Paediatric Pearls

by Dr Julia Thomson, Paediatrician

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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!

How many respiratory infections does an average child have in a year?

by Dr Dharini Chandrasegaran

INFANCY	11 infections per year
PRE-SCHOOL	8 infections per year
SCHOOL AGE	4 infections per year

A child with a normal immune system, grows and develops normally, responds quickly to appropriate treatment and is healthy between infections. Red flags for possible immunodeficiency (PID) are

- Failure of a baby or child to gain weight or grow normally (faltering growth)
- The need for iv antibiotics to treat infections
- A family history of primary immunodeficiency
- Four or more ear infections in one year
- Two or more sinus infections in one year
- Two or more months on at least two antibiotics at a stretch with little effect
- Two or more pneumonias within three years
- Frequent deep tissue or organ abscesses
- Persistent thrush or fungal infection (more than six months)
- Two or more deep seated infections, including septicaemia, within three years

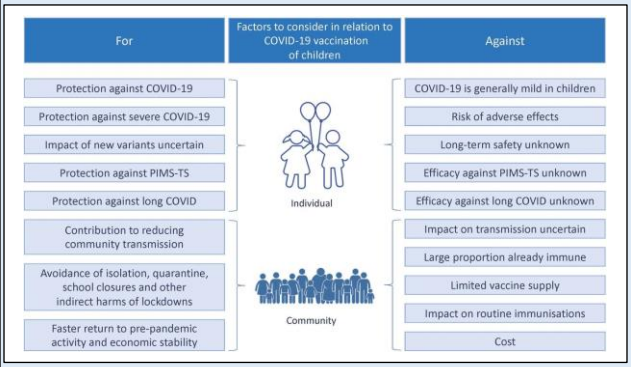
2 or more of these red flags? Think "primary immunodeficiency?" from https://www.paediatricfoam.com/2020/09/immunodeficiency/ and http://www.immunodeficiencyuk.org/

The immunodeficiency support group website lists 360 (!) PIDs that have been identified to date but - don't worry - 20 of them account for nearly all the clinical cases: http://www.immunodeficiencyuk.org/whatarepids/typesofpid. Many of us older clinicians did not cover much immunology at medical school and this website is invaluable for filling in our knowledge gaps. There are 8 subtypes:

COMBINED IMMUNODEFICIENCY Eg. Severe Combined ID (SCID)	**IMMUNODEF. WITH SYNDROMES** Eg. DiGeorge syndrome / 22q11 deletion	**ANTIBODY DEFICIENCY** Eg. Common variable ID. disorders (CVID)	**IMMUNE DYSREGULATION** Eg. HLH
CONGENITAL PHAGOCYTE DEF. Eg. Chronic granulomatous disorder	**DEFECTS IN INNATE IMMUNIITY** Eg. IRAK4 deficiency	**AUTOINFLAMMATORY DISORDERS** Eg. Familial Mediterranean Fever	**COMPLEMENT DEFICIENCY** Eg. C1 esterase deficiency

Doctors' appreciation of the risk of secondary immunodeficiency tends to be better: think HIV, malignancy, malnutrition, diabetes, steroids and other immunosuppressive treatments, recent chicken pox, protein-losing states like nephrotic syndrome.

Should children be vaccinated against Covid-19?



Zimmermann P, Pittet LF, Finn A, et al. Should children be vaccinated against COVID-19? *Archives of Disease in Childhood* Published Online First: 03 November 2021. doi: 10.1136/archdischild-2021-323040

There is no consensus on whether children under 12 should be vaccinated (see above). RCPCH's position statement is that "children, young people and all of society will directly benefit from an increase in vaccination uptake in the adult population" and - with inference to the impact of the lockdown on their mental health - that children "have already borne a great deal on behalf of us all."

NEW SERIES – "*Did you know?*"

Every month, we all pick up updates, information and new resources that we were unaware of. I have asked our junior paediatric trainees to keep an eye out for titbits which would be useful to healthcare professionals new to paediatrics or dealing with children as a subset of their usual clinical load.

