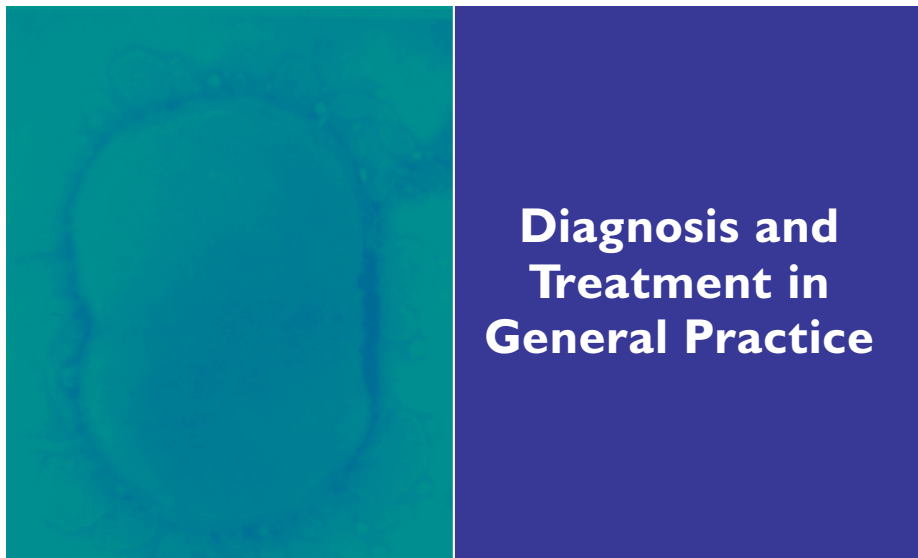




Meningococcal Meningitis and Septicaemia

Guidance Notes



Meningococcal Disease

Meningococcal disease can kill a healthy person of any age within hours of the appearance of the first symptoms. Early diagnosis depends on knowing what to look for. The disease is uncommon, but is important because of its serious nature. It is more prevalent in winter and may follow outbreaks of influenza.

Meningococcal disease has two main clinical presentations: meningitis and septicaemia, which often occur together. Meningococcal septicaemia is far more likely to kill than meningococcal meningitis. Whilst fewer than 5% of cases die of meningococcal meningitis, the case fatality rate for meningococcal septicaemia can rise to 50% if the patient is already in shock when they reach medical help. Septicaemia is more likely to be fatal when it occurs without meningitis. A patient with septicaemia may present with very different symptoms from someone with meningitis.

Problems with Early Diagnosis



If a tumbler is pressed firmly against a petechial or purpuric rash it does not blanch, but remains visible through the glass. A non-blanching rash in a febrile or unwell patient constitutes a medical emergency.

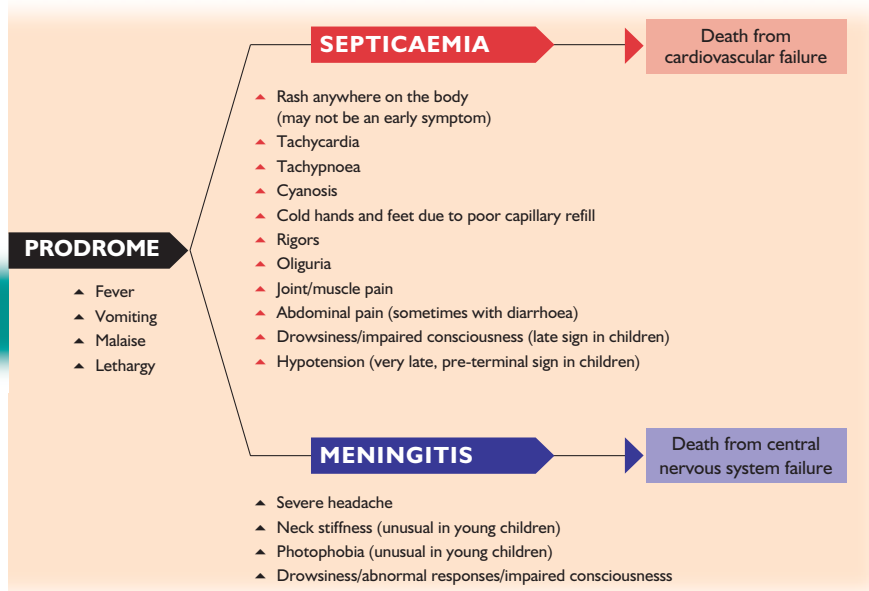
During the early, prodromal stage of the disease, a patient may present with non-specific febrile illness that is not always possible to distinguish from influenza or other viruses. Since the disease can develop so rapidly, it is important, subject to the GP's clinical judgement, that a patient, or parent of a patient, with a non-specific febrile illness who is not being sent to hospital is given:

- reassurance to trust their instincts and encouragement to seek immediate medical help again if the patient's condition deteriorates;
- information about the signs and symptoms of serious illness. (See back cover for a list of the Foundation's public information about meningitis and septicaemia);
- a description of both a typical meningococcal rash and the 'Tumbler Test'. Rash is the commonest reason for people with meningococcal disease to seek medical advice.

