


The Recognition of a Sick Baby and Child
in the Emergency Department

For on site tutorials as part of the remote simulation program
Paediatrics: 4

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Introductions



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

General Aims

- Learn in a team setting
- Blend clinical skills with team skills
- Reflect critically on practice

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These aims are the same for all sessions – please do not modify

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.

Ground Rules

- Participation
- Privacy
- Confidentiality
- Disclaimer
- Debriefing
- Mobile phones

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These aims are the same for all sessions – please do not modify

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.

Session Objectives

- Discuss a Structured Approach to Sick Baby and Child in the Emergency Department
- To demonstrate initial assessment & management
- Recognise the severity of illness
- Allocation of roles in teams
- Communicate within teams in the Emergency Department

A structured approach overview

RESUSCITATION (0-10min)

1. **Call for assistance**
2. Conduct **initial Assessment** (DRS-ABCDE)
3. Initiate **Emergency Treatment**
4. **Re-evaluate** (repeat steps 1 - 3)

SECONDARY CARE (10-60 mins)

1. Complete a focussed, systematic **assessment** (history & examination, investigations)
2. Initiate **specific** definitive treatments
3. Initiate **supportive** care
4. Actively look for and manage **complications**

TERTIARY CARE (1 - 24 hr)

1. Consult
2. **Check** results + **Reassess** patient
3. Arrange appropriate **disposition**
4. Provide **continuity** of care
5. **Document** management

Assessment and management is performed in ED in a structured and timely manner. The focus is on simultaneous assessment and management, with the priority being to exclude and manage any life threatening conditions. This framework and timeframe may be used to assess and manage any patient that presents to ED in a timely and ordered fashion, this includes the paediatric patient.

The initial resuscitation involves a rapid early assessment of an immediately life threatening injury or illness and the commencement of the medical management. This primary survey provides a rapid overview of the treatment priorities of the patient. This is usually the DRS-ABCDE approach to the vast majority of emergency department presentations.

Following this initial phase a period of further more detailed assessment and specific care priorities is undertaken. Consideration of the condition, its cause, complications and co-morbidities should be performed with management tailored to the specific patient with their specific issues. The initiation of supportive care should begin during the secondary care phase.

The tertiary care phase is the process of reassessment of the patient, the response to management and the results of investigations. During this phase disposition decisions and consultations are made and clear documentation of both the emergency

Initial assessment

- D** Identify potential Dangers to patient and staff
- R** Check Responsiveness of patient
- S** Send for help
- A** Airway & remember C-spine protection
- B** Breathing
- C** Circulation
- D** Disability & dextrostix (DEFG)
- E** Environmental

The DRS-ABCDE approach is advised by the Australian Resuscitation Council (ARC) and this can be applied to all critically unwell patients. It is similar to the approach recommended in trauma care. This applies for the paediatric patient and the adult patient and is a simple acronym to recall and apply.

Aim here is to exclude and manage any time critical or life threatening conditions, giving a structure to apply in those early minutes of any resuscitation.

Assessing Children

- Physiological & anatomical differences
- Communication
- Parents
- One size doesn't fit all
- Spectrum of disease
- Compensate 'til late



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When assessing children it is important to recall that there are anatomical, physiological and psychological changes occurring as a child grows in both size and maturity. These factors will vary between individuals but there is some generalisability based on age and weight.

It is imperative that these factors are taken into account when communicating with the child and his or her parents, choosing equipment and medication dosing.

Staff should also understand that children may appear to compensate with their vital signs until late in the spectrum of disease, which may provide false reassurance. The entire clinical picture should be taken during the assessment process.

A child centred approach will aid in keeping the child and their parents calm and cooperative. Interact with the child, invite the parents to distract the child and include them in the decision making process.

Airway

- Patency
- Posture
- Added sounds
- Effort of breathing



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The structured approach continues with assessment of the airway. This should begin with a period of observation, so as to limit distress to the child and provide vast quantities of useful information of the overall clinical picture of the child, as well as the airway component.

Airway patency demonstrates the child is able to maintain their own airway, as well as giving an indication of central nervous system state.

If the airway is not patent, immediately start oxygen therapy, jaw thrust and chin lift, or place in the recovery position (remaining cautious of cervical spine protection if required).