Two ***Did you Know?*** statements for starters:

1. Diminished or absent tonsils and cervical nodes in the presence of recurrent respiratory infections can suggest an antibody deficiency (https://www.paediatricfoam.com/2020/09/immunodeficiency/).

2. The NICE guideline on ADHD was updated in 2019 and an ECG is no longer necessary for all children prior to starting medications (https://www.nice.org.uk/guidance/ng87/chapter/Update-information).

What? Why? Children in Hospital

I have just come across this excellent Scottish charity and their website which houses parent information leaflets and 61 videos for families to watch to help prepare themselves for their visit to the hospital. ECG, x-ray, blood test etc.

https://www.whatwhychildreninhospital.org.uk/

Effect of Amoxicillin Dose and Treatment Duration on the Need for Antibiotic Re-treatment in Children With Community-Acquired Pneumonia

The CAP-IT Randomized Clinical Trial

Julia A. Bielicki, PhD[1]; Wolfgang Stöhr, PhD[2]; Sam Barratt, MPH[2]; et al

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JAMA. 2021;326(17):1713-1724. doi:10.1001/jama.2021.17843

Link to full text paper from Journal of the American Medical Association

With thanks to one of our current GP trainees, Dr Rebecca White, for bringing this recent paper to the journal club for discussion. This is a topic which exercises all of us who treat unwell children.

- < 5 yr olds often receive antibiotics for respiratory infections, usually amoxicillin
- ≈ 33% of community acquired pneumonia (CAP) in this age group is thought to be bacterial
- Co-detection of viruses and bacteria is common in symptomatic and asymptomatic children
- Neither chest x-rays nor blood tests help tell which children require antibiotics
- There are antibiotic stewardship issues with the current prevalence of antibiotic use in this cohort of children, especially in secondary care
- Duration of treatment varies from 3 to 7 days with doses ranging from 30 - 90mg/kg/day

CAP-IT TRIAL CLINICAL QUESTION: For children with community-acquired pneumonia discharged from an emergency department, observational unit, or inpatient ward (within 48 hours), is subsequent outpatient treatment with oral amoxicillin at a dose of 35 to 50 mg/kg per day noninferior to 70 to 90 mg/kg per day, and is a 3-day course noninferior to 7 days, with regard to the need for antibiotic re-treatment?

Methods: multi-centre randomised, blinded, placebo-controlled trial. Children discharged from A+E or <48h inpatient admission. Primary outcome - re-treatment with antibiotics for a respiratory infection <28 days from randomisation. Secondary outcomes - symptoms, compliance, *S. pneumoniae* colonisation.

Results: 824 children enrolled, mean age 2.5Y, 48% female. There was no significant difference in the primary outcome (the need for further treatment) with a reduced dose or a reduced duration of therapy. Compliance was better with a shorter duration of therapy. Cough lasted for 2 days longer in shorter duration, no other significant difference in symptoms.

Conclusion: a 3 day course of amoxicillin at a dose of 30-50mg/kg is non-inferior to treatment for 7 days with 70-90mg/kg for children <5 years discharged from A+E or hospital ward (<48h admission) with CAP.

British Thoracic Society guidelines for the management of community acquired pneumonia in children: update 2011

A reminder of current UK guidelines: https://thorax.bmj.com/content/thoraxjnl/66/Suppl_2/ii1.full.pdf

Fever >38.5° + recession + tachypnoea = consider bacterial pneumonia

- All children with a clear clinical diagnosis of pneumonia should receive antibiotics as bacteria v. viral causes can not be distinguished reliably
- An x-ray is unnecessary in children not admitted to hospital
- CRP and other acute phase reactants should not be tested routinely
- Children with O_2 sats < 92% should be referred to hospital and treated with O_2
- Amoxicillin is first line antibiotic, co-amoxiclav in influenza associated pneumonia
- Oral antibiotics (if tolerated) are safe and effective, even in severe pneumonia
- Children with CAP in both primary and secondary care should be reassessed if symptoms persist beyond 48hrs of treatment. Consider adding a macrolide.