



Complete Summary

GUIDELINE TITLE

Management of invasive meningococcal disease in children and young people. A national clinical guideline.

BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network (SIGN). Management of invasive meningococcal disease in children and young people. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2008 May. 46 p. (SIGN publication; no. 102). [143 references]

GUIDELINE STATUS

This is the current release of the guideline.

Any amendments to the guideline in the interim period will be noted on [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).

** REGULATORY ALERT **

FDA WARNING/REGULATORY ALERT

Note from the National Guideline Clearinghouse: This guideline references a drug(s) for which important revised regulatory and/or warning information has been released.

- [September 11, 2007, Rocephin \(ceftriaxone sodium\)](#): Roche informed healthcare professionals about revisions made to the prescribing information for Rocephin to clarify the potential risk associated with concomitant use of Rocephin with calcium or calcium-containing solutions.

COMPLETE SUMMARY CONTENT

** REGULATORY ALERT **

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INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT

CATEGORIES

SCOPE

DISEASE/CONDITION(S)

Meningococcal disease

GUIDELINE CATEGORY

Diagnosis
Management
Treatment

CLINICAL SPECIALTY

Emergency Medicine
Family Practice
Infectious Diseases
Internal Medicine
Neurology
Pediatrics
Preventive Medicine

INTENDED USERS

Advanced Practice Nurses
Emergency Medical Technicians/Paramedics
Health Care Providers
Nurses
Physician Assistants
Physicians
Public Health Departments

GUIDELINE OBJECTIVE(S)

To provide recommendations on best practice in the recognition and management of meningococcal disease in children and young people up to 16 years of age

TARGET POPULATION

Children and young people up to 16 years of age

INTERVENTIONS AND PRACTICES CONSIDERED

Diagnosis/Assessment

1. Assessment of signs and symptoms
2. Interval assessment

3. Laboratory assessment (blood culture, meningococcal polymerase chain reaction [PCR], lumbar puncture as indicated)
4. Glasgow Meningococcal Septicaemia Prognostic Score (in children with invasive meningococcal disease [IMD])

Early Treatment

1. Antibiotic therapy (benzylpenicillin, cefotaxime)
2. Out-of-hospital care

Treatment

1. Intravenous fluids
2. Antibiotic therapy (cefotaxime)
3. Duration of antibiotic therapy
4. Corticosteroid therapy (dexamethasone)

Management

1. Intensive care management
 - Ventilation and airway
 - Inotropes
 - Renal replacement therapy
 - Extra corporeal membrane oxygenation
 - Monitoring
2. Surgical management
 - Compartment pressure monitoring
 - Surgical debridement
3. Follow-up care

Prevention

1. Prophylactic antibiotics for close contacts/healthcare workers
2. Vaccination (Men C vaccine)
3. Infection control measures

MAJOR OUTCOMES CONSIDERED

- Morbidity and mortality
- Long term complications, including hearing loss, neurological complications, psychiatric problems, bone and joint complications, post necrotic scarring, and renal impairment

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The evidence base for this guideline was synthesised in accordance with Scottish Intercollegiate Guidelines Network (SIGN) methodology. A systematic review of the literature was carried out using a search strategy devised by a SIGN Information Officer. Databases searched include Medline, Embase, Cinahl, PsychINFO, and the Cochrane Library. For most searches, the year range covered was 2000-2006. Internet searches were carried out on various websites including the New Zealand Guidelines Group, National Electronic Library for Health (NELH) Guidelines Finder, and the US National Guideline Clearinghouse. The search strategies can be requested from the SIGN Executive. The main searches were supplemented by material identified by individual members of the development group.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Levels of Evidence

1++: High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+: Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias

1-: Meta-analyses, systematic reviews, or RCTs with a high risk of bias

2++: High quality systematic reviews of case control or cohort studies
High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+: Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2-: Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3: Non-analytic studies (e.g. case reports, case series)

4: Expert opinion

METHODS USED TO ANALYZE THE EVIDENCE

Systematic Review with Evidence Tables

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Once papers have been selected as potential sources of evidence, the methodology used in each study is assessed to ensure its validity. The result of this assessment will affect the level of evidence allocated to the paper, which will in turn influence the grade of recommendation that it supports.

