

Paediatric Pearls

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Previous editions are all available at www.paediatricpearls.co.uk

From the Literature with Dr Marylyn Emedo, paediatric registrar and education fellow at King's College Hospital, London

[Arch Dis Child. Mar 16: Validation of two algorithms for managing children with a non-blanching rash.](#) Riordan FA, Jones L, Clark J, Non-Blanching Rash Audit Group

- ◆ This study looked at the efficacy of using algorithms to decide how to manage cases of non-blanching rash seen in hospital.
- ◆ Non blanching rash (NBR – including both petechiae and purpura) is one of the most recognised signs of possible meningococcal disease (MCD) by both lay people and health care professionals, although it is absent in about 20% of cases.
- ◆ Early recognition and appropriate treatment of NBR is crucial as missing a case of meningococcal disease can have disastrous consequences. Treating all cases of NBR with immediate IV broad spectrum antibiotics however is also undesirable - in clinical practice, the majority of children we see will have other diagnoses, such as viral illnesses, [Henoch Schonlein Purpura](#) (HSP) or [idiopathic thrombocytopenia](#) (ITP).
- ◆ The NICE guideline on bacterial meningitis includes an [algorithm](#) for managing children who have a NBR as part of their presentation. Other studies have attempted to rationalise which children with a NBR should be treated eg. [Brogan and Raffles, ADC 2000](#). Riordan et al created their own management [algorithm](#) (from Newcastle, Birmingham and Liverpool – somewhat confusingly termed the **NBL** algorithm) and compared the two approaches.
- ◆ This study used data from 8 cohorts; a total of 625 children aged between 1 month and 15 years, presenting with NBR. The NBL algorithm was applied prospectively to certain groups, and the NICE guideline was then applied retrospectively across all cases.
- ◆ Cases of MCD were defined as either “confirmed” (culture positive) or “probable” (clinically unwell with a high index of suspicion, cultures negative). 145 of the 625 children in this study (23%) had either confirmed or probable meningococcal disease.
- ◆ The NBL algorithm recommended treatment for 37% of children, picking up all 145 cases of confirmed or suspected MCD with a sensitivity of 100% and a specificity of 82%.
- ◆ In one prospective cohort 15 children had HSP, and as dictated by the NBL algorithm should have had immediate IV antibiotics; however clinicians utilised their clinical judgement and withheld antibiotics for these children. There was however one child in a different cohort initially similarly thought to have HSP thus not immediately treated; unfortunately the diagnosis was in fact MCD and he required PICU treatment for septic shock.
- ◆ The NICE algorithm recommended treating 61% (382) of children with antibiotics which included 141/145 of the confirmed/suspected MCD patients. The four that would not have received treatment included 2 who presented afebrile (but did have high CRPs), and one leucopaenic – NICE does not recommend CRP measurement in afebrile children, and does not take leucopaenia into account – although this is a known sign of sepsis. The sensitivity was thus 97% and specificity 50% of the NICE algorithm, thus suggesting more children would receive unnecessary antibiotics using the NICE algorithm rather than the NBL one, and there is a small increased likelihood of missing cases of MCD.
- ◆ The study demonstrates the utility of algorithmic management of children presenting with NBR. The higher specificity of the NBL algorithm over the NICE algorithm may be due to the fact that only meningism, cap refill > 5s and irritability/lethargy are included as symptoms/signs which might suggest meningococcal disease, whereas NICE has a much longer list of other symptoms/signs which are considered possibly significant thereby increasing the propensity to over treat.

Benign acute childhood myositis (BACM) - Good 2005 paper on aetiology and management in the ED available in [full text here](#).

Sudden onset of muscle pain predominantly affecting the calves of school age children. Often can't weight bear, usually preceded by coryza, neurology is normal (if not, think is this [Guillain-Barre?](#)). High CK, normal U & Es, lowish WBC and platelets. Usually resolves with no treatment. IV fluids probably unnecessary unless there are concerns about [rhabdomyolysis](#) (is their urine the colour of coca-cola or dipstick positive for blood? If so, refer.). BACM is not really seen in adults – possibly because it occurs only in 'flu naïve people.

[Click here](#) for the Whittington Hospital patients' information leaflet.

Intravenous fluid therapy in children and young people in hospital. [NICE guideline \(NG29\)](#), December 2015

Comprehensive, prescriptive guideline on prescribing and managing iv fluids in the under 16s. PDF of 6 algorithms [here](#).

Salient points of guideline:

- ☑ Pay attention to 12 and 24 hourly fluid balance subtotals
- ☑ Iv fluid resuscitation is 20mls/kg normal saline over < 10 mins, 10-20mls/kg in neonates
- ☑ Maintenance isotonic fluids are 100mls/kg for first 10kgs, 50mls/kg for next 10kgs of weight and 20mls/kg for the rest (males need no more than 2500mls total, females 2000mls)
- ☑ Restrict fluids to 50-80% if there is a risk of hyponatraemia
- ☑ Treat symptomatic hyponatraemia with 2mls/kg of 2.7% sodium chloride over 10-15 minutes.
- ☑ Keep sodium shifts to < 12mmol/L/24 hours

Children with gastroenteritis in the UK only rarely need IV fluids!
Luton has a good guide to [assessing D&V in primary care](#).
[Click here](#) for the abbreviated Whipps Cross guideline on D&V.

Exceptions to the above IV fluids guideline:

1. Burns – [LSEBN guideline](#) here
2. Diabetic ketoacidosis – 2015 [BSPED calculator](#)

Reintroducing egg in the egg allergic child (see [the BSACI guide](#) and a slightly shortened version of that document that I have put [here](#)):

Well cooked egg Stage 1	Loosely cooked egg Stage 2	Raw egg Stage 3
Cakes	Pancakes and Yorkshire pudding	Fresh mousse
Biscuits	Meringues	Fresh Mayonnaise
Dried egg pasta	Lemon Curd	Fresh Ice Cream
Well Cooked fresh egg pasta	Quiche	Sorbet
Egg in sausages and prepared meat dishes	Scrambled egg	Royal icing (both fresh powdered icing sugar)
Egg glaze on pastry	Soft boiled egg	Horseradish sauce
Sponge fingers	Fried egg	Tartar sauce
Textured vegetable protein meat alternative (e.g. Quorn)	Omelette	Raw egg in cake mix and other dishes awaiting cooking
Chocolates and sweets	Poached egg	
Egg in some gravy granules	Egg in batter (e.g. fish)	
Egg in some cheeses	Egg in breadcrumbs	
Hard boiled egg*	Hollandaise sauce	
	Egg custard	

* This should be the last food introduced within Stage 1. Please ensure the egg is well cooked and has no runny white or yolk.

From [King's College guideline](#) on reintroducing egg

Factsheet on egg allergy:
<http://www.anaphylaxis.org.uk/wp-content/uploads/2015/12/Egg-Allergy-v8-JW-credentials-updated.pdf>

Did you know?

The usual MMR vaccine should be given to egg allergic children.

I have also put the [4 page guide to reintroducing egg at home](#) under the Primary Care guidelines tab (<http://www.paediatricpearls.co.uk/primary-care-guidelines/>).