

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!

Carotenaemia – with thanks to Dr Anusuya Kawsar, dermatology registrar at Barts Health NHS Trust. **Yellow pigmentation** of skin particularly over soles and palms. Carotenoids are precursors of Vitamin A/ retinol found in red, green, yellow and orange vegetables and fruit. It's harmless and reversible.

How many carrots does it take to turn skin orange? Ans: 5-10 a day for a few weeks. Less if they are cooked and pureed as this increases the absorption of carotene. Carotenaemia is more common in vegetarians and in young children fed large quantities of baby jars. A 2.5oz jar of sweet potatoes or carrots contains 4-500% of an infant's recommended daily intake.

Other Possible Causes:

Secondary Carotenaemia: hyperlipidaemia, liver disease, hypothyroidism, diabetes, nephrotic syndrome which all impair the conversion of β -carotene into retinol.

Rare genetic defect in carotene metabolism

Investigations: Serum beta carotene levels will be high

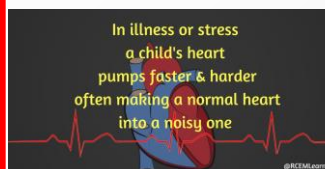
Treatment: Modify the diet or treat underlying cause

More reading: <https://www.dermnetnz.org/topics/carotenaemia>, <http://www.medicalzone.net/differential-diagnosis-of-carotenemia.html>



LESSONS FROM THE FRONT LINE – getting the lingo right

Heart murmurs are often picked up incidentally in the ED or in the GP surgery when a child is unwell. There's a good article on how to approach this at <https://www.rcemlearning.co.uk/foamed/listen-to-your-heart-murmurs-in-children/>. **If the child is well grown, there are no red flags and the murmur is soft, short, systolic, symptom free and shifts with position then the heart will be normal.**



- Red flags:**
- Red flag: Symptoms – breathless, faltering growth, sweaty on feeding, syncope, palpitations
 - Red flag: Diastolic murmurs
 - Red flag: Heaves and thrills
 - Red flag: A new harsh murmur
 - Red flag: Holosystolic / pansystolic
 - Red flag: Intensity increases on standing
 - Red flag: Abnormal second heart sound
 - Red flag: Impalpable femoral pulses

Instead of telling the parents that their child might have a hole in their heart or a leaky valve, use reassuring language such as that in the RCEM cartoon above or that found in the GOSH information leaflet on innocent murmurs at <https://www.gosh.nhs.uk/conditions-and-treatments/general-medical-conditions/heart-murmurs-innocent>

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Medically Unexplained Symptoms (MUS) Part 2 – Risk factors and the “filter theory”. (Last month Part 1 - background)

For those of you who may not have seen last month's edition, I recommended an e-learning resource on MUS from MindEd at <https://www.minded.org.uk/Component/Details/525083>.

Experiencing bodily symptoms, without suffering from a well-defined physical disease, is a normal response to a broad range of life stressors. The e-learning module talks about the **factors** involved. NB: health professionals are implicated in some of these:

- Predisposing** – anxious or perfectionist personality traits
- Precipitating** – physical trauma or harm. This can include experiences within the health service, operations or even misinterpretation of results
- Perpetuating** – unnecessary medical examinations or treatment (initiated by the doctor as (or more) often as insisted upon by the patient or parent
- Protective** – well functioning family

Signal Filter Theory: describes how, in healthy people, the CNS filters out a lot of signals before they reach their brain eg. we are not constantly aware of our clothes touching our skin. This filter seems to be broken in children with MUS and their CNS is somehow rewired. These changes are however reversible.

Somatosensory Amplification Theory: suggests that a physical sensation arises and that patients then focus their attention on this sensation. They develop certain cognitions and attributions which further amplify the perception of these physical signals. This amplification results in a vicious circle in a way that symptoms are reinforced by patients' thoughts and concerns.