The methodological assessment is based on a number of key questions that focus on those aspects of the study design that research has shown to have a significant influence on the validity of the results reported and conclusions drawn. These key questions differ between study types, and a range of checklists is used to bring a degree of consistency to the assessment process. Scottish Intercollegiate Guidelines Network (SIGN) has based its assessments on the MERGE (Method for Evaluating Research and Guideline Evidence) checklists developed by the New South Wales Department of Health, which have been subjected to wide consultation and evaluation. These checklists were subjected to detailed evaluation and adaptation to meet SIGN's requirements for a balance between methodological rigour and practicality of use.

The assessment process inevitably involves a degree of subjective judgment. The extent to which a study meets a particular criterion (e.g., an acceptable level of loss to follow-up) and, more importantly, the likely impact of this on the reported results from the study will depend on the clinical context. To minimise any potential bias resulting from this, each study must be evaluated independently by at least two group members. Any differences in assessment should then be discussed by the full group. Where differences cannot be resolved, an independent reviewer or an experienced member of SIGN Executive staff will arbitrate to reach an agreed quality assessment

Evidence Tables

Evidence tables are compiled by SIGN executive staff based on the quality assessments of individual studies provided by guideline development group members. The tables summarise all the validated studies identified from the systematic literature review relating to each key question. They are presented in a standard format to make it easier to compare results across studies, and will present separately the evidence for each outcome measure used in the published studies. These evidence tables form an essential part of the guideline development record and ensure that the basis of the guideline development group's recommendations is transparent.

Additional details can be found in the companion document titled "SIGN 50: A Guideline Developers' Handbook." (Edinburgh [UK]: Scottish Intercollegiate Guidelines Network. [SIGN publication; no. 50]), available from the [SIGN Web site](#).

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

Synthesising the Evidence

Guideline recommendations are graded to differentiate between those based on strong evidence and those based on weak evidence. This judgment is made on the basis of an (objective) assessment of the design and quality of each study and a (perhaps more subjective) judgment on the consistency, clinical relevance and external validity of the whole body of evidence. The aim is to produce a recommendation that is evidence-based, but which is relevant to the way in which health care is delivered in Scotland and is therefore implementable.

It is important to emphasise that the grading does not relate to the importance of the recommendation, but to the strength of the supporting evidence and, in particular, to the predictive power of the study designs from which that data was obtained. Thus, the grading assigned to a recommendation indicates to users the likelihood that, if that recommendation is implemented, the predicted outcome will be achieved.

Considered Judgment

It is rare for the evidence to show clearly and unambiguously what course of action should be recommended for any given question. Consequently, it is not always clear to those who were not involved in the decision making process how guideline developers were able to arrive at their recommendations, given the evidence they had to base them on. In order to address this problem, SIGN has introduced the concept of considered judgment.

Under the heading of considered judgment, guideline development groups summarise their view of the total body of evidence covered by each evidence table. This summary view is expected to cover the following aspects:

- Quantity, quality, and consistency of evidence
- External validity (generalisability) of study findings
- Directness of application to the target population for the guideline
- Any evidence of potential harms associated with implementation of a recommendation
- Clinical impact (i.e., the extent of the impact on the target patient population, and the resources needed to treat them in accordance with the recommendation)
- Whether, and to what extent, any equality groups may be particularly advantaged or disadvantaged by the recommendations made
- Implementability (i.e., how practical it would be for the NHS in Scotland to implement the recommendation.)

The group is finally asked to summarise its view on all of these issues, both the quality of the evidence and its potential impact, before making a graded recommendation. This summary should be succinct, and taken together with its views of the level of evidence represent the first draft of the text that will appear in the guideline immediately before a graded recommendation.

Additional detail about SIGN's process for formulating guideline recommendations is provided in Section 6 of the companion document titled "SIGN 50: A Guideline Developers' Handbook." (Edinburgh [UK]: Scottish Intercollegiate Guidelines Network. [SIGN publication; no. 50], available from the [SIGN Web site](#).

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Grades of Recommendation

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

A: At least one meta-analysis, systematic review of randomized controlled trials (RCTs), or RCT rated as 1++ and directly applicable to the target population; *or*

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 1++ or 1+

C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results *or*

Extrapolated evidence from studies rated as 2++

D: Evidence level 3 or 4 *or*

Extrapolated evidence from studies rated as 2+

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review
Internal Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

The national open meeting is the main consultative phase of Scottish Intercollegiate Guidelines Network (SIGN) guideline development, at which the

guideline development group presents its draft recommendations for the first time. The national open meeting for this guideline was held on 28 February 2007 and was attended by 92 representatives of all the key specialties relevant to the guideline. The draft guideline was also available on the SIGN website for a limited period at this stage to allow those unable to attend the meeting to contribute to the development of the guideline.

