Paediatric Emergencies

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Foreword

- Hey lovely GP lot,
- Due to the C-word having very rudely taken over our lives, we will sadly not be able to deliver this teaching in person.
- Therefore you will have to make do with this powerpoint presentation. It is slightly more wordy than intended, given we cannot talk you through the slides or do any group work. Apologies.
- If there are any questions… google it ☺ or feel free to email us helenjeckel@hotmail.de or sarah.casey8@nhs.net
- Sources listed at the end of the slide show.

Aims

- Discuss A to E assessment, with specific signs seen in children
- Give an overview of the presentation and management of key paediatric emergencies
- Use the NICE traffic light system to highlight the indicators of an unwell child, where appropriate

Recognising the ill child

- As with adults, use a systematic A to E approach

A & B	C	D & E
• Resp effort • Resp rate • Stridor/wheeze • Auscultation • Skin colour	• Heart rate • Cap refill • Pulse vol • Skin temp	• Conscious level • Posture • Pupils • Fever • Rash

Recognising the ill child
Airway and Breathing

Assessment of effort, efficacy and effect…

1. Effort:
   - Resp rate – Increased in airway/lung disease or metabolic acidosis, decreased in fatigue/cerebral depression
   - Recession – Intercostal/subcostal/tracheal tug - common in infants, indicates severe resp compromise if seen in children >6y
   - Wheeze – expiratory, lower airway narrowing
   - Stridor – inspiratory, upper airway obstruction (larynx / trachea)
   - Nasal flaring – seen in infants, sign of mod resp distress
   - Grunting – heard in infants, caused by exhalation against closed glottis, sign of severe resp distress

Recognising the ill child
Airway and Breathing

- 2. Efficacy
  - Auscultation of chest – reduced / asymmetrical / bronchial breath sounds, silent chest is pre terminal
  - Oxygen saturations – can be unreliable in shock/hypothermia but sats >97 reassuring
- 3. Effect (on other organs)
  - Skin colour – cyanosis is a pre terminal sign only seen when sats >70 (except in cyanotic heart disease - may be cyanosed but adequate oxygenation, cyanosis will not respond to O2)
  - Mental status – drowsiness could indicate hypoxia/hypercapnia

Recognising the ill child
Circulation

- Heart rate – tachycardia indicates shock/decreased stroke volume, bradycardia is pre terminal sign
- Capillary refill – can be early sign of shock
- Pulse volume – weak in shock, bounding in sepsis
- Blood pressure – late indicator in children so rarely done, cuff size may not be available in GP
- Skin colour – cold, pale, mottled skin peripherally indicates poor perfusion
- Urinary output – <1ml/kg/hr in children or <2ml/kg/hr in infants indicates inadequate renal perfusion

Recognising the ill child

Disability

- Conscious level – AVPU / GCS
  (Paeds GCS: https://bpna.org.uk/audit/GCS.PDF)
- Posture – decreased tone can indicate serious illness in any system, increased tone can indicate serious brain dysfunction
- Pupils – dilated / poor reaction / unequal can indicate serious brain dysfunction

Recognising the ill child

Exposure

- Temperature – fever at all ages indicates infection, in infants low temp may also be a sign of infection
- Rash – urticarial in allergy, purpura/petechiae in sepsis
- Source of infection – important sources include bulging fontanelle/neck stiffness in meningitis, joint swelling in septic arthritis

Case Discussions

- Consider the following 3 scenarios
  - What else from the history would you like to know?
  - How would you go about your assessment?
  - Knowing what you know now, what is the most likely diagnosis?
  - What would be your management of this child?

CASE 1

- 8 year old girl presenting with dad. Came in earlier in the day and was diagnosed with a chest infection. Prescribed antibiotics.
- Brought back in to see you as now more SOB.

Case 1
What else would you like to know?

- Onset?
  - SOB significantly worse after 1st dose of antibiotic
- Associated Sx?
  - Itchy rash and some swelling to mouth
- Previously had?
  - Never had similar Sx in past. Never has antibiotics before
- DHx? PMHx?
  - NKDA. Nil regular meds
  - No other PMHx. Immunisations up-to-date (IUTD)

Case 1
Assessment

- A – Mild oedema to lips, inspiratory stridor
- B – Bilat wheeze, RR 45, Sats 99% OA, AE to both bases
- C – Normal HS, HR 145, CRT <2secs
- D – Normal temp, BM not done, GCS 15
- E – Widespread urticarial rash, pallor

Case 1
Diagnosis & Management

- Likely diagnosis?!
  - Anaphylaxis
- CALL FOR HELP
- Lie patient flat and raise legs
- IM Adrenaline
- Oxygen
- ?Access – Hydrocortisone, chlorphenamine

Case 1
Management

IM doses of 1:1000 adrenaline

- Child more than 12 years: 500 micrograms IM (0.5 mL)
- Child 6 -12 years: 300 micrograms IM (0.3 mL)
- Child less than 6 years: 150 micrograms IM (0.15 mL)

Repeat after 5 mins if no better

CASE 2

- 2 month old brought in by mum. Concerned not waking for feeds.
- Also noted hot to touch.

