NATIONAL INSTITUTE FOR HEALTH AND CLINICAL EXCELLENCE

SCOPE

1 Guideline title

Bacterial meningitis and meningococcal septicaemia: management of bacterial meningitis and meningococcal septicaemia in children and young people younger than 16 years in primary and secondary care

1.1 Short title

Bacterial meningitis and meningococcal septicaemia in children

2 Background

a) The National Institute for Health and Clinical Excellence ('NICE' or 'the Institute') has commissioned the National Collaborating Centre for Women's and Children's Health to develop a clinical guideline on meningitis and meningococcal disease in children and young people for use in the NHS in England and Wales. This follows referral of the topic by the Department of Health (see appendix). The guideline will provide recommendations for good practice that are based on the best available evidence of clinical and cost effectiveness.

b) The Institute's clinical guidelines support the implementation of National Service Frameworks (NSFs) in those aspects of care where a Framework has been published. The statements in each NSF reflect the evidence that was used at the time the Framework was prepared. The clinical guidelines and technology appraisals published by the Institute after an NSF has been issued have the effect of updating the Framework.

c) NICE clinical guidelines support the role of healthcare professionals in providing care in partnership with patients, taking account of their individual needs and preferences, and ensuring that patients (and

their carers and families, where appropriate) can make informed decisions about their care and treatment.

3 Clinical need for the guideline

a) Meningitis is a condition characterised by an inflammation of the pia and arachnoid mater, the two inner meninges (or coverings) of the brain and the spinal cord. The term is usually restricted to inflammation that results from infective agents. Bacterial septicaemia is the spread of bacteria through the blood stream, which may be associated with changes to circulation and a lowered blood pressure. Both conditions can be caused by several different bacteria.

b) Meningitis is mostly caused by bacteria. It can also be caused by viruses, and rarely by fungi, but this guideline will cover only bacterial meningitis. The principle causative organisms in children and babies older than 3 months include *Neisseria meningitidis* (meningococcus) and *Streptococcus pneumoniae* (pneumococcus). *Haemophilus influenzae* type b is now rare since the introduction of vaccination. In babies younger than 3 months, *Group B Streptococcus, Escherichia coli* and *Listeria monocytogenes* are most common causative organisms. Infections are typically acquired by person-to-person droplet transmission. Meningococcal infections account for the majority of cases of meningitis in the UK and Republic of Ireland.

c) Meningococcal disease is caused by *N. meningitidis*, and includes two predominant patterns of illness: meningitis and septicaemia (meningococcaemia or meningococcal septicaemia), although a proportion of cases show features of both. Meningococcal infections can also affect other organs, including lungs (pneumonia), joints (bacterial arthropathy) and eyes (conjunctivitis). The organism is carried in the nose by up to 40% of the population (incidence is highest in teenagers and there is almost no carriage in

early childhood) and is usually asymptomatic. However, in a small minority of those who encounter the organism for the first time, meningitis, septicaemia or both can occur.

d) Between 1999 and 2005, total reported cases of meningococcal disease fell from 2967 to 1300 in England and Wales, and cases of meningococcal meningitis dropped from 1145 to 579. This fall was partly a result of the introduction of the meningitis C vaccine and partly a natural dip in the incidence of the disease. The total number of cases of all other infective meningitis over the same time period fell from 860 to 807 cases. In 2004 the annual incidence of meningococcal disease was 4.0 100,000 people in England and 3.9 per 100,000 in Wales, based on enhanced surveillance data.

e) Children younger than 9 years are the most at risk of contracting bacterial meningitis and meningococcal septicaemia. The age based incidences of meningococcal disease and bacterial meningitis in England and Wales in 2005 were 31.3 per 100,000 and 4.8 per 100,000 in the age groups 0–4 and 5–9 years respectively. Meningococcal disease is the most common infectious cause of death in children aged between 1 and 5 years.

f) Patients with meningitis or meningococcal septicaemia present to primary care as well as to emergency departments. All patients with meningitis are managed in hospital.

g) Typical presentations of meningitis vary depending on age. Common features in children and young people include fever, vomiting, headache, neck pain, photophobia, confusion, drowsiness and fits. Young babies may present with irritability and refusal to feed. Children and young people with septicaemia present with fever, vomiting, cold hands and feet, shivering, pale or mottled skin, fast breathing, rash, confusion and drowsiness. The rash associated with meningococcal disease ranges from a non-specific macular rash to the characteristic purpuric (raised, non-

blanching, bluish purple) rash. This purpuric rash is mostly seen with septicaemia but is not always present initially.

h) Meningitis and meningococcal disease carry a significant risk of mortality and serious long term morbidity. Up to 20% of the children who contract severe meningococcal septicaemia die, usually within 24 hours of the first symptoms appearing. Complications of infection with *N. meningitidis* include neurological damage, loss of hearing, acute renal failure and clotting abnormalities. Critical decrease in blood supply to the limbs may result in loss of fingertips and skin. Long term complications include residual headaches, memory disturbances, epilepsy, learning difficulties and other neurological sequelae including deafness, blindness and cerebral palsy.

i) There has been a reduction in the incidence of meningitis over the years as a result of vaccines and improved awareness. This has affected some disease causing organisms more than others. However there continues to be variation in areas such as initial assessment and initiation of treatment, disease severity assessment and prevention of secondary cases. The absence of a consistent approach in the management of meningitis and meningococcal disease is reflected in considerable variation in the quality of care between settings.