Peer Review

All SIGN guidelines are reviewed in draft form by independent expert referees, who are asked to comment primarily on the comprehensiveness and accuracy of interpretation of the evidence base supporting the recommendations in the guideline. A number of general practitioners (GPs) and other primary care practitioners also provide comments on the guideline from the primary care perspective, concentrating particularly on the clarity of the recommendations and their assessment of the usefulness of the guideline as a working tool for the primary care team. The draft is also sent to at least two lay reviewers in order to obtain comments from the patient's perspective.

It should be noted that all reviewers are invited to comment as individuals, not as representatives of any particular organisation or group. Corporate interests, whether commercial, professional, or societal have an opportunity to make representations at the national meeting stage where they can send representatives to the meeting or provide comment on the draft produced for that meeting. Peer reviewers are asked to complete a declaration of interests form.

The comments received from peer reviewers and others are carefully tabulated and discussed with the Chair and with the guideline development group. Each point must be addressed and any changes to the guideline as a result noted or, if no change is made, the reasons for this recorded.

As a final quality control check prior to publication, the guideline is reviewed by an editorial group comprising the relevant specialty representatives on SIGN Council to ensure that the specialist reviewers' comments have been addressed adequately and that any risk of bias in the guideline development process as a whole has been minimised.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the Scottish Intercollegiate Guidelines Network (SIGN) and National Guideline Clearinghouse (NGC): In addition to these evidence-based recommendations, the guideline development group also identifies points of best clinical practice in the full-text guideline document.

The grades of recommendations (A–D) and levels of evidence (1++, 1+, 1-, 2++, 2+, 2-, 3, 4) are defined at the end of the "Major Recommendations" field.

Early Assessment

Signs and Symptoms

Initial Assessment

D - A generalised petechial rash, beyond the distribution of the superior vena cava, or purpuric rash in any location, in an ill child, are strongly suggestive of meningococcal septicaemia and should lead to urgent treatment and referral to secondary care.

D - The following features in an ill child should prompt consideration of a diagnosis of Invasive meningococcal disease (IMD):

- Petechial rash
- Altered mental state
- Cold hands and feet
- Extremity pain
- Fever
- Headache
- Neck stiffness
- Skin mottling

D -:

- Meningococcal disease should not be automatically excluded as a potential diagnosis if young children present with non-specific symptoms such as fever, lethargy, poor feeding, nausea, vomiting and irritability or a non-blanching rash, within the first four to six hours of illness.
- If there is sufficient clinical suspicion, appropriate treatment should be commenced and assessment in secondary care should be arranged.

Managing Children with Non-Specific Symptoms

GPP - Parents or carers of children with non-specific symptoms who are unlikely to have meningococcal disease should be advised to call back if the child's condition deteriorates. This advice should take account of local access to health care.

Interval Assessment

D - Children with symptoms or signs which are highly suggestive of meningococcal disease should not have their treatment delayed by interval assessment.

GPP - Children with non-specific symptoms at initial presentation, in whom meningococcal disease cannot be excluded, should be reassessed within four to six hours.

GPP - Carers should seek further clinical advice if the child's condition deteriorates prior to planned reassessment (e.g., rash changes). This advice should take account of local arrangements for health care.

Early Treatment

Antibiotic Therapy

D - Parenteral antibiotics (*either benzylpenicillin or cefotaxime*) should be administered in children as soon as invasive meningococcal disease (IMD) is suspected, and not delayed pending investigations.

Out-of-Hospital Care

D - Pre-hospital practitioners should follow guidance produced by the Joint Royal Colleges Ambulance Liaison Committee and the Meningitis Research Foundation when treating children and young people with suspected IMD.

Service Delivery

D - Following arrival at hospital, children with suspected IMD should be reviewed and treated promptly by a senior and experienced clinician.

D - Management of children with progressive IMD should be discussed with intensive care at an early stage.

GPP - Robust local protocols should ensure that children with IMD have rapid access to appropriate levels of supervision and care that take into account local services and geography.

