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## **Validating British Society for Antimicrobial Chemotherapy (BSAC) guidance for the management of children with fever and a non-blanching rash**

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# Validating British Society for Antimicrobial Chemotherapy (BSAC) guidance for the management of children with fever and a non-blanching rash.

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Prior to the introduction of the Meningococcal C vaccine in 1999 and the Meningococcal B vaccine in 2015 it had been estimated that up to 20% of children with fever and non-blanching rash would have invasive Meningococcal Disease. With the introduction of effective vaccines the rate of Meningococcal Disease have fallen significantly in the UK over the last 20 years [1].

The Petechiae in Children (PiC) study was the largest prospective study of children with fever and non-blanching rashes ever performed [2,3]. Conducted over two winters between 2017 and 2019 across 37 UK sites the PiC study demonstrated that Meningococcal Disease now accounts for approximately 1% of children presenting to emergency care in the UK with a non-blanching rash and history of fever [3]. The PiC study validated current clinical practice guidelines in the UK including the two national guidelines produced by the National Institute for Health and Care Excellence (NICE). The full PiC study and protocol have been published in full elsewhere [2,3].

The two relevant CPGs produced by NICE are NICE CG102 - Meningitis (bacterial) and meningococcal septicaemia in under 16s: recognition, diagnosis and management and NICE NG51 - Sepsis: recognition, diagnosis and early management. These two CPGs recommend different approaches to the assessment and management of children with non-blanching rashes and fever [4,5]. NICE NG51 advises treatment of all children irrespective of appearance or laboratory results whereas NICE CG102 advocates a more tailored approach based on clinical appearance and laboratory results [4,5]. Both guidelines were highly sensitive 1.00 (95% CI 0.82 to 1.00) for both [3]. Unfortunately they both demonstrated low specificities of 0.00 (95% CI N/A) and 0.01(0.01 to 0.02) 0.01(0.01 to 0.02) respectively [3].

Shortly after the publication of the PIC study the British Society for Antimicrobial Chemotherapy (BSAC) produced a new national guideline for the assessment and management of children with fever and non-blanching rash [6]. This tailored approach advocates that children with high risk features (Unwell appearance, purpura, haemodynamic instability, or a rash developing with the department) should be treated immediately for possible invasive Meningococcal Disease [6]. It also identifies a low risk group suitable for management in the community without parenteral antibiotics [6]. This low risk group is defined based upon clinical features (well appearance, distribution of rash) and laboratory features (C - reactive protein < 20mg/l) [6].

Using the original PiC dataset of 1329 children the BSAC guidance was validated using the same methodology reported in the PiC study. Using the PiC dataset the BSAC guidance demonstrated a sensitivity of 1.00 (95% CI 0.82 to 1.00) and a specificity of 0.42(95% 0.39 to 0.44). The BSAC guidance correctly identified all children with Meningococcal Disease whilst also identifying 322 children who did not require blood tests and 547 children who could be safely discharged without the need for parenteral antibiotics.

Based on these findings it appears that the BSAC guidance should be adopted nationally as the standard of care for children presenting with fever and non-blanching rash.

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