

Paediatric Pearls

by Dr Julia Thomson, Paediatrician

July/August 2022

Monthly paediatric update newsletter for all health professionals working with children – put together by Dr Julia Thomson, Paediatric Consultant at Homerton University Hospital, London, UK. Housed at www.paediatricpearls.co.uk where comments and requests are welcome!

FROM THE (simulated this month) FRONT LINE with thanks to Dr Naresh Seeboruth

Chloe is a 1-year-old girl brought into resus with fever and tachycardia. She has been unwell for the last 24hrs. She has developed a widespread rash over her torso and has had several episodes of diarrhoea. Her parents called the ambulance this evening as she has been less rousable. 5 days ago she sustained a 6% burn to her arms and chest.

A: airway patent **B:** RR 72, Sats 92% in air, bilateral crackles, equal air entry **C:** HR 180, BP 62/32, CRT 4 secs **D:** PEARL, GCS 13/15 (E3, V4, M6), widespread erythematous rash over torso, arms and legs. Peripheral oedema at the ankles T 39.4. **DIAGNOSIS:**

Toxic shock syndrome

Background	- TSS is a rare acute life threatening condition characterised by the production of bacteria producing toxins which lead to immune activation, hypotension and end organ failure - Any unhealed burn wound of any size increases your risk of getting TSS - Always consider TSS in febrile children (>38C) with a recent burn
Pathogens	- Staphylococcus aureus - produces toxic shock syndrome toxins (TSST) - Streptococcus pyogenes , mainly group A beta haemolytic streptococcus producing streptococcal pyogenic exotoxin A
Immunology	Toxins behave as 'super antigens' that interact with antigen-presenting cells and T Cells to induce T Cell proliferation and massive cytokine production including TNF-α
Clinical Features	- The symptoms of TSS start suddenly and get worse quickly. - They might include one or more of the following symptoms: • Fever >38°C • Flu-like symptoms • Diarrhoea +/- vomiting • A widespread sunburn-like rash - including palms and soles • Lethargy • Reduced urine output • Tachycardia +/- tachypnoea
Complications	- Overwhelming sepsis and end organ failure - Infective myositis - Necrotising fasciitis
Treatment	- Fluid resuscitation +/- inotropic support - Antimicrobials • Clindamycin is superior to penicillin because of its potency in suppressing bacterial toxin synthesis as well suppressing the synthesis of TNF-α - Intravenous immunoglobulin (IVIG) • reduces T cell production of pro-inflammatory cytokines, and significantly increases the plasma neutralising activity against super-antigens

Never, EVER, ignore a fast heart rate!

Fever in under 5s

Quality standard [QS64] Published: 24 July 2014 Last updated: 27 July 2022

This [quality standard](#) covers the assessment and early management of fever with no obvious cause in babies and children up to 5 years. In July 2022, one statement about urine testing was removed to bring the standard in line with the updated [UTI in under 16s guideline](#). The remaining 3 which primary and secondary care should follow are:

- 1- Infants and children under 5 years with unexplained fever have their risk of serious illness assessed and recorded using [the traffic light system](#)
- 2 - Infants and children under 5 years who are seen in person by a healthcare professional have their temperature, heart rate, respiratory rate and capillary refill time measured and recorded if fever is suspected
- 3 - Parents and carers who are advised that they can care for an infant or child under 5 years with unexplained fever at home are given [safety net advice](#), including information on when to seek further help.

Are we all compliant?

"My child can't swallow pills"

You could point families towards this rather sweet video from an oncology unit in the States where play specialists and social workers spend time playing the "Pill Swallowing Game":

<https://www.youtube.com/watch?v=WnW36kEW40k>



<https://www.e-afh.org.uk/programmes/kidzmed/> is a whole e-Learning resource for healthcare professionals in teaching children to swallow pills.

Remember, in this summer season of minor injuries, to examine the abdomen of children who fall off their bicycles

A teenager presented to a Minor Injuries Unit (MIU), with an abdominal injury having fallen off a bicycle. Vital signs were normal, a bruise was noted on the abdominal wall and pain score was 5/10. The Nurse Practitioner discussed the case with the GP on duty for the MIU. It was decided that the risk of internal injury was low and the patient was discharged with analgesia. Advice was given to contact 111 if there were further concerns.

Approx 7 hours later, the patient presented to the closest Emergency Department, complaining of persistent pain and vomiting. Blood tests revealed a significantly raised amylase and a CT scan revealed a transection of the pancreas which was eventually fatal.

Learning points:

- 'Handlebar' injuries to the abdomen are associated with major internal injuries (to liver, spleen, pancreas and duodenum) in children.
- Patients with intra-abdominal injury may present with initially normal physiology and/or without visible abdominal wall injury.
- If the child presents to an ED, have a low threshold for surgical review, CT imaging and/or admission for observation.
- If the child presents to a Minor Injuries Unit, there should be a low threshold for in-person review by a clinician trained to examine the abdomen, and/or referral to an ED.

Polio's back?! With thanks to Dr Jack Scannell, paediatric registrar, for pulling together this great [update on what is lurking in London's sewers](#). And probably other cities too. Jack's fast facts:

- ☺ polio is an enterovirus that only affects humans and is transmitted faeco-orally or oral-orally
- ☺ 70% of infected people are asymptomatic, 0.5% get irreversible paralysis which is fatal in 5-10% of these cases from respiratory muscle paralysis
- ☺ immunisation has reduced global cases from 350,000 in 1988 to just 6 in 2021. Polio is now endemic in only 2 countries.
- ☺ vaccines can be inactivated (as in UK now) or oral polio vaccine which is a good choice in areas where wild polio is endemic and is also more practical for mass vaccination campaigns.

Vaccination Choices

INACTIVATED POLIO VACCINE (IPV)	ORAL POLIO VACCINE (OPV)
Purified protein derivative given as injection	Live attenuated strain of virus given orally
First developed by Jonas Salk	Albert Sabin version first in widespread use
No risk of vaccine-associated illness	3 cases per million of vaccine-associated paralytic poliomyelitis (c/w 5000 per million if acquired naturally)
~90% protection after 2 doses ~99% protection after 3 doses Lasts several years but multiple boosters given	~50% protection after 1 dose ~95% protection after 3 doses Likely to be lifelong
Less intestinal immunity generated (as only a humoral response is elicited)	Stronger intestinal immunity so a good choice in areas where wild type virus is endemic
Requires more equipment/infrastructure	Easier to administer
VACCINE OF CHOICE IN MORE ECONOMICALLY DEVELOPED COUNTRIES	VACCINE OF CHOICE IN DEVELOPING COUNTRIES/FOR MASS VACCINATION CAMPAIGNS

UK to 'urgently' offer polio vaccine booster to children aged 1 to 9 in London

How to increase protection against virus comes as sewage surveillance indicates transmission is taking place



☺ sewage monitoring is an effective public health mechanism for monitoring disease prevalence in communities

☺ there is always a bit of vaccine-like polio in our sewers from travellers who have recently had OPV but these are live viruses and so can – if they mutate sufficiently - acquire virulence. Some heavily mutated strains have been found which increases the risk of paralysis from poliovirus.
☺ the highest risk of serious illness is to unvaccinated children. London has poor vaccine coverage percentages and a high density population so the Joint Committee on Vaccination and Immunisation (JCVI) advised a supplementary IPV booster campaign for children aged 1-9 in London. [Click here for the poster form of the algorithm](#) advising GPs which vaccine to give children depending on their age and vaccination history.

[CLICK HERE](#) for the information leaflet for parents.

Patient Safety Notice

PSN064 / January 2022



Handlebar injuries in the paediatric abdomen