Confirming the Diagnosis

Laboratory Diagnosis

Blood Culture

To confirm the diagnosis in all children with suspected IMD, blood should be taken for:

C - Bacterial culture

D - Meningococcal polymerase chain reaction (PCR)

Lumbar Puncture

GPP - Lumbar puncture is not recommended in the initial assessment of suspected IMD with features of septicaemia. Lumbar Puncture (LP) may be considered later if there is diagnostic uncertainty or unsatisfactory clinical progress, and there are no contraindications.

C - Lumbar puncture should be performed in patients with clinical meningitis without features of septicaemia (*purpura*) where there are no contraindications.

D - Cerebrospinal fluid should be submitted for microscopy, culture and PCR.

Illness Severity and Outcome

Clinical Variables

C - Clinicians should be aware that the following are associated with high mortality:

- A platelet times neutrophil product of $<40 \times 10^9/l$
- A procalcitonin level of $>150 \text{ ng/l}$

D - Clinicians should be aware that meningococcal meningitis carries a lower risk of adverse neurological outcome than meningitis due to other bacteria.

Scoring Systems

D - Children diagnosed with IMD should have sequential Glasgow Meningococcal Septicaemia Prognostic Score (GMSPS) performed and any deterioration should be discussed with intensive care.

Treatment

Intravenous Fluids

B - If there are signs of shock, administer a rapid infusion of intravenous (IV) fluids as isotonic crystalloid or colloid solution up to 60 mL/kg given as three boluses of 20 mL/kg, with reassessment after each bolus.

GPP - Fluid resuscitation in excess of 60 ml/kg and inotropic support are often required.

GPP - Evidence of circulatory failure and the need for repeated IV fluid boluses should prompt early consultation with intensive care as inotropic support and ventilation may be required.

Antibiotics

Initial Antibiotic Therapy

B - Parenteral cefotaxime should be used as initial treatment of previously well children over three months with a diagnosis of IMD.

GPP - Once daily ceftriaxone monotherapy may be substituted if calcium containing parenteral agents have not been used in the preceding 48 hours.

GPP - When parenteral antibiotics are indicated for infants less than three months of age, cefotaxime plus an antibiotic active against listeria (*e.g., ampicillin or amoxicillin*) should be given.

Duration of Antibiotic Treatment

GPP - In children with invasive meningococcal disease the duration of antibiotic therapy should be seven days.

Corticosteroid Therapy

Meningococcal Septicaemia

B - Steroids are not recommended for the treatment of children with meningococcal septicaemia (see section below titled "Inotropes" for an exception to this in the case of inotrope-resistant shock).

Meningococcal Meningitis

A - In children beginning empirical antibiotic treatment for bacterial meningitis of unknown aetiology, parenteral dexamethasone therapy (0.15 mg/kg six hourly) should be commenced with, or within 24 hours of, the first antibiotic dose, and be continued for four days.

B - In children with meningococcal meningitis, parenteral dexamethasone therapy (0.15 mg/kg six hourly) should be commenced with, or within 24 hours of, the first antibiotic dose, and be continued for four days.

Intensive Care

D - Transfer to Pediatric Intensive Care unit (PICU) should be arranged for patients who continue to deteriorate despite appropriate supportive therapy (oxygen, fluids and antibiotics).

Intensive Care Management

Ventilation and Airway Management

D - In patients with progressive meningococcal disease:

- Airway and breathing should be rigorously monitored and maintained
- The decision to intubate and ventilate should be made if there is increased work of breathing, hypoventilation, low level of consciousness or presence of a moribund state
- Volume loading should be considered before and during intubation, and anaesthetic induction agents that maintain cardiovascular stability should be used
- Lung-protective ventilation strategies should be instituted

GPP -:

- High frequency oscillation ventilation should be considered for patients when conventional ventilation is failing.
- Early ventilatory support should be considered for children with fluid resistant shock, after institution of inotrope therapy.

Inotropes

D - Children with fluid resistant shock should receive early inotropic therapy, and ventilatory support should be considered.

GPP - In children with refractory hypotension (inotrope-resistant septic shock), IV vasopressin and steroid dose titration are appropriate rescue strategies.

Monitoring

D - Non-invasive monitoring should be applied in all children with fluid sensitive shock.

D - Central venous and arterial access should be considered in children with fluid resistant septic shock.

Renal Replacement Therapy

GPP - Continuous venovenous haemofiltration may be considered in children with inotrope dependent septic shock, severe metabolic acidosis, acute or impending renal failure and complex or problematic fluid balance.