Children with airway compromise may posture themselves to protect their own airway or in an attempt to maintain some airway patency, the tripod position is an example of this.

Snoring demonstrates a functional obstruction, crying or talking suggests a patent airway. Stridor is an inspiratory sound and stertor is its expiratory counterpart.

Stridor is due to intrathoracic upper airway obstruction and stertor due to extrathoracic obstruction. Either added sounds are cause for heightened concern. If present, do not upset child and call for urgent anaesthetic back up, and consider the underlying cause and if nebulised adrenalin is indicated.

Increased effort of breathing may be indicated by grunting and nasal flaring, use of accessory muscles, tracheal tug, sternal subcostal and intercostal recession, except in

Breathing

- Rate
- Colour
- Auscultation
- Saturations
- Clinical picture



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Following assessment of the airway it is a natural progression to review the work of breathing and adequacy of oxygenation and ventilation.

The respiratory rate is age dependent, is also affected by normal activity, crying and can be significantly deranged in times of pathology.

Bradypnoea is a slowed rate, tachypnoea is an elevated rate. Apnoea is defined as a cessation of breathing for >20seconds and is of concern.

The NSW health department has released age related “between the flags” charts which must be referred to when taking the vital signs of children. These reference ranges should be readily available in areas which assess paediatrics. An example of this chart is on the next slide.

The respiratory rate should be counted for 60seconds, when the child is calm and non-distressed. This can be difficult in the emergency department.

The colour of a child should be noted, as children can rapidly change in colour with illness. Cyanosis, a blue colour, is bad and evidence of hypoxia! Extreme pallor or mottling of the skin is of concern also and has many causes.

Assessment of breathing requires auscultation of the chest for added sounds including wheeze, crepitations, and the ominous sound of the silent chest.

Saturations (Spo₂) should be ideally recorded with the child breathing room air prior to the application of supplementary oxygen. Spo₂<90 is concerning in previously fit

Blue, Yellow and Red zones

Age appropriate

Respiratory effort table

NSW HEALTH

FAMILY NAME: _____ SEX: MALE FEMALE

GIVEN NAME: _____

D.O.B. / / M.D. /

ADDRESS: _____

LOCATION: _____

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

Facility: _____

STANDARD PAEDIATRIC OBSERVATION CHART (SPOC)

1-4 Years

COMPLETE ALL DETAILS OR AFFIX PATIENT LABEL HERE

CONSIDER EARLIER ESCALATION OF PATIENTS WITH:

- Chronic or complex conditions
- Post-operative
- Pre-existing cardiac or respiratory conditions
- Opioid infusions

ADDITIONAL CRITERIA FOR ESCALATION ON BACK PAGE

GUIDE TO AIRWAY / BREATHING ASSESSMENT

	MILD	MODERATE	SEVERE
Airway	• Stridor on exertion	• Stridor at rest • Partial airway obstruction	• New onset of stridor • Imminent airway obstruction
Behaviour & Feeding	• Normal • Takes in sentences	• Some / intermittent irritability • Difficulty feeding or crying • Difficulty breathing or eating	• Agitated / Confused • Crying • Unable to talk or cry • Unable to feed or eat
Respiratory Rate	• Mildly increased	• Moderately increased	• Markedly increased • Decreasing (exhaustion)
Accessory Muscle Use	• None / Minimal	• Moderate recession • Tracheal tug • Nasal flaring	• Severe recession • Grunting • Excessive gasp • Cyanosis
Apnoeic Episodes	• None	• Abnormal pauses in breathing	
Oxygen	• No oxygen requirement	• Mild hypoxaemia, corrected by oxygen • Increasing oxygen requirement	

This is a copy of the “Between the Flags” charts for children in NSW. All clinicians who manage children should become familiar with them and the local response to the blue, yellow and red zones. The principles of the BTF charts are discussed in detail in the DETECT program.

Blue Zone is a nurse initiated zone – a warning that the patient may be deteriorating - Review? pain, anxiety, fever, oxygenation and increase frequency of observations as appropriate

Yellow Zone is a Clinical Review: response as per local CERS policy, responder within 30 mins

Red Zone is a Rapid Response: either a response by Paediatric Registrar/agreed or local CERS policy, responder within 5 mins or Cardiac Arrest

Yellow zone allows for clinical judgement but must be discussed with Nurse in Charge. Red zone is mandatory.

