

Vital signs for front line nurses

Early Recognition of Meningitis and Septicaemia

Meningitis and septicaemia can kill in hours. **Septicaemia** and **meningitis** can occur on their own but often appear together. **Septicaemia without signs of meningitis is far more life-threatening.**

Early recognition depends on knowing what to look for:

Observations

- Temperature
- Heart rate
- Respiratory rate
- Oxygen saturation
- Capillary refill time
- Conscious level **AVPU** - Assess best response patient can make:
Alert?

Responds to **Voice?** **Urgent**

Responds to **Pain?** **Emergency**

Unresponsive? **Emergency**

- Check for rash all over
- Blood pressure - check this if other signs outside normal

Non-blanching rash

- Typical of septicaemia
- Pin-prick spots, purple blotches, bruises or blood blisters
- May be absent (especially in pure meningitis), scanty, or rapidly evolving (in septicaemia).

NORMAL VALUES OF VITAL SIGNS

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

Oxygen Saturation: normal value is >95% in air. If SaO₂ monitor is not picking up, check perfusion - capillary refill should be <2 seconds



maculopapular rash with scanty petechiae[†]



early purpuric rash of septicaemia[†]

Up to 30% of cases start with a blanching rash.

Findings

SEPTICAEMIA

Septicaemia causes shock which can lead to multi-organ failure.

LOOK FOR

- Limb or joint pain - may be severe. Isolated limb pain is a well established symptom of septicaemia
- Pallor, mottled skin
- Cold hands and feet
- Tachycardia
- Tachypnoea
- Rigors
- Conscious level:
early in shock - children often alert and able to speak



Child lucid despite advancing septicaemia

as shock advances

- babies - limp and floppy
- older children and adults - unable to stand
- Metabolic acidosis - blood gas (arterial, capillary or venous) can confirm shock. Base deficit worse than -5 mmol/l is significant.

LATE SIGNS

- Impaired consciousness
- likely to be late in children
- Hypotension
- Cyanosis

MENINGITIS

Meningitis causes raised intracranial pressure, which can lead to coning (brain stem herniation) and brain death.

LOOK FOR

- Neck stiffness, headache, photophobia in older children and adults
 - *Neck stiffness, photophobia uncommon in young children - their absence should not be reassuring*
- All children - poorly responsive, staring, difficult to wake. Parents may report poor eye contact.
- Babies - irritable with a high pitched cry, particularly when handled
- Babies - stiff body, jerky movements, abnormal tone
- Teenagers and adults may be combative, confused or aggressive - you may suspect drug/alcohol use
- Seizures

LATE SIGNS

- Raised Intracranial Pressure:
 - Raised BP, slow pulse rate
 - Glasgow Coma Score < 8 or rapidly falling
 - Dilated, unequal, or poorly reacting pupils
- In babies, tense/bulging fontanelle

MENINGOCOCCAL DISEASE

First symptoms as for self-limiting viral illnesses. Children under five – **fever** first. Older children and adolescents – **headache. Vomiting and nausea** – all ages.

Red Flag Symptoms of septicaemia and circulatory shut-down: **limb pain, pale or mottled skin**, and **cold extremities** can appear 5 or more hours earlier than classic symptoms.

Other early symptoms: **drowsy** with **rapid or laboured breathing** and sometimes **diarrhoea** in younger children; **thirst** in older children/teenagers.

Classic symptoms: **rash** is often the first one. **Neck stiffness** and **photophobia** are usually later and are not reliable signs in babies/ young children.

Action

- 1 Very sick patient (with or without rash): shock/depressed conscious level/seizures?**
 - Resus, record all vital signs and put on continuous monitor, call Senior Doctor immediately, ensure i.v. antibiotics are given, ask for blood gas.
- 2 Non-blanching rash with fever (or history of fever)?**
 - Record all vital signs and put on continuous monitor, call Senior Doctor immediately, ensure i.v. antibiotics are given, ask for blood gas.
- 3 Suspected meningitis with or without rash?**
 - Half hourly vital signs, ensure prompt medical review, ensure i.v. antibiotics are given. If rash is non-blanching, treat as in 2 above.
- 4 Possible early septicaemia, no rash or blanching rash?**
 - Half hourly vital signs, check for (developing) rash, ensure prompt medical review, ask for blood gas.

3&4 If vital signs change, consider if patient getting sicker and needs more urgent treatment as in 1 or 2.

Refer to Early Management protocols for paediatric and adult settings (details overleaf)

It is rarely possible to exclude meningitis or septicaemia in a patient with non-specific symptoms. If you are sending a patient home it is important to provide a safety net. Give them information (see back page for contact details to order **free** patient information) and encourage them to seek medical help if it gets worse, even if it is shortly after you've seen them.

Public Health

- Doctor reports suspected meningitis or meningococcal disease to CCDC/CPHM who arranges prophylaxis for close personal contacts (if meningococcal/Hib or institutional outbreak of pneumococcal).
- Where local protocol agreed with public health, ward staff may give prophylaxis.
- Isolate patient for first 24 hours.
- Health care staff only need prophylaxis if their mouth or nose is splattered with large particle droplets from the respiratory tract of a patient with meningococcal disease, or conjunctivitis develops within ten days. 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.

About Meningitis Research Foundation

Meningitis Research Foundation is an international charity. Our vision is a world free from meningitis and septicaemia. Our helpline number is 080 880 3344. 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, including:

- **Early Management algorithms for paediatric and adult settings**
- **Booklet for doctors in training in a hospital setting**
- **Booklets and quick reference cards for primary care and ambulance personnel**

To see all our resources, order or download free of charge visit

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.

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A charity registered in England and Wales no 1091105,
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