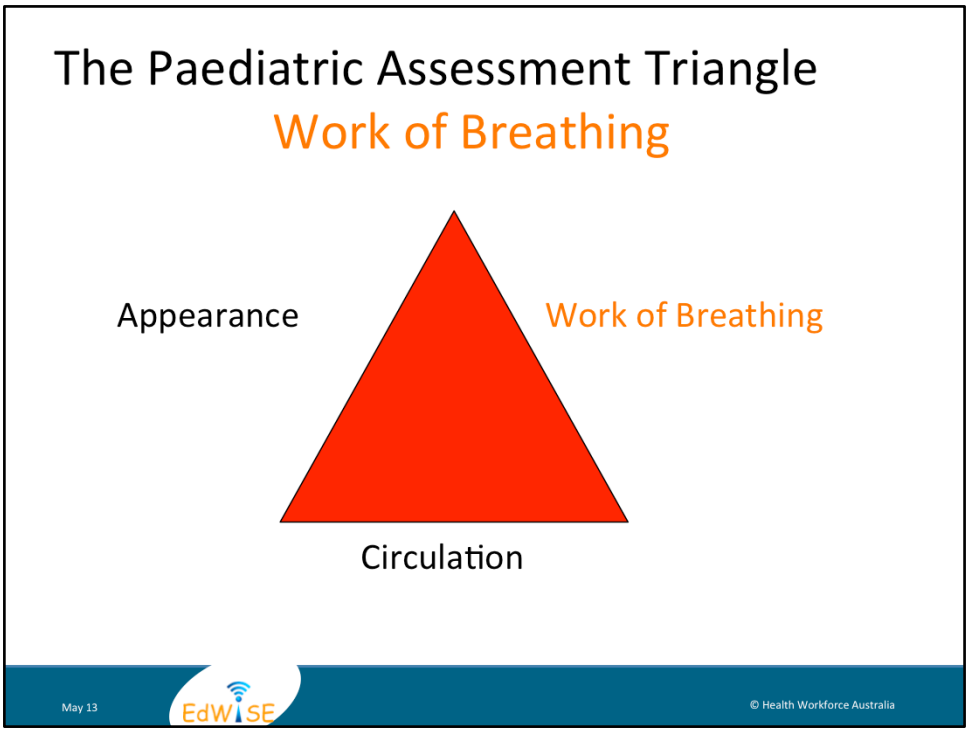
Tone- newborn - flex tone, older child should be able to sit up straight

Interactivity - baby- notices noises, reaches for toy, older- talks with you

Consolability- baby - able to be consoled by parents, older - able to be calmed

Look/gaze- baby - eyes focus on face, and/or track , or thousand mile stare or eyes shut, older- make eye contact, look around the room

