Doncaster and Bassetlaw Paediatric Department
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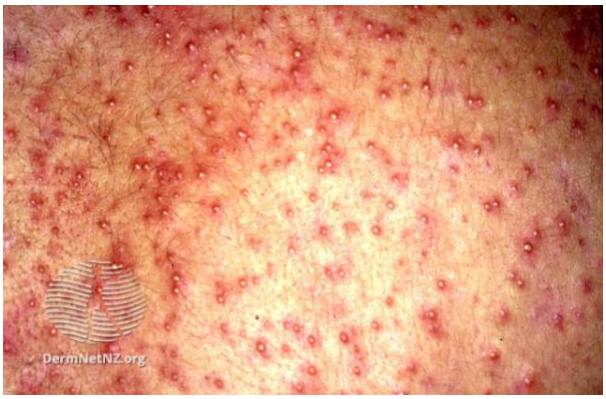
Doncaster and Bassetlaw Teaching Hospitals NHS Foundation Trust

Welcome to the first issue of 'The PEN' – the Paediatric Education Newsletter. This is a monthly educational bulletin of cases, clinical questions and learning points from recent teaching.

Case: A neonate with a pustular rash – Author Lucy Elliott GPST1

A well 5-day old neonate presented with a 2-day history of a widespread pustular rash. The rash spread from the trunk to the rest of his body. He was born at term and was feeding well. He had IV antibiotics for 36h following birth due to risk factors.



Credit: Image from DermNetNZ.org

On examination he had a diffuse blanching pustular rash with erythematous base.

The lesions were approximately 2mm in diameter.

Table 2: Differential Diagnosis for neonatal pustular rash		Age of presentation
Infectious	Bacterial	Neonatal period
	Syphilis (palmoplantar changes)	
	Viral	
	Fungal/parasitic	
Reactive	Miliaria (first weeks of life)	First weeks
	Transient neonatal pustular melanosis	Day 0
	Erythema toxicum	Day 1-3
	Eosinophilic folliculitis	First year
	Acne	First year
	Acropustulosis	Hours to 6 weeks

Source: https://www.racgp.org.au/afp/2012/may/common-rashes-in-neonates/

Evidence Update: Pustular Rashes in Neonates
BMJ Best Practice: Assessment of Pustular Rash - Includes neonates
Dynamed: Rash in children – differential diagnosis - Specific section on Neonatal rashes
Further reading: DermNet NZ. Blisters and pustules in neonates

Articles – these articles provide an overview of pustular rashes in neonates including diagnosis and management
1. Neonatal pustular dermatosis: an overview. Indian journal of dermatology; 2015; vol. 60 (no. 2); p. 211
2. Educational paper: neonatal skin lesions. European Journal of Pediatrics ; Berlin Vol. 173, Iss. 5, (May 2014): 557-66.

Rashes are extremely common in newborns and can be a significant source of parental anxiety. In this case the likely cause was **miliaria pustulosa**, a benign condition found in neonates. We provided safety netting advice and a further review to assess for any progression of the rash.

Clinical Question : In obese children receiving IV aminophylline how do I prescribe treatment to take in consideration their body habitus? – Author Simon Scammell ST8

Identification of obese inpatient children presents a challenge. As it stands, most paediatric prescribers do not calculate BMI. This is often due to a lack of inpatient height measurements.

Weight adjustment is now in the START assessment and advisory notes are issued within the cBNF, but there is a lack of awareness of the potential for harm of obesity-related errors. Only 9% of Paediatricians know how to calculate ideal body weight (IBW)[1].

Aminophylline is a drug with a narrow therapeutic range so particular care needs to be taken. The cBNF recommends using IBW however it does not provide guidance on which method to use to calculate it.
The UK Medicines Information (UKMi) pharmacists take a pragmatic approach and suggest prescribing the loading dose on total body weight but the maintenance prescription should use IBW. The reverse BMI method has been found to be the most superior method of calculating IBW across a wider range of ages and heights[2].

Example of IBW calculation using the BMI method
A 7-year-old girl who is 1.2m tall
BMI_{50} = 15.6kg/m_2 (using Girls UK Body Mass Index 2-20 years chart[2])
IBW = BMI_{50} x (height in m)^2 = 15.6 x 1.2 x 1.2 = 22.5kg *UK Medicine Information*[3]

UKMI Q& A: a comprehensive up-to-date summary of evidence relating to drug dosing in obese children. **How should medicines be dosed in children who are obese?**

Systematic Reviews – there are two systematic reviews
1. Drug Dosing and Pharmacokinetics in Children With Obesity: A Systematic Review. JAMA pediatrics; Jul 2015; vol. 169 (no. 7); p. 678-685

2. Gaps in Drug Dosing for Obese Children: A Systematic Review of Commonly Prescribed Emergency Care Medications Clinical Therapeutics; Sep 2015; vol. 37 (no. 9); p. 1924-1932

Learning Points from this month's departmental teaching

Congenital CMV – Rebecca Stokell ST4
1.Congenital CMV can be diagnosed on either a urine or saliva sample. This must be sent within the first 21 days of life. At DRI, Infants who fail the newborn hearing screen are tested for CMV.
2. IgM positive on maternal blood is not diagnostic of recent infection.

Childhood Obesity – Jan Devaraja ST7
1.Websites/ Smart phone apps that could be helpful for children and parents: Change4Life, Rise Above, and PHC- UK Sugar Equivalent (websites) and Food Scanner and Lose It (free smartphone apps)
2. In adolescents who are morbidly obese, there is poor evidence of benefit with lifestyle modifications only. Consider bariatric surgery in adolescents whose BMI is 40kg/m2 and above or BMI 35kg/m2 with co-morbidity.

Metabolic Bone disease of prematurity – Ihsan Mohamed ST8
1. Measurements of PTH helps in establishing underlying calcium or phosphate deficiency as a cause for MBDP.
2. Phosphate supplementation alone can reduce serum ionised calcium triggering secondary hyperparathyroidism and worsening MBDP.
3. Treatment of MBDP with supplementation should maintain optimal ratio of calcium and phosphate to avoid phosphate-driven secondary hyperparathyroidism.

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