These and 6 other explanatory models of MUS are described in the Dutch paper (full text available) referenced below. No papers about children were included in this analysis. I think the theories can be extrapolated to children – with the added complication of the effect the parents' health beliefs might be having on their child's perception of their own health.

van Ravenzwaaij J. [Explanatory models of medically unexplained symptoms: a qualitative analysis of the literature. Mental Health in Family Medicine](#) 2010;7:223–31

Urinary tract infection (lower): antimicrobial prescribing

<https://www.nice.org.uk/guidance/ng109> (publ October 2019) sets out an antimicrobial prescribing strategy for lower urinary tract infection (cystitis) in children, young people and adults (without a catheter). It aims to optimise antibiotic use and reduce resistance. For the under 16s, we are referred principally to the separate guidelines on [UTI in the under 16s](#) and on [fever in the under 5s](#).

❖ Offer antibiotics immediately as per chart below, taking into account any previous urine culture results and antibiotic use:

Choice of antibiotic: children and young people under 16 years

Antibiotic ¹	Dosage and course length ²
Refer children under 3 months to paediatric specialist and treat with intravenous antibiotics in line with the NICE guideline on fever in the under 5s	
Children aged 3 months and over - First choice ^{3,4}	
Trimethoprim - if low risk of resistance ⁵	3 to 5 months, 4 mg/kg (maximum 200 mg per dose) or 25 mg twice a day for 3 days; 6 months to 5 years, 4 mg/kg (maximum 200 mg per dose) or 50 mg twice a day for 3 days; 6 to 11 years, 4 mg/kg (maximum 200 mg per dose) or 100 mg twice a day for 3 days; 12 to 15 years, 200 mg twice a day for 3 days
Nitrofurantoin - if eGFR ≥ 45 ml/minute ⁶	3 months to 11 years, 750 micrograms/kg four times a day for 3 days; 12 to 15 years, 50 mg four times a day or 100 mg modified-release twice a day for 3 days
Children aged 3 months and over - Second choice (worsening lower UTI symptoms on first choice taken for at least 48 hours or when first choice not suitable) ^{3,4,7}	
Nitrofurantoin - if eGFR ≥ 45 ml/minute ⁶ and not first choice	3 months to 11 years, 750 micrograms/kg four times a day for 3 days; 12 to 15 years, 50 mg four times a day or 100 mg modified-release twice a day for 3 days
Amoxicillin (only if culture results available and susceptible)	1 to 11 months, 125 mg three times a day for 3 days; 1 to 4 years, 250 mg three times a day for 3 days; 5 to 15 years, 500 mg three times a day for 3 days
Cefalexin	3 to 11 months, 12.5 mg/kg or 125 mg twice a day for 3 days; 1 to 4 years, 12.5 mg/kg twice a day or 125 mg three times a day for 3 days; 5 to 11 years, 12.5 mg/kg twice a day or 250 mg three times a day for 3 days; 12 to 15 years, 500 mg twice a day for 3 days

The [2011 BTS guideline on community acquired pneumonia](#) (CAP) in children was last audited in 2017. The standards are all about reducing investigations and escalation of care in simple pneumonia if at all possible. <https://www.brit-thoracic.org.uk/quality-improvement/clinical-audit/bts-national-audit-reports/> houses the last one. Although there were fewer x-rays and blood tests done overall, we still have a way to go to achieve the standards:

- Temperature $>38.5^{\circ}\text{C}$
- Respiratory rate >70 breaths/min in infants and >50 breaths/min in older children
- Moderate to severe recession or severe difficulty in breathing
- Nasal flaring, grunting or apnoeas
- Cyanosis or oxygen saturations $<92\%$
- Significant tachycardia for age range (not included in this audit)
- Capillary refill time of ≥ 2 seconds (not included in this audit)

BTS definition of severe CAP

- ❖ less than **5%** of children with CAP should have blood tests
- ❖ less than **10%** should have a chest x-ray
- ❖ less than **10%** should have iv antibiotics
- ❖ less than **5%** should have hospital follow up

We are supposed to be achieving these targets by 2020. In 2016/7, 45% of children had blood tests and 73% had chest x-rays which is a long way off the 5% and 10% expected for these tests respectively. [NICE guidelines on sepsis](#) were published during this audit period and could have led to more investigations being done as their [high risk criteria](#) for severe sepsis are more conservative than BTS'.

Bottom Line: children with simple CAP and no signs of sepsis should be assessed and managed in primary care with no investigations and oral antibiotics. I suspect many are. In the ED, we need to follow that lead.