## Risk of Infection to Ambulance Personnel

Personal protective equipment (PPE) should be worn when treating a patient with suspected meningococcal disease. However, meningococcal bacteria are very fragile and do not survive outside the nose and throat.

Healthcare workers only require prophylaxis if their mouth or nose has been splattered (clearly felt) with large particle droplets/secretions from the respiratory tract of a patient with meningococcal disease, or if conjunctivitis develops within 10 days of exposure. This is unlikely to occur except when using suction during airway management, inserting an oro/nasopharyngeal airway, intubating, or if the patient coughs in your face.

When a case of meningococcal disease is confirmed, the public health doctor will ensure that antibiotics are offered to any contacts of the case whose exposure puts them at particularly increased risk of infection.

## About Meningitis Research Foundation

Meningitis Research Foundation is an international charity. Our vision is a world free from meningitis and septicaemia. Our Feefone helpline number is 1800 41 33 44. Trained staff and qualified nurses speak to callers, give information to people dealing with a case and offer support and befriending to patients and families affected.

We also produce other resources for health professionals and members of the public. These can be ordered or downloaded free of charge from:

**www.meningitis.org/resources**

**If this card has helped you, please consider helping us. We rely on donations and fundraising, so if you would like to make a donation, please contact your local office below**

**Dublin**
**01 819 6931 • info@meningitis-ireland.org**

Also offices in Belfast, Bristol & Edinburgh

A charity registered in Ireland CHY 12030,
England and Wales no 1091105 & in Scotland no SC037586
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# Meningococcal infection

## Meningococcal septicaemia and meningitis

## Identification & Management for Ambulance Personnel

Meningococcal disease is the leading infectious cause of death in children and can kill a healthy person of any age within hours of their first symptoms. There are two main clinical presentations: meningitis and septicaemia. These can occur on their own, but often occur together. **Septicaemia in the absence of signs of meningitis can be even more life-threatening than meningitis alone.**

Meningococcal septicaemia occurs when meningococcal bacteria invade the bloodstream and release their toxic products. This can progress rapidly to shock and circulatory collapse. Deterioration can be rapid and irreversible, with treatment becoming less effective by the minute.

The speed with which the disease is identified and treatment started mainly determines the outcome.

**Signs and symptoms indicative of meningococcal septicaemia or meningitis (see inside)**

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**With or without non-blanching rash**

↓

**Give benzylpenicillin and treat for shock (if present)**

**...during rapid transportation to hospital**

## Assessment

- **Airway**
- **Breathing** - rate & effort. Measure oxygen saturation
- **Circulation** - pulse & capillary refill time
- **Disability** - AVPU
- **Expose** - look for rash
  - take temperature if appropriate

**Normal values of vital signs**

| Age (years) | Respiratory rate /min | Heart rate /min |
|---|---|---|
| <1 | 30-40 | 110-160 |
| 1-2 | 25-35 | 100-150 |
| 2-5 | 25-30 | 95-140 |
| 5-12 | 20-25 | 80-120 |
| 12+ | 15-20 | 60-100 |

*From Advanced Paediatric Life Support - the Practical Approach. Mackway Jones K, Molyneaux E, Phillips B, Wieteska S, editors. 3rd ed. London: BMJ Books; 2001.*

***The patient may have been previously unwell with non-specific symptoms, pyrexia, flu-like symptoms, irritability.***

## The Rash

Classically haemorrhagic type (purpuric), or may appear "flea bitten". In pigmented skin look at conjunctivae under lower eyelid. If a glass tumbler is pressed firmly against a purpuric rash, the rash will **NOT** fade, **rash remains visible through the glass.**

Classic haemorrhagic rash
*Courtesy of Dr A Riordan*

Tumbler test
*Courtesy of Prof P Brandtzaeg*

Petechial rash on conjunctivae
*Courtesy of DA Warrell*

**If there is a non-blanching rash in an unwell person, meningococcal septicaemia must be assumed.**

A non-blanching rash is indicative of meningococcal septicaemia but is not a foolproof technique.

- There may be **NO** rash
- Up to 30% of cases **start** with a blanching pink rash which fades with pressure and then becomes purpuric.

***Any patient in whom meningococcal disease is suspected should be reassessed regularly for the appearance of a non-blanching rash.***

## Signs and Symptoms

**Airway**
- May need managing

**Breathing**
- Respiratory rate & effort – raised
- $SpO_2$ reduced or may be unrecordable (poor perfusion)

**Circulation**
- Heart rate – raised (relative bradycardia is a very late sign)
- Capillary refill > 2 seconds, skin cold to touch (especially in extremities). Skin may appear pale/mottled (early in illness, skin may be warm)

**Disability**
- Level of consciousness –
  - early in shock: alert/able to speak
  - advanced shock or meningitis: babies – limp, floppy & drowsy or poorly responsive, staring
  - Older children/adults – difficulty walking/ standing, drowsy, confused.
- Rigors
- Seizures, or in babies abnormal tone, stiff body, jerky movements
- Advanced meningitis - dilated, unequal or poorly reacting pupils

**Other**
- Temperature – raised (peripheral shutdown or any antipyretics given may mask this)
- Rash
- Pain in joints, muscles and limbs
- Vomiting/abdominal pain/diarrhoea
- Meningitis: children/ adults - headache, stiff neck, photophobia; babies - tense or bulging fontanelle

***Symptoms may appear in any order or may not appear at all.***

## Management (Time critical)

1. Open **airway**.
2. High flow **oxygen** with assisted ventilation (as needed).
3. Correct A & B problems at scene then **DO NOT DELAY TRANSFER** to nearest receiving hospital.
4. **Give benzylpenicillin** (see below) **IN TRANSIT**.
5. **Treat shock** en route to hospital with bolus of crystalloid: children 20ml/ kg, adults 1 L and repeat if ongoing signs of poor perfusion'. Check blood sugar and treat if necessary.
6. Provide **hospital alert message** including age of patient.
7. Repeat assessment and further management of ABCs as necessary en route.

**Benzylpenicillin administration**

- The illness may progress rapidly - the sooner benzylpenicillin is administered the better the outcome
- Dissolve benzylpenicillin in sterile water (as in table below)
- Give IV if access can be obtained easily, otherwise IM or IO.

| Age | Dose |
|---|---|
| Less than 1 year | 300mg |
| 1-8 years | 600mg |
| >8 years and adult | 1200mg |