

Physical Signs in Children with Meningococcal Disease

ORGAN SYSTEM	SEPSIS	MENINGITIS
Respiratory	<ul style="list-style-type: none"> Increased respiratory rate and work of breathing occur early, secondary to acidosis and hypoxia as circulatory failure develops 	<ul style="list-style-type: none"> No changes early in disease Abnormal breathing patterns seen late with critically raised intracranial pressure (varies from hyperventilation to Cheyne-Stokes breathing or apnoea)
Cardiovascular	<p>Careful examination of this system is the key to recognition of sepsis. Clinical features of circulatory failure (shock) develop:</p> <ul style="list-style-type: none"> Tachycardia is an early and important sign Peripheral vasoconstriction results in pallor, cold hands and feet, and mottling Capillary refill time > 2 seconds, especially in conjunction with other signs, suggests shock BP is normal until late in sepsis. Hypotension is a pre-terminal sign in children 	<ul style="list-style-type: none"> No changes early in disease Later, raised intracranial pressure leads to bradycardia and hypertension
CNS	<ul style="list-style-type: none"> Children have a normal conscious level until late in the illness and they may appear alert and responsive Hypoxia and hypoperfusion eventually lead to a decreased conscious level: this is a late and a pre-terminal sign in shock Neck stiffness and photophobia are not characteristic of sepsis 	<p>CNS function most likely to be abnormal</p> <ul style="list-style-type: none"> Irritability, drowsiness, confusion and decreased conscious level as intracranial pressure rises. Babies may have a vacant expression/full fontanelle. Teenagers can become confused and combative Neck stiffness and photophobia are uncommon signs in early meningitis in young children.
Renal	<ul style="list-style-type: none"> Decreased urine output occurs early in shock 	<ul style="list-style-type: none"> No change in meningitis

Death	Results from cardiovascular failure (shock)	Results from raised intracranial pressure
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Normal Values of Vital Signs <i>Adapted from Advanced Paediatric Life Support: The Practical Approach (6th ed.)</i>			
Age	RR/min	HR/min	Systolic BP
Birth	25-50	120-170	80-90
3 m	25-45	115-160	80-90
6 m	20-40	110-160	80-90
12 m	20-40	110-160	85-95
18 m	20-35	100-155	85-95
2 y	20-30	100-150	85-100
3 y	20-30	90-140	85-100
4 y	20-30	80-135	85-100
5 y	20-30	80-135	90-110
6 y	20-30	80-130	90-110
8 y	15-25	70-120	90-110
12 y	12-24	65-115	100-120
>14 y	12-24	60-110	100-120

RASH: The rash of meningococcal disease can start as a blanching rash in up to a third of patients: remember to check for underlying signs of meningitis and sepsis in children who present with a maculopapular rash. Patients with meningitis tend to have a more scanty (or absent) rash than those with sepsis. Ideally, the whole skin surface of a febrile patient without an obvious cause for fever should be checked.



Benzylpenicillin dosage
(except in penicillin anaphylaxis)
Adult and child aged 10 or older: **1200 mg**
Child 1-9 years: **600 mg**
Infant: **300 mg**

Meningitis Research Foundation
www.meningitis.org



Meningococcal Meningitis and Sepsis

Wall chart

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2018 edition Ireland