Case 2
NICE traffic light system

- In this scenario, you could utilise the NICE traffic light system
- Useful tool for evaluating children under 5 with fevers
- Indicator of the risk of serious illness
- How to interpret
  - Red – If ANY red Symptoms present, patient in high risk group for serious illness
  - Amber – If ANY amber Sx, intermediate risk
  - Green – If ONLY green Sx, low risk group for serious illness

NICE Traffic Light System

	Green – low risk	Amber – intermediate risk	Red – high risk
Colour (of skin, lips or tongue)	• Normal colour	• Pallor reported by parent/carer	• Pale/mottled/ashen/ blue
Activity	• Responds normally to social cues • Content/smiles • Stays awake or awakens quickly • Strong normal cry/not crying	• Not responding normally to social cues • No smile • Wakes only with prolonged stimulation • Decreased activity	• No response to social cues • Appears ill to a healthcare professional • Does not wake or if roused does not stay awake • Weak, high-pitched or continuous cry
Respiratory		• Nasal flaring • Tachypnoea: – RR >50 breaths/ minute, age 6–12 months – RR >40 breaths/ minute, age >12 months • Oxygen saturation ≤95% in air • Crackles in the chest	• Grunting • Tachypnoea: RR >60 breaths/minute • Moderate or severe chest indrawing
Circulation and hydration	• Normal skin and eyes • Moist mucous membranes	• Tachycardia: – >160 beats/minute, age <12 months – >150 beats/minute, age 12–24 months – >140 beats/minute, age 2–5 years • CRT ≥3 seconds • Dry mucous membranes • Poor feeding in infants • Reduced urine output	• Reduced skin turgor
Other	• None of the amber or red symptoms or signs	• Age 3–6 months, temperature ≥39°C • Fever for ≥5 days • Rigors • Swelling of a limb or joint • Non-weight bearing limb/not using an extremity	• Age <3 months, temperature ≥38°C* • Non-blanching rash • Bulging fontanelle • Neck stiffness • Status epilepticus • Focal neurological signs • Focal seizures

Case 2
What else would you like to know?

- Onset?
  - 12hours reduced feeds and hot to touch
- Other Sx?
  - Increasing sleepy, now only waking to prolonged stimulation
  - Mum noted ‘strange cry’
- Wet/ dirty nappies?
  - Reduced wet nappies. Normal dirty nappies
- Infective Sx?
  - Sniffly last week, no cough
  - No skin changes noted
- DHx? PMHx?
  - NKDA. Nil regular meds
  - No PMHx. IUTD

Case 2
Assessment

- A – Patent
- B – RR 50, sats 97 OA, no recession/ tug/ grunting/ flare
- C – CRT 5s, HR 180, HS normal, mottled skin
- D – Temp 39.5, minimal response to social cues, high pitched cry
- E – Several non-blanching petechiae on buttocks

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Severity?!

Case 2
Diagnosis & Management

- Severity?
  - Patient in high risk group for serious illness as per traffic light system
- Diagnosis?!?
  - Suspected meningitis w non-blanching rash
- ?Bacterial meningitis w/o non-blanching rash
  - Transfer w/o giving Abx, unless urgent transfer not possible
- ?Meningococcal disease (meningitis w non-blanching rash/ meningococcal septicaemia)
  - IM or IV benzylpenicillin asap. Do NOT delay urgent transfer
  - CI to benpen if clear history of anaphylaxis after a previous dose (rash after penicillin not a CI)

Case 2 Management

- IM doses of benzylpenicillin
- Child 1-11months: 300mg
- Child 1-9years: 600mg
- Child 10-17years: 1.2g

CASE 3

- 4 year old brought in by stepdad. Known asthmatic.
- Has had cough and cold for 2 weeks. More wheezy today.

Case 3
What else would you like to know?

- DHx? PMHx?
  - NKDA.
  - Age under 5, but likely background of asthma, prescribed ICS and salbutamol inhaler by GP
  - Seen in PAU with asthma last winter but not admitted. No prev ICU admissions
- Inhaler use?
  - Using ICS when remembers
  - Used salbutamol inhaler 10x/day last 48hrs
- FHx?
  - FHx of atopy
- SHx? Pets? Smoking?
  - Lives with parents. No pets. Parents smoke outside.