Extra Corporeal Membrane Oxygenation

GPP - Extra corporeal membrane oxygenation (ECMO) should not be used as a standard therapy for refractory shock in children with IMD.

GPP - ECMO may be considered in patients with acute respiratory distress syndrome (ARDS) secondary to IMD who have failed to respond to conventional intensive care management.

Haematological and Immunological Support

GPP - Activated protein C should not be used in the treatment of meningococcal sepsis in children.

Surgical Management

D - Compartment pressure monitoring should be considered in children with extensive limb involvement.

GPP - Urgent specialist referral is necessary for assessment and interpretation of compartment pressure monitoring.

D - Urgent surgical debridement should be performed in the presence of secondary wound infection if the child's condition allows.

GPP - Orthopaedic and plastic surgery teams should be consulted early for needs assessment.

Prevention of Secondary Transmission

Prophylactic Antibiotics

C - Chemoprophylaxis should be offered to those who have prolonged close contact in a household setting with a child with meningococcal disease during the seven days before onset of illness.

D - In isolated cases of meningococcal disease, prophylaxis is not indicated for pupils in the same nursery, school or class as a child diagnosed with meningococcal disease, unless they are a close contact.

D - Chemoprophylaxis should be offered to healthcare workers whose mouth or nose is directly exposed to droplets or respiratory secretions from a child with meningococcal disease during the acute illness prior to completion of 24 hours of antibiotics.

Vaccination

D - Prior to discharge from hospital, Men C vaccine should be offered to:

- Any patient who has not been immunised, whatever the serogroup
- Patients with confirmed serogroup C disease who have previously been immunized with Men C

Infection Control

D - Children with suspected meningococcal infection should be admitted to a single room in hospital, where practical.

D - Infection control measures for droplet infection should be implemented when a child with suspected meningococcal infection is admitted to hospital. These can be discontinued after 24 hours of effective treatment.

D - Healthcare staff at high risk of exposure to respiratory secretions should use appropriate personal protective equipment.

Follow-up Care

Long Term Complications

Hearing Loss

GPP - All children who have had a diagnosis of meningitis should have their hearing tested to allow any therapies required to be started as early as possible.

Recommendations on Morbidities

D - Children and families or carers of children who have survived invasive meningococcal disease should be made aware of potential long term complications of the disease.

C - When assessing the follow-up needs of children with meningococcal disease healthcare professionals should consider the following potential morbidities:

- Hearing loss
- Neurological complications
- Psychiatric, psychosocial and behavioural problems
- Bone and joint complications, with awareness that these may not be apparent for many years after illness
- Post necrotic scarring with possible requirements for amputations and skin grafting. Long term follow-up may be needed for children for scar revision, surgical repair of deformities, leg length discrepancy, angular deformities and poorly fitting prosthesis
- Renal impairment, particularly in those who required renal replacement therapy during their acute illness

GPP - All children who have had meningococcal sepsis or meningitis should have a follow-up appointment and be carefully assessed for evidence of any immediate or potential long term complications.

GPP - An individual care plan should be developed for each patient on leaving hospital.

Impact on Families and Carers

C - Healthcare professionals involved in the follow-up of children with meningococcal disease need to be aware of the potential for post-traumatic stress disorder in both the children and their families and carers.

Definitions:

Grades of Recommendation

Note: The grade of recommendation relates to the strength of the evidence on which the recommendation is based. It does not reflect the clinical importance of the recommendation.

Grade A: At least one meta-analysis, systematic review, or randomised controlled trial (RCT) rated as 1++ and directly applicable to the target population; *or*

A body of evidence consisting principally of studies rated as 1+, directly applicable to the target population, and demonstrating overall consistency of results

Grade B: A body of evidence including studies rated as 2++, directly applicable to the target population, and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 1++ or 1+

Grade C: A body of evidence including studies rated as 2+, directly applicable to the target population and demonstrating overall consistency of results; *or*

Extrapolated evidence from studies rated as 2++

Grade D: Evidence level 3 or 4; *or*

Extrapolated evidence from studies rated as 2+

Good Practice Points: Recommended best practice based on the clinical experience of the guideline development group.