Disease Pathway

This diagram illustrates the development of symptoms and signs at the far ends of the spectrum of meningococcal disease. It is important that the signs of underlying meningitis or septicaemia are looked for in all febrile patients without an obvious cause for fever. Advanced meningococcal disease can be missed if the following signs are not looked for. In addition, parental concern and patient apprehension are important

Order in which the symptoms below appear may vary. Some symptoms may be absent.



Babies may also show the following symptoms:

- ▲ Tense fontanelle
- ▲ Pale or mottled skin or cyanosis
- ▲ Poor feeding
- ▲ Irritable, particularly when handled, with a high pitched or moaning cry
- ▲ Abnormal tone, either increased or decreased, or abnormal posturing
- ▲ Vacant staring or poorly responsive or lethargic

A proportion of patients will undergo rapid deterioration, which is characteristic of this disease.

Clinical Tests for Doctors

I The Rash

Most patients with meningococcal septicaemia develop a rash - it is one of the clearest and most important signs to recognise. In meningitis it can be very scanty or even absent.



Maculopapular rash with scanty petechiae. †



Classic purpuric rash.

In the early stages the rash may be blanching and maculopapular, but it nearly always develops into a non-blanching red or brownish petechial rash or purpura. Isolated pin-prick spots may appear where the rash is mainly maculopapular, so examination of the whole skin surface is worthwhile. This is best done in good lighting, searching the entire body for small petechiae, especially in a febrile child with no focal cause. **A rapidly evolving petechial or purpuric rash is a sign of very poor prognosis.**

Although some of the causes of petechial rashes are self-limiting conditions, many others, including meningococcal disease, are fulminant or life-threatening, and a non-blanching rash should therefore be treated as an emergency.



Purpuric rash on dark skin.



Petechial rash on conjunctivae. †

The rash can be more difficult to see on dark skin, but may be visible in paler areas, especially the soles of the feet, palms of the hands, abdomen, or on the conjunctivae or palate.

About 50% of people with meningococcal disease have the typical, non-blanching rash when seen by their GP. Most patients with maculopapular rashes have benign self-limiting illnesses, so if the typical non-blanching rash is absent, looking for other signs of serious illness is key to identifying the patient with meningococcal disease. Other signs can be subtle, even when the disease is far advanced.

2 Shock

A person who develops life-threatening septicaemia will have tachycardia, fast or irregular breathing, cold hands and feet due to vasoconstriction and poor capillary refill. Check capillary refill by pressing for 5 seconds on the nail of the big toe or a finger, the forehead or the sternum, so it blanches, and counting the seconds it takes for colour to return. Capillary refill time >2 seconds on the forehead or sternum is abnormal, and when prolonged to ≥ 4 seconds on peripheries, especially in combination with increased heart and respiratory rates, suggests shock.

Hypotension is an important sign in adults, but when present in children indicates critical illness and this limits its diagnostic value. In conjunction with other signs, postural hypotension in adults may suggest shock.

Normal values of vital signs From Advanced Paediatric Life Support Manual

Age (years)	Heart Rate per minute	Respiratory Rate per minute	Systolic Blood Pressure
< 1	110-160	30-40	70 -90
1-2	100-150	25-35	80 -95
2-5	95 -140	25-30	80 -100
5-12	80 -120	20-25	90 -110
over 12	60 -100	15-20	100-120

3 Conscious Level

This can be assessed by checking **AVPU**:

Alert? Responds to **V**oice? Responds to **P**ain? **U**nresponsive?

Drowsiness/impaired consciousness in children is a late and grave prognostic sign and indicates immediate action.

Even severely shocked children will often be alert and communicative.

4 Neck Stiffness

True neck stiffness can be assessed by checking whether a patient can kiss their knees, or by assessing the ease of passive flexion in a relaxed patient. Neck stiffness signifies meningitis, but is absent in septicaemia. It is unusual in young children even with meningitis, so the absence of neck stiffness in a febrile child is **NEVER** reassuring.

Factors that may confuse diagnosis and delay recognition:

- purpuric areas which look like bruises can be confused with injury or abuse;
- disorientation/impaired consciousness can be confused with substance/alcohol abuse;
- joint and bone aches are common in meningococcal septicaemia - occasionally children have been diagnosed with fractures due to the intensity of the pain;
- maculopapular rashes are often explained as being viral in origin;
- URTI does not exclude meningitis or septicaemia.