Speech/cry- baby - strong cry, older - normal speech



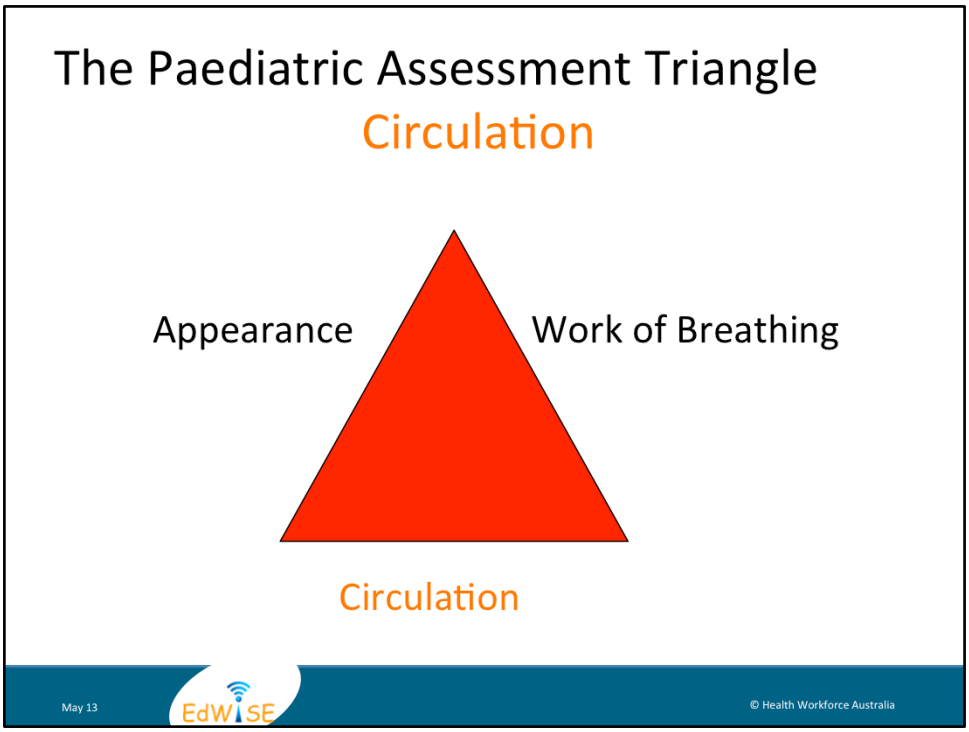
Work of breathing

Respiratory rate should be counted, although in the paediatric population it is often unreliable due to wide range of things (pain, cold, distress) that can raise it. This respiratory rate contributes to the overall picture of the child as part of the PAT and should always be considered as part of the bigger picture only.

Abnormal positioning will be assessed as part of appearance, as well of the breathing assessment. Some children are unable to lie down, or adopt tripod sitting or sniffing position, these positions are a cause for concern for the respiratory capacity of the child.

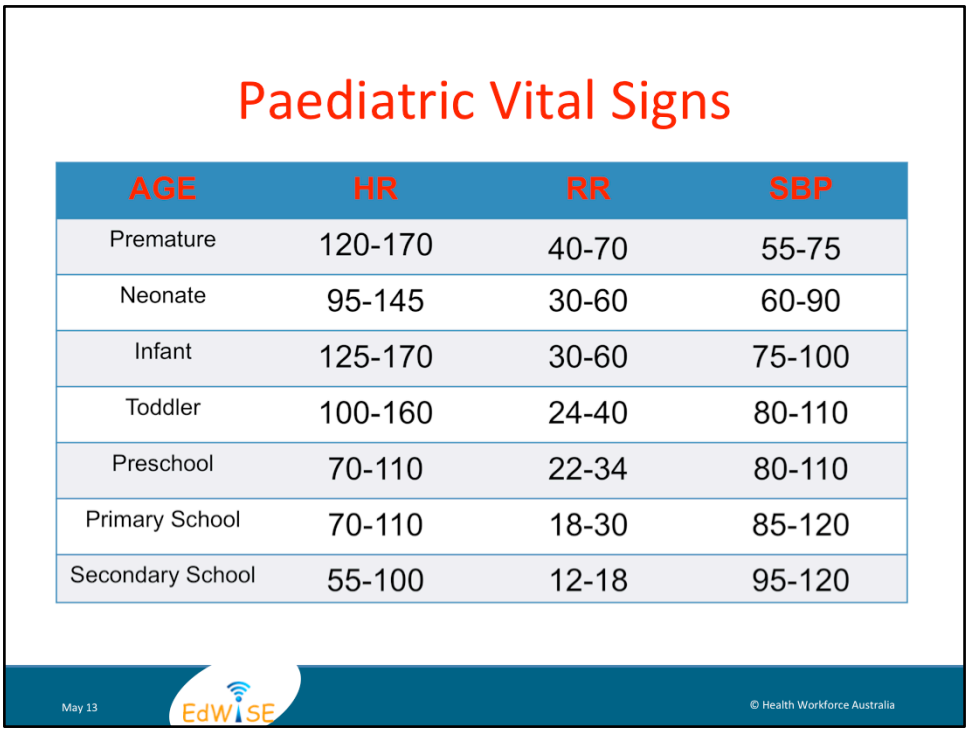
Abnormal airway sounds, which are concerning include grunting, snoring, wheezing, stridor, hoarse or muffled speech.