Levels of Evidence

1++ - High quality meta-analyses, systematic reviews of randomised controlled trials (RCTs), or RCTs with a very low risk of bias

1+ - Well-conducted meta-analyses, systematic reviews, or RCTs with a low risk of bias

1- - Meta-analyses, systematic reviews, or RCTs with a high risk of bias

2++ - High quality systematic reviews of case control or cohort studies. High quality case control or cohort studies with a very low risk of confounding or bias and a high probability that the relationship is causal

2+ - Well-conducted case control or cohort studies with a low risk of confounding or bias and a moderate probability that the relationship is causal

2- - Case control or cohort studies with a high risk of confounding or bias and a significant risk that the relationship is not causal

3 - Non-analytic studies (e.g., case reports, case series)

4 - Expert opinion

CLINICAL ALGORITHM(S)

A clinical algorithm, "Child Presents with a Possible Diagnosis of Invasive Meningococcal Disease (IMD)" is provided in the original guideline document.

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Appropriate treatment and management of meningococcal disease in children and young people up to 16 years of age

POTENTIAL HARMS

- Side effects of therapy
- The US Food and Drug Administration has issued an alert regarding the interaction between ceftriaxone and calcium containing solutions.

CONTRAINDICATIONS

CONTRAINDICATIONS

Contraindications to lumbar puncture

- Cardiorespiratory decompensation
- Raised intracranial pressure (ICP)
- Coagulopathy
- Purpura/petechial rash

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

This guideline is not intended to be construed or to serve as a standard of care. Standards of care are determined on the basis of all clinical data available for an individual case and are subject to change as scientific knowledge and technology advance and patterns of care evolve. Adherence to guideline recommendations will not ensure a successful outcome in every case, nor should they be construed as including all proper methods of care or excluding other acceptable methods of care aimed at the same results. The ultimate judgement must be made by the appropriate healthcare professional(s) responsible for clinical decisions regarding a particular clinical procedure or treatment plan. This judgement should only be arrived at following discussion of the options with the patient, covering the diagnostic and treatment choices available. It is, however, advised that significant departures from the national guideline or any local guidelines derived from it should be fully documented in the patient's case notes at the time the relevant decision is taken.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

Local Implementation

Implementation of national clinical guidelines is the responsibility of each National Health Service (NHS) Board and is an essential part of clinical governance. It is acknowledged that every Board cannot implement every guideline immediately on publication, but mechanisms should be in place to ensure that the care provided is reviewed against the guideline recommendations and the reasons for any differences assessed and, where appropriate, addressed. These discussions should involve both clinical staff and management. Local arrangements may then be made to implement the national guideline in individual hospitals, units and

practices, and to monitor compliance. This may be done by a variety of means including patient-specific reminders, continuing education and training, and clinical audit.

A key point for audit is identified in the original guideline document.

IMPLEMENTATION TOOLS

Audit Criteria/Indicators
Chart Documentation/Checklists/Forms
Clinical Algorithm
Quick Reference Guides/Physician Guides

For information about [availability](#), see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Living with Illness
Staying Healthy

IOM DOMAIN

Effectiveness
Patient-centeredness
Timeliness

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Scottish Intercollegiate Guidelines Network (SIGN). Management of invasive meningococcal disease in children and young people. A national clinical guideline. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network (SIGN); 2008 May. 46 p. (SIGN publication; no. 102). [143 references]

ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2008 May

GUIDELINE DEVELOPER(S)

Scottish Intercollegiate Guidelines Network - National Government Agency [Non-U.S.]

SOURCE(S) OF FUNDING

Scottish Executive Health Department

GUIDELINE COMMITTEE

Guideline Development Group

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

All members of the guideline development group made declarations of interest and further details of these are available on request from the SIGN Executive.

GUIDELINE STATUS

This is the current release of the guideline.

Any amendments to the guideline in the interim period will be noted on [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Quick reference guide: Management of invasive meningococcal disease in children and young people. Scottish Intercollegiate Guidelines Network, 2008 May. 2 p. Available in Portable Document Format (PDF) from the [Scottish Intercollegiate Guidelines Network \(SIGN\) Web site](#).
- SIGN 50: A guideline developer's handbook. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network. (SIGN publication; no. 50). Available from the [SIGN Web site](#).
- Appraising the quality of clinical guidelines. The SIGN guide to the AGREE (Appraisal of Guidelines Research & Evaluation) guideline appraisal instrument. Edinburgh (Scotland): Scottish Intercollegiate Guidelines Network, 2001. Available from the [SIGN Web site](#).

Additional tools, including the Glasgow Meningococcal Septicaemia Prognostic Scoring Tool are available in the Annexes of the [original guideline document](#).

PATIENT RESOURCES

None available

NGC STATUS

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