Treatment and Further Action

Antibiotic Therapy

Mortality from meningococcal infection is reduced by early antibiotic therapy. If meningococcal infection is suspected, benzylpenicillin should be administered intravenously (or intraosseously if intraosseous needle available). If you cannot access either of these routes within a few minutes, then the drug should be given intramuscularly as proximally as possible, into a part of the limb which is still warm (the cold area being more poorly perfused). This should be done whilst arranging transfer to hospital.

Benzylnenicillin dosage (BNF)

Adult and child aged 10 or older: **1200 mg**

Child 1-9 years: **600 mg**

Infant: **300 mg**

Recommended unless there is a history of immediate allergic reactions after previous penicillin administration. Although very rare, anaphylaxis is more likely if there is a history of immediate allergic reactions (such as difficulty in breathing, collapse, generalised itchy rash) after previous penicillin administration. General Practitioners do not need to carry an alternative antibiotic, but if other antibiotics are available, third-generation cephalosporins may be used. If there is a history of immediate allergic reactions to penicillin or cephalosporins, chloramphenicol may be used.

Do not delay giving antibiotics



Supportive Treatment (if facilities are available)

If a patient is unconscious, airways management should be implemented. Oxygen should be administered, particularly when the respiratory rate is raised, suggesting shock or pulmonary oedema.

Rapid heart rate, poor capillary refill time and cold extremities suggest hypovolaemia and iv fluids should be administered to prevent circulatory collapse.

Supportive treatment should not delay antibiotic therapy or transport to hospital

Transfer To Hospital

The patient should be transferred to hospital by the quickest means of transport, usually 999 ambulance.

Ambulance control and hospital staff need to know the diagnosis, whether the patient has a non-blanching rash, and especially whether there are serious prognostic signs such as a rapidly evolving petechial or purpuric rash, shock, or impaired conscious level.

Case Notification

All cases of meningococcal meningitis and septicaemia in the UK have to be notified to the local health authority or health board's Consultant in Communicable Disease Control (CCDC) or Consultant in Public Health Medicine (CPHM). GPs may wish to check whether this has been done by the hospital.

Dealing With Patient Contacts

The CCDC or CPHM is responsible for ensuring that intimate and household contacts of a patient with meningococcal disease who require antibiotic prophylaxis are prescribed rifampicin, ciprofloxacin or, for pregnant contacts, ceftriaxone. This is restricted to those contacts identified by public health. The purpose of chemoprophylaxis is to eliminate carriage in the contact group, it does not prevent illness in those already infected, so contacts should continue to be alert to the symptoms of meningococcal disease.

This booklet was written with the help of a panel of experts in meningococcal disease representing a broad range of clinical experience including general practice, paediatrics, A & E medicine, public health and infectious diseases. The pilot version of this booklet was evaluated by a sample of GPs throughout the country.

How Meningitis Research Foundation Can Help

Meningitis Research Foundation is a registered charity that fights death and disability from meningitis and septicaemia, and supports people affected by the diseases. The Foundation funds vital scientific research into the prevention, detection and treatment of meningitis and septicaemia, raises awareness of the diseases, and offers support through in-depth information and befriending. Meningitis Research Foundation provides a range of resources for health professionals and their patients, developed in consultation with experts in the field from a range of health disciplines. Leaflets and posters are free of charge and can be obtained by contacting our offices. Most of our resources are also available from our website.

- **Symptoms Card** – Credit card sized visual symptoms checklist.
- **Symptoms Chart** – A visually orientated leaflet aimed at parents and carers of children.
- **Get it Sussed Art Card and Poster** – For adolescents and young adults.
- **Baby Watch Art Card and Poster** – For parents and other carers of babies and very young children.
- **Tot Watch** – For parents and other carers of toddlers.
- **Am I At Risk?** – A leaflet for anyone who is worried about meningitis and septicaemia due to a case in the community or their family.
- **Information in different languages** – Albanian, Arabic*, Bengali*, Chinese*, French, Greek, Gujarati*, Hindi*, Portuguese, Punjabi*, Somali*, Spanish, Turkish, Urdu*, Vietnamese*, Welsh and Irish Gaelic. Primarily available from our website in written and sound file versions. (*available in audiotape format)
- **Early Recognition of Meningitis and Septicaemia** – Laminated card for front line nurses.
- **Meningitis and Septicaemia - What Happens Next?** – A booklet for people dealing with physical and psychological sequelae of meningitis and septicaemia, and their families and friends.
- **Living with Bereavement - The Way Forward** – A leaflet for people who are coping with bereavement as a result of the diseases.

The Foundation also has a symptoms information video 'Holly's Story' for health professionals and their patients.

Freephone 24 hour helpline 080 8800 3344



Meningitis Research Foundation's trained staff and nurses respond to calls day and night from people who want to know more about meningitis and septicaemia, vaccines relevant to the diseases, or are worried about someone who is ill. The team offers on-going support and befriending to those who are bereaved, or who are recovering from the diseases.

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