

1. Introduction

- Meningococcal disease is the leading cause of death by infection in children and young adults and can kill a healthy person of any age within hours of their first symptoms.

2. Incidence

- There are 1,200 confirmed cases of meningococcal disease in England and Wales each year, although the true figure is probably twice this number.

3. Pathophysiology

- Two clinical categories are described although they often overlap:
 - meningitis.
 - septicaemia.
- In meningitis, the meninges covering the brain and spinal cord are infected by bacteria causing inflammation.
- In septicaemia, bacteria invade the bloodstream, releasing toxins and producing a clinical picture of shock and circulatory collapse. Deterioration can be rapid and may be irreversible, with treatment becoming less effective by the minute. Early recognition and prompt treatment improves clinical outcomes.

4. Severity and Outcome

- The mortality from septicaemia can be up to 40% but if recognised early, resuscitated aggressively and managed on ITU, mortalities of less than 5% can be achieved.

5. Assessment

- Refer to medical emergencies in adults or children.**
- The 'classical features' – **neck stiffness, photophobia** and **haemorrhagic rash** – should be sought and are useful clinical discriminators when present, but less helpful and potentially falsely reassuring when absent.
- These features are more common in adults, older children and teenagers but quite rare in pre-school children. Small children often present with non-specific signs such as nausea, vomiting, loss of appetite, sore throat and coryzal symptoms – features that might otherwise suggest a diagnosis of viral illness.

Airway:

- Added sounds e.g. grunting.
- Upper airway obstruction e.g. coma, fitting.

Breathing:^a

- Respiratory rate.
- Breathing effort.
- Oxygen saturations (SaO_2).

Circulation:^a

- Pulse.
- Capillary refill time.

^aFor the 'normal' paediatric age-related respiratory and cardiovascular parameters refer to medical emergencies in children – overview guideline.

Disability:

- A** Alert
- V** Responds to voice
- P** Responds to painful stimulus
- U** Unresponsive

Expose:

- Examine for rashes (see below).
- Measure temperature if appropriate.

The patient may have been previously unwell with non-specific symptoms e.g.

- Irritability.
- Pyrexia.
- 'Flu-like' symptoms.

THE RASH

Presentation – the classical, haemorrhagic, non-blanching rash (may be petechial or purpuric) is seen in approximately 40% of infected children.

In pigmented skin it can be helpful to look at the conjunctiva under the lower eyelid.

In an unwell patient, a non-blanching rash suggests meningococcal septicaemia.

The 'Glass' or 'Tumbler' test

A petechial or purpuric rash does **NOT** blanch/fade when pressed with a glass tumbler, **remaining visible through the glass**.

If the 'glass' test is negative, do not assume that meningococcal disease has been excluded; often there will be **NO** rash.

If meningococcal disease is suspected in any patient (irrespective of the presence or absence of a rash) undertake a TIME CRITICAL transfer (refer to Figure 3.5).

CLINICAL FINDINGS

The patient may be 'unwell' and deteriorate rapidly. Clinical features include:

- Fever (may be masked by peripheral shutdown or antipyretics).
- Cold, mottled skin (especially extremities) (the skin may rarely be warm and flushed; features of 'warm shock').
- Vomiting, abdominal pain and diarrhoea.
- Pain in joints, muscles and limbs.
- Rash – progressive petechial rash becoming purpuric – like a bruise or blood-blister. (NB These rashes are often **absent** at presentation.)
- Raised respiratory rate and effort.
- O_2 saturations – reduced or unrecordable (poor perfusion).
- Raised heart rate.
- Capillary refill time >2 seconds.
- Rigors.
- Seizures.