Case 3
Assessment

- A – Patent
- B – RR 50, Sats 91 OA, recessions, tracheal tug, widespread bilat wheeze
- C – HR 160, CRT 2s, HS normal, pale
- D – Temp 36.5, GCS 15, decreased activity
- E – No skin changes

Case 3
Diagnosis & Management

- Diagnosis?!
  - Acute asthma exacerbation
- CALL HELP
- Oxygen
- Salbutamol whilst awaiting transfer
- Nebulized ipratropium bromide if poor response
- Start oral prednisolone if time

Case 3 Management

- Life-threatening/severe asthma
  - Salbutamol neb
    - Child 2-5 years: 2.5mg
    - Child >5years: 5mg
  - Can repeat every 20-30mins if intermittent neb
  - If poor response, add ipratropium bromide neb
    - Child 2-12years: 250mcg
    - Don't repeat within 4hrs

- Moderate asthma/Nebuliser not available in severe asthma
  - Salbutamol inhaler w spacer (and facemask connected to mouthpiece of spacer if <3yrs)
    - 10puffs; give a puff ever 30-60seconds
  - If poor response, rpt whilst awaiting transfer/switch to salbutamol neb

Case 3
Management

- If not requiring hospital admission
  - Check peak flow if poss
  - Salbutamol inhaler w spacer (and facemask connected to mouthpiece of spacer if <3yrs)
    - 10puffs; give a puff ever 30-60seconds
  - Check technique and adherence

- If not admitted, f-u within 48 hours of presentation.
- If admitted, f-u within 2 working days of discharge.

QUIZ TIME!

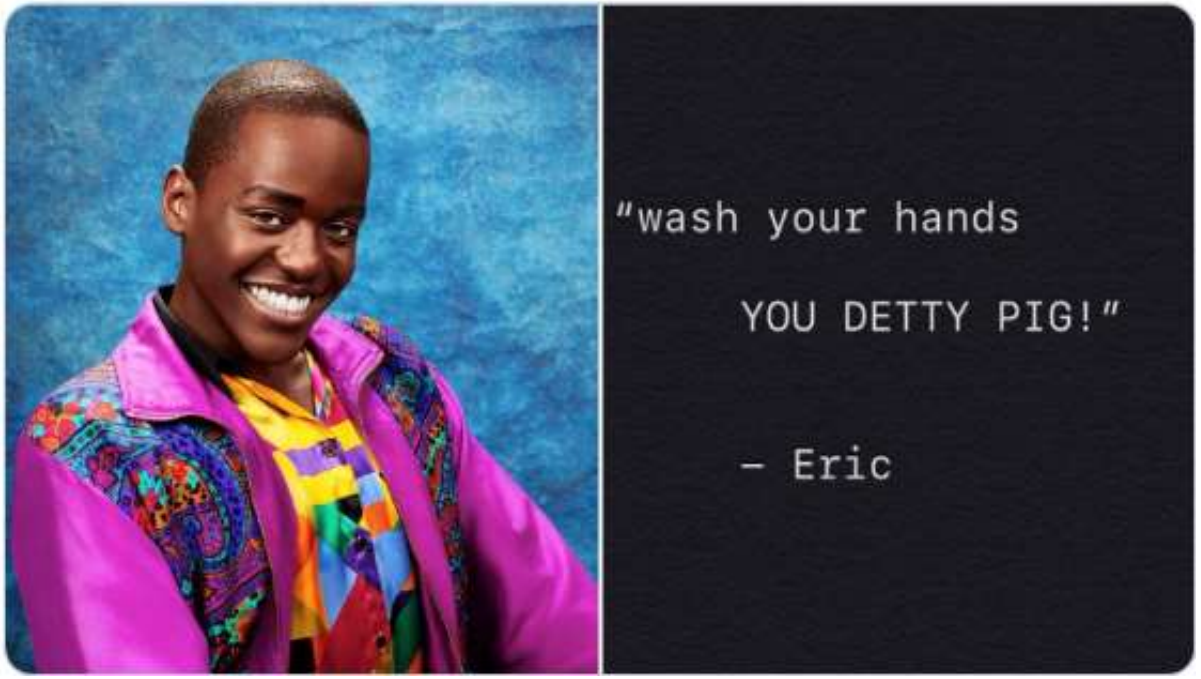
- Time for a short quiz on what you've learnt

http://www.quiz-maker.com/Q09LCOG

Summary

- Use a systematic A to E approach in assessing the unwell child
- Be aware of specific paediatric signs & symptoms indicative of serious illness
- Be aware of important paediatric emergencies and their management
- Utilise the NICE traffic light system in children under 5 with fevers to gage risk of serious illness

- Oh, and….



- Hoping you all stay well, Helen & Sarah x

Sources

- European Paediatric Advanced Life Support Manual. Resuscitation Council UK.
- https://www.resus.org.uk/anaphylaxis/emergency-treatment-of-anaphylactic-reactions/
- https://www.nice.org.uk/guidance/CG102/chapter/1-Guidance#pre-hospital-management-of-suspected-bacterial-meningitis-and-meningococcal-septicaemia#
- https://www.nice.org.uk/guidance/ng143/resources/support-for-education-and-learning-educational-resource-traffic-light-table-pdf-6960664333
- https://cks.nice.org.uk/asthma#!scenario:2