4 The guideline

a) The guideline development process is described in detail in two publications that are available from the NICE website (see ‘Further information’). ‘The guideline development process: an overview for stakeholders, the public and the NHS’ describes how organisations can become involved in the development of a guideline. ‘The guidelines manual’ provides advice on the technical aspects of guideline development.

b) This document is the scope. It defines exactly what this guideline will (and will not) examine, and what the guideline developers will consider. The scope is based on the referral from the Department of Health (see appendix).

c) The areas that will be addressed by the guideline are described in the following sections.

4.1 Population

4.1.1 Groups that will be covered

a) All children and young people from birth up to their 16th birthday who have or are suspected to have bacterial meningitis or meningococcal septicaemia.

4.1.2 Groups that will not be covered

a) Children and young people with known immunodeficiency.

b) Children and young people with brain tumours, existing hydrocephalus or intracranial shunts.

c) Neonates already receiving care in neonatal units.

4.2 Healthcare setting

a) Management in primary and secondary care.

4.3 Clinical management

a) Diagnosis of bacterial meningitis and meningococcal septicaemia:

- symptoms and signs
- identification of levels of risk based on probabilities of combinations of signs and symptoms
- differentiating between meningococcal septicaemia and other causes of non-blanching rash.

b) Management of suspected bacterial meningitis and meningococcal septicaemia in primary care and in the pre-hospital setting.

c) Management of bacterial meningitis and meningococcal septicaemia in secondary care:

- choice of antibiotics
- fluid resuscitation – type of fluid and timing of administration
- timing and role of intubation and the decision to initiate it
- corticosteroids for the treatment of meningitis
- use of scoring systems such as Glasgow Meningococcal Septicaemia Prognostic Score in diagnosis and management
- role of recombinant Bpi (bacterial permeability increasing protein) and activated protein C.

d) Retrieval and transfer to secondary and tertiary care.

e) Choice and timing of investigations:

- blood tests
- aspirates and swabs
- lumbar puncture
- radiology – computed tomography
- immunological testing.

f) Information that should be given to parents and carers:

- at the time of initial presentation.
- after diagnosis
- regarding short- and long-term effects, including significant psychological and physical morbidities.

g) Note that guideline recommendations will normally fall within licensed indications; exceptionally, and only if clearly supported by evidence, use outside a licensed indication may be recommended. The guideline will assume that prescribers will use the summary of

product characteristics to inform their decisions for individual patients.

h) The Guideline Development Group will consider making recommendations on the principal complementary and alternative interventions or approaches to care relevant to the guideline topic.

i) The Guideline Development Group will take reasonable steps to identify ineffective interventions and approaches to care. If robust and credible recommendations for re-positioning the intervention for optimal use, or changing the approach to care to make more efficient use of resources, can be made, they will be clearly stated. If the resources released are substantial, consideration will be given to listing such recommendations in the 'Key priorities for implementation' section of the guideline.

4.4 Status

4.4.1 Scope

This is the final scope.

4.4.2 Guideline

The development of the guideline recommendations will begin in February 2008.

4.4.3 Related NICE guidance

Feverish illness in children: assessment and initial management in children younger than 5 years. NICE clinical guideline 47 (2007). Available from www.nice.org.uk/CG047

Intrapartum care: Care of healthy women and their babies during childbirth. NICE clinical guideline 55 (2007). Available from www.nice.org.uk/CG055

The epilepsies: the diagnosis and management of the epilepsies in adults and children in primary and secondary care. NICE clinical guideline 20 (2004). Available from www.nice.org.uk/CG020

5 Further information

Information on the guideline development process is provided in:

- 'The guideline development process: an overview for stakeholders, the public and the NHS'
- 'The guidelines manual'.

These booklets are available as PDF files from the NICE website (www.nice.org.uk/guidelinesmanual). Information on the progress of the guideline will also be available from the website.

Appendix: Referral from the Department of Health

The Department of Health asked the Institute:

'To prepare a clinical guideline on the management of meningococcal disease and meningitis in children and adolescents in primary and secondary care.'