



MRF's eTool: improving the recognition, diagnosis and management of bacterial meningitis

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Meningitis Research Foundation (MRF) has launched a new teaching package, including an eTool, for clinicians wanting to improve their ability to recognise, investigate and manage young infants who present with possible bacterial meningitis.

For decades, parents have named meningitis as the disease they fear most¹ and this is not surprising. It is well-known that young infants are at the highest risk of contracting bacterial meningitis and that this is a disease that can kill quickly or cause serious disability in some survivors. Young children are particularly at risk of bacterial meningitis because their immune system continues to develop in the first few months of life. In England and Wales the rate of bacterial meningitis in infants under the age of three months is 70 times that of adults.²

Vaccines have proven their worth in reducing the incidence of bacterial meningitis and septicaemia in older children but little to no progress has been made in infants less than three months of age. Enhanced surveillance undertaken by experts at St George's University of London, and facilitated by the British Paediatric Surveillance Unit, revealed that the incidence of bacterial meningitis in this age group remained unchanged in 2010/2011 compared to the previous three decades.³

Routine vaccines have had little impact on meningitis in infants less than three months of age, not only because the routine schedule starts from two months of age but also because some of the most common causes of meningitis in young

infants – Group B streptococcus (GBS), *E. coli* and *Listeria monocytogenes* – are not currently vaccine preventable.

In the absence of vaccines, rapid identification and treatment of meningitis provides the best chance of survival but unfortunately it can often be missed because in young infants the symptoms are mostly non-specific and resemble many other less serious viral illnesses. Additionally, research has found that around 50% of infants less than three months of age diagnosed with bacterial meningitis did not present with fever.⁴ This is especially concerning because the absence of fever means that these children are not picked up by the major guidelines designed to identify sick children.⁵ In this context it is perhaps not surprising that some infants with meningitis could potentially be sent home from the GP or hospital when they first present.

As a patient organisation, MRF is dedicated to helping improve diagnosis and treatment in this vulnerable age group. This is why MRF funded a healthcare delivery study to examine the early presenting features, symptom progression and management of young infants diagnosed with bacterial meningitis. The study found that:

- there was lack of recognition of the signs and symptoms by GPs and in hospital
- there were delays in starting antibiotics
- the choice of antibiotics did not follow National Institute for Health and Care Excellence (NICE) guidelines
- there were delays in performing lumbar puncture, which is essential for prompt diagnosis of bacterial meningitis.
- there was variation in practice across the hospitals where the infants were treated.⁶

It is essential to optimise recognition and management of bacterial meningitis to save lives and minimise long-term after-effects, such as neurodevelopmental complications, in those that survive.

The study recommended a targeted campaign for education and harmonisation of practice. In response MRF has worked with the study investigators and the Royal College of Paediatrics and Child Health (RCPCH) to create a teaching package for hospital management of suspected bacterial meningitis in infants less than three months of age. The educational package, which has been endorsed by and received continuing

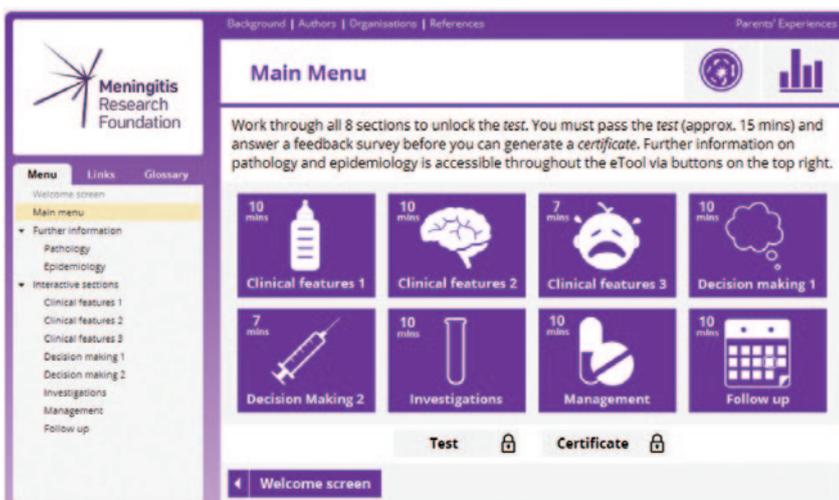


FIGURE 1 The main menu of the MRF's eTool.

professional development accreditation from the RCPCH, consists of:

- an eTool to help clinicians recognise clinical features of bacterial meningitis in young infants (**FIGURE 1**)
- a lumbar puncture information sheet to help doctors explain the procedure to parents
- an algorithm to aid management of bacterial meningitis.



FIGURE 2 MRF's Baby Watch card: symptoms information for parents.

Feedback from a survey of paediatricians who piloted the resource was overwhelmingly positive, with 97% of respondents reporting that they would recommend the course to a colleague and 87% feeling they would be less likely to miss a case of meningitis after completing it.

It is hoped that this eTool will better equip clinicians to rapidly diagnose and treat bacterial meningitis in young infants, ultimately improving outcomes for these infants and their families.

MRF's Baby Watch poster and A6 card provides a pictorial representation of symptoms to assist parents and carers to recognise meningitis and septicaemia in babies too young to explain how they are feeling (**FIGURE 2**).

References

1. **PHE.** *Parental Attitudes to Childhood Immunisation: Some Key Findings.* 2016. Online at: www.gov.uk/government/uploads/system/uploads/attachment_data/file/585203/2016_survey_infographic.pdf.
2. **Okike I.O., Ribeiro S., Ramsay M.E. et al.** Trends in bacterial, mycobacterial, and fungal meningitis in England and Wales 2004-11: an observational study. *Lancet Infect Dis* 2014;14:301-07.
3. **Okike I.O., Johnson A.P., Henderson K.L. et al.** Incidence, etiology and outcome of bacterial meningitis in infants aged <90 days in the UK and Republic of Ireland: prospective, enhanced, national population-based surveillance. *Clin Infect Dis* 2014;59:e150-77.
4. **Okike I., Ladhani S., Johnson A. et al.** Clinical characteristics and risk factors for poor outcome in infants less than 90 days of age with bacterial meningitis in the UK and Ireland. *Pediatr Infect Dis J* (in press).
5. **National Institute for Health and Care Excellence.** *Feverish Illness: Assessment and Initial Management in Children Younger than 5 Years.* 2007. NICE: London.
6. **Okike I.O., Ladhani S.N., Anthony M. et al.** Assessment of healthcare delivery in the early management of bacterial meningitis in UK young infants: an observational study. *BMJ Open* 2017;7:e015700.

For more information about meningitis and septicaemia, and to see the full range of free resources for health professionals and families and patients, visit www.meningitis.org. The eTool is available at neonatal.meningitis.org. The information sheet and algorithm can be accessed from the eTool or downloaded from www.meningitis.org/healthcare-professionals/resources

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