How to manage bacterial meningitis and meningococcal septicaemia in under-16s

A member of the NICE guideline development group highlights the important issues from the latest evidence based guideline for Nursing Times readers

INTRODUCTION
This article outlines the new National Institute of Health and Clinical Excellence clinical guideline on the recognition and treatment of bacterial meningitis and meningococcal septicaemia in children and its relevance to and implications for nursing practice.

The guideline, Bacterial Meningitis and Meningococcal Septicaemia, offers healthcare professionals advice on the care of children and young people aged under 16 years in both primary and acute care (NICE, 2010).

INCIDENCE
Bacterial meningitis and septicaemia are caused by a range of bacteria, including Neisseria meningitidis (meningococcus), Streptococcus pneumoniae (pneumococcus) and Haemophilus influenzae type B (Hib), and can occur singly or, more commonly, together when they are known as meningococcal disease.

Bacterial meningitis occurs when the bacteria, which are found normally in the upper respiratory tract, infect the lining of the brain (meninges) and the spinal cord. Meningococcal septicaemia is caused when the bacteria multiply rapidly in the bloodstream, leading to damage to blood vessels and, in some cases, multiple organ failure or death.

Although relatively rare, meningococcal disease is still the leading infectious cause of death in early childhood. Since many of these deaths are preventable, its control and treatment is a clinical priority. The childhood immunisation programme has reduced the number of cases of group C meningococcal disease by about 90% in all age groups. However, there is as yet no vaccine against group B disease, which accounts for the majority (90%) of all cases of bacterial meningitis.

According to the Health Protection Agency, in 2007 there were just over 1,000 confirmed cases of bacterial meningitis and meningococcal septicaemia in England and Wales. The agency identified that on average there are approximately 1,500 reported cases of meningococcal disease in the UK each year.

Figures suggest that up to 20% of the children who contract severe meningococcal septicaemia die, usually within 24 hours of the first symptoms appearing, and frequently before they receive specialist care.

This guideline, when implemented, will enable nurses to play an important role in improving diagnosis and treatment of meningococcal disease. It will also reduce the variation in the quality of care that patients with suspected or confirmed meningococcal disease receive.

‘Children and young people with meningococcal disease can deteriorate rapidly, regardless of the result of any initial assessment of severity’

THE GUIDELINE
The NICE guideline focuses on best practice advice for patient-centred care. It recommends that treatment and care should take into account the child or young person’s needs and preferences, as well as those of their parents and carers.

It states that those affected should have the opportunity to make informed decisions about their treatment, in partnership with healthcare professionals.

Good communication between staff, patients and their carers is vital, and the guideline identifies that this should be supported by evidence based written information tailored to the individual’s needs. NICE recognises that the treatment and care, and the information patients and their carers are given, should be culturally and age appropriate.

The guidance and main priorities for implementation focus on:

- Symptoms and signs of bacterial meningitis and meningococcal septicaemia;
- Management before arriving at hospital, including transfer of those with suspected bacterial meningitis or suspected meningococcal septicaemia to acute care as an emergency by telephoning 999;
- Diagnosis in acute care, including:
  - The use of polymerase chain reaction testing to confirm a diagnosis of meningococcal disease;
  - When to perform a lumbar puncture to confirm a diagnosis of meningitis or meningococcal disease;
- Management in acute care, including:
  - Which antibiotics to use for suspected bacterial meningitis or meningococcal disease;
  - Which antibiotics to use for specific infections in confirmed bacterial meningitis or meningococcal disease;
  - Intravenous fluid resuscitation in suspected or confirmed meningococcal septicaemia;
  - Monitoring for deterioration for meningococcal disease;
- Retrieval and transfer to tertiary care;
- Long term management, including the review of children and young people for morbidity such as:
  - Hearing loss (with the child or young person having undergone an urgent assessment for cochlear implants as soon as they are fit);
  - Orthopaedic complications;
  - Skin complications (including scarring from necrosis);
  - Psychosocial problems;
  - Neurological and developmental problems;
  - Renal failure.

RECOGNITION OF SIGNS AND SYMPTOMS
It is vital that healthcare professionals are aware of clinical signs and symptoms that can be used to help identify children and...
young people presenting with possible bacterial meningitis and/or septicaemia. Nursing staff in primary care have a key role in working collaboratively with medical staff to ensure these signs and symptoms are correctly recognised.

The guideline provides useful tables to identify the prevalence of differing signs and symptoms in bacterial meningitis and meningococcal septicaemia in the differing age groups. It is mapped to and supported by the NICE Feverish Illness in Children clinical guideline (NICE, 2007).

The guideline also stresses the need for health professionals to consider the non-specific features of the child’s or young person’s presentation, such as the level of parental concern, how quickly the illness is progressing and their own clinical judgement, when assessing the overall severity of the individual’s illness.

**PRE HOSPITAL MANAGEMENT**
Any child or young person presenting with suspected bacterial meningitis or suspected meningococcal disease should be immediately transferred to acute care by telephoning 999.

Additionally, the guideline identifies that parenteral antibiotics should be given to the child or young person at the earliest opportunity (either in primary or acute care), but stresses that this should not allow any delay in urgently transferring the patient to hospital.

**ACUTE CARE MANAGEMENT**

**Diagnosis**
NICE has provided clear and direct guidance on the non-specific diagnostic tests to be undertaken in children and young people who have suspected meningococcal disease and bacterial meningitis. These include: blood tests; the taking of skin lesion and throat swabs; when to and when not to undertake a lumbar puncture; and the use of cranial computed tomography.

**Monitoring for deterioration**
Monitoring and assessing for any deterioration or improvement in a child’s physiological parameters is a key role for the nurse in any acute hospital setting.

This guideline emphasises the need for close monitoring for signs of deterioration following admission of a child or young person to hospital with meningococcal disease. It also highlights the need for healthcare professionals to be aware that the condition of these children and young people can deteriorate rapidly, regardless of the result of any initial assessment of severity.

Healthcare professionals involved in the treatment of seriously ill children and young people should therefore be trained in the recognition and management of meningococcal disease.

**Supportive care for the critically ill child or young person**
The complexity in management of these children and young people can be challenging for nursing and inexperienced medical staff. This guideline provides logical direction in key areas of collaborative care such as:

- IV fluid administration in the shocked child;
- Prescription of maintenance IV fluids in the child with meningitis;
- Airway management, and when to intubate a child or young person with meningitis or meningococcal septicaemia;
- Advice on the use of vasoactive agents.

The guideline can also help to promote teamwork, optimise care and improve outcomes for children and young people with meningococcal disease.

Furthermore, it identifies the importance of discussing – as soon as possible – all children or young people with suspected or confirmed meningococcal disease who have required resuscitative care with a paediatric intensivist. The transfer of these patients should be undertaken by an experienced paediatric intensive care retrieval team comprised of medical and nursing staff.

**CONCLUSION**
This NICE guideline does not call for major changes in clinical practice. Instead it builds on and clarifies practice guidelines that have been widely used since the late 1990s. It provides the evidence base for the recommendations and offers clear and logical guidance for nursing and medical staff who are infrequently faced with the management of these seriously ill children and who are therefore unfamiliar with their needs.

Undoubtedly, the guideline will help improve the assessment and diagnosis of children and young people with suspected bacterial meningitis or meningococcal septicaemia, and will help to ensure that they receive prompt and appropriate treatment. If it is properly and universally implemented it will save many lives.

The guideline is available at www.nice.org.uk/CG102

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**REFERENCE**