Physical signs which are worrying may be nasal flaring, retractions around the chest (supra clavicular, sub-sternal, intercostal, tracheal), and the sign of head bobbing in younger children.

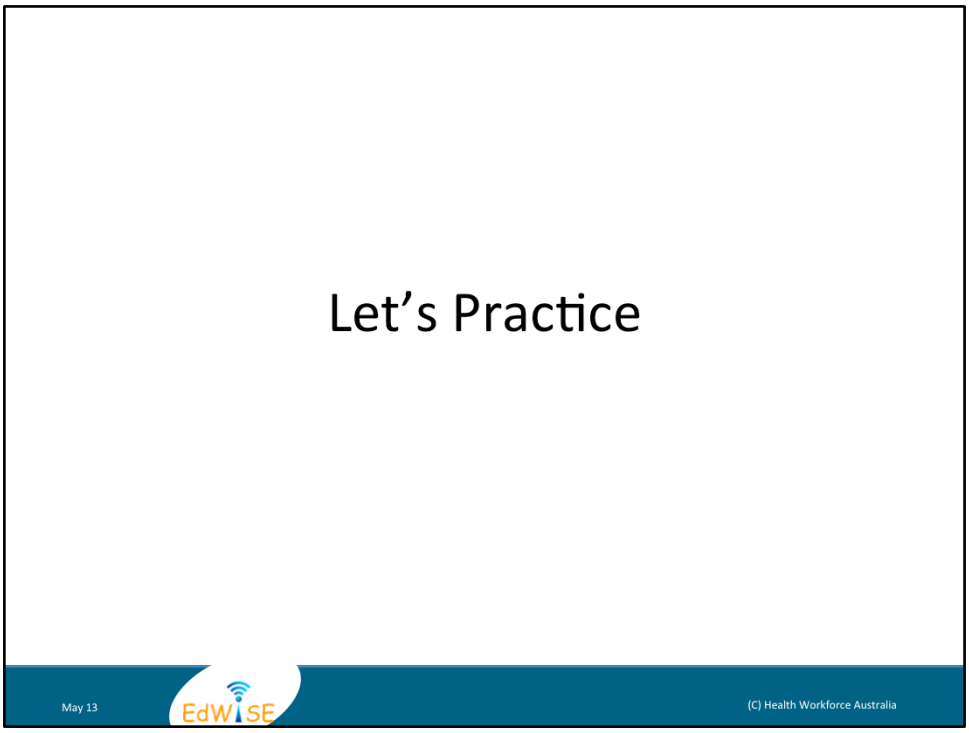


Circulation- to look for adequate cardiac output and perfusion
Again the appearance of the child will give a rapid assessment of the circulatory state of the child. The colour of the skin is one sign of perfusion.
Mottling- patchy skin colouring due to vasoconstriction.
Pallor-white skin due to inadequate perfusion.
Cyanosis- late sign of inadequate perfusion and or hypoxia.
Capillary refill provides evidence of tissue perfusion and should be part of the clinical examination of any child, especially those who appear toxic.

An assessment of the heart rate and blood pressure should be performed when assessing the circulatory state of the child.



As the physiology of a child changes with age, so do the vital signs.
They should be taken early in the emergency department visit and repeated to allow trends of vital signs, as with the adult population.
On observation charts the normal variants related to the child's age should be documented and abnormalities from these parameters highlighted to the treating clinicians.
These numbers should be available on wall charts, age specific observation charts and on readily available cards for staff.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Summary

- Children are not little adults
  - Continuum of anatomy, physiology and psychology progressing to adulthood
- The Paediatric Assessment Triangle
  - Appearance, Work of Breathing, Circulation
- Stay calm, be non-threatening, engage the child, include parents

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