Respiratory video



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This video demonstrates an unwell child with significant respiratory distress. Participants should learn to recognise the clinical signs which are concerning in this patient.

The facilitator should invite discussion about the structured assessment of this child from the visual clues which are available.

Circulation

- Heart Rate
- Capillary refill
- Blood Pressure
- Skin colour
- Skin temp



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Again the assessment of the circulatory system of the child is part of the overall clinical picture of the paediatric patient.

Heart Rate (HR) and Blood pressure (BP) both have an age dependant reference range which should be reviewed on the BTF chart. The participants should be reminded of the importance of a blood pressure assessment in the paediatric population, though hypotension is a late sign.

Capillary refill should be performed as part of the assessment of the circulatory state, this should be taken centrally over the sternum where pressure is applied for 5 seconds and the time taken for this to return to baseline once the pressure is removed should be measured. 2 seconds is normal.

The temperature of a child should be taken, as part of circulation or exposure, during the primary survey, as temperature affects circulatory state and vice versa.

Assessment of hydration status includes the clinical observations and input/output over the past 24 hour period.

The Shocked Child

Most Common Causes

- Hypovolaemia
- Septicaemia
- Trauma

Shock & Hypoglycaemia
go hand in hand



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Shock is defined as inadequate supply of oxygen to the tissues. Causes of circulatory shock include hypovolaemia, sepsis, obstruction, cardiovascular and neurogenic shock. The details of each of these sub-classifications is beyond this presentation on structured assessment, but should be kept in mind during the process of looking for the condition, cause, complications and co-morbidities of each presentation. Children often deteriorate later than the adult population, with compensation occurring until severe shock becomes evident. As children have poor glycaemic reserve hypoglycaemia is a common finding in shocked children and this should be checked and corrected regularly.

Disability

- Conscious level
- Pupils
- Pain
- DEFG-don't forget the glucose
- Posturing



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Assessment of neurological status forms the D of the structured approach. The level of consciousness can be rapidly assessed with the AVPU score (Alert-Voice-Pain-Unresponsive) or the Glasgow Coma Score (GCS) which has been modified for the paediatric population can be applied. This allows for a systematic documentation of global neurological function.

The pupils should be assessed for size and reactivity.

Glucose measurement should never be forgotten in the unwell child – 2mls/kg of 10% dextrose should be used in treatment of any hypoglycaemia.

Pain and response to pain should be monitored in children, with adequate analgesia an essential part of the management plan. Oral, intranasal, subcutaneous or intravenous options are available for the paediatric population. Treatment of pain will improve assessment and gain the trust of both the child and the parents.

Examination of the posture of the child, movement of limbs spontaneously and in response to pain should be performed. Decorticate or decerebrate posturing provide important information to the clinician (examples of this are on the next slide)

Posture



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These pictures demonstrate decorticate and decerebrate movements in children.

Exposure

- Temperature
- Trauma
- Rash
- Bruises



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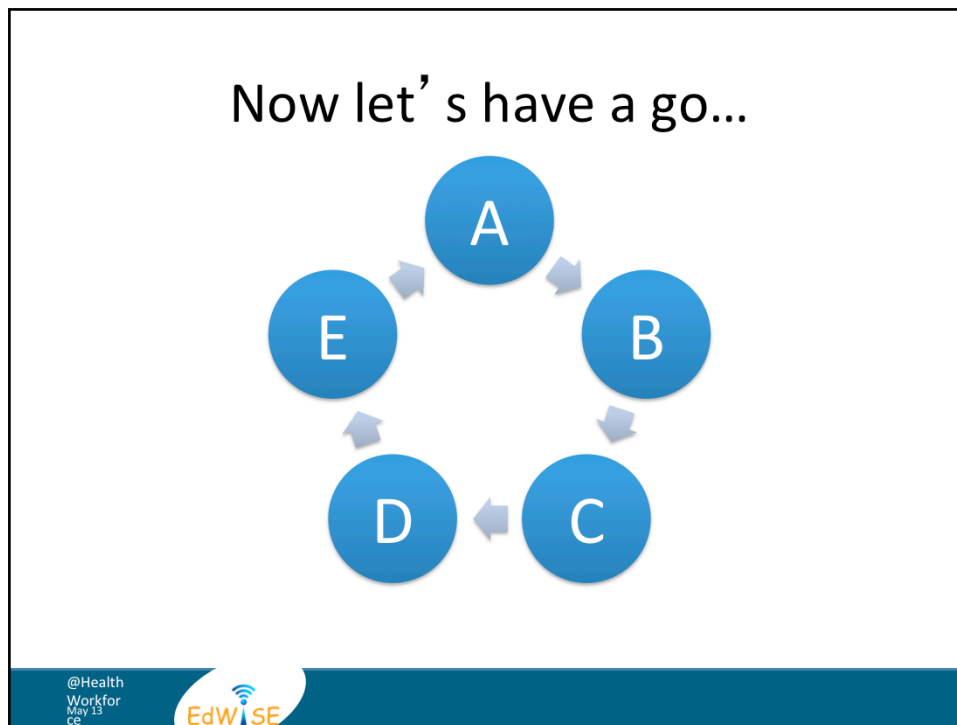


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Exposure is an essential part of examination of the child as often injuries and signs of illness can go unrecognised. Once the child has been examined the child should be recovered for both modesty and to preserve temperature as heat is rapidly lost via the bodies surface.

Assessment of the temperature forms part of the vital signs and should be documented on the BTF chart. Remember that the vital signs are part of the greater clinical picture.

Close examination for any rashes that may be present – blanching/non-blanching, etc
Close examination for signs of trauma, including bruises and deformity, as well as areas of pain to palpation will aid in the assessment process. Certainly the non-verbal child requires close observation for reaction to this examination.



Here we get the participants to get familiarised to manikin and go through A-B-C-D-E.

Specifically go through each system and ask a different participant to vocalise how they would assess/examine child.

AIRWAY= stridor , cervical spine protection if needed, accessory muscle use, tracheal tug, recessions-sternal/intercostal/subcostal

BREATHING= count respiratory rate, ask what is normal for baby of 6 months, auscultate for wheeze/creps, Spo₂, colour and if Spo₂<95 on room air or cyanosed give O₂.

CIRCULATION=HR and what is normal (good to have age appropriate BTF chart) Also where to feel for pulses in baby vs child. Capillary refill and how and where to do (normal is <2 secs after 5 sec push on sternum), BP and hypotension and bradycardia are also late signs. If HR is in yellow or red zone or low BP or prolonged cap refill probably best to give a 20m/kg bolus of NaCl. Maybe short discussion of IV access and IO.

DISABILITY= level of consciousness using AVPU, pupils and if equal and reactive to light, abnormal posturing and pain scores. **DON'T FORGET THE GLUCOSE**

Resources

- Age appropriate BTF charts
- Formulae
- Broselow Tape and Trolley
- Drug Books
- NETS calculator
- Parents

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There are a wealth of resources available to assist in providing age appropriate treatment to children. These resources include the Between the Flags charts, formulae for calculating drugs and equipment sizing, Broselow tapes and trolleys, Drug dosing books and the NETS calculator which is available on line.

The parents are an invaluable resource in managing their own children, particularly those with long standing illness. Where possible they should be included in the care of the child and aware of the management plan.

Secondary Care

Assessment

Focussed History (AMPLE)

- **A**llergies
- **M**edications
- **P**ast medical history / co-morbidities / social history/ immunization
- **L**ast ate and drank
- **E**vents related to current problem, along with corroborative history from relatives and ambulance. Any environmental issues

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Secondary Care requires a more detailed history and examination. The AMPLE mnemonic provides a reminder of the information which should be sought early in the assessment process as this aids in the early management of the child.

A head to toe examination seeks to find signs of illness or injury which were not found in the primary survey, it will also review the findings from the initial phases and the response to treatment.

Scenario



- Rose has been brought in by her parents unusually drowsy.

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Summary

- Observation provides a wealth of information
- DRS-ABCDE approach to assessment
 - Resuscitation, secondary care, tertiary care
- Paediatric tools aid your assessment
- Include the parents and child in the process

References

- Advanced Paediatric Life Support Manual (5th Edition), 2011.
- NSW Health Policy “Children and Infants – Recognition of a sick baby or child in the emergency department”, 2011.

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