

## Division of Laboratory Medicine

### Bacteriology

## CSF (Bacteriology)

Meningitis is defined as inflammation of the meninges. This process may be acute or chronic and infective or non-infective. Many infective agents have been shown to cause meningitis, including viruses, bacteria, fungi and parasites.

Royal Manchester Children's Hospital is a specialist paediatric neurology centre; as such CSF obtained from ventricular shunts and shunts removed during revision may also be submitted to the laboratory for microscopy and culture.

### General information

**Collection container:** Collect specimens in appropriate CE marked leak proof containers and transport specimens in sealed plastic bags.

**Specimen type:** Cerebrospinal Fluid



**Collection:** Use aseptic technique. Collect specimens into appropriate CE marked leak proof containers and place in sealed plastic bag.

**Specimen transport:** Specimens should be transported and processed as soon as possible. CSFs should not be podded.

**Minimum volume of sample:** For routine cell count & culture; ideally a minimum volume of 1 mL. For Mycobacteria sp., culture (Tb), at least 6mL where possible; such investigations cannot be performed outside of normal hours. CSF is normally collected sequentially into three or more separate containers which should be numbered consecutively.

**Special precautions:** Always contact the laboratory when sending a CSF sample. Send sample 3 (or the last sample if more than 3 taken) to Microbiology. Outside of normal hours contact the on-call Biomedical Scientist through the main switchboard.

### Laboratory information

**Measurement units:** Cell count x10<sup>6</sup>/L

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#### **Biological reference units:**

##### Leucocytes (WBC)

Neonates 0 - 30 cells x 10<sup>6</sup>/L  
1-4yr old 0 - 20 cells x 10<sup>6</sup>/L  
5yr-puberty 0 - 10 cells x 10<sup>6</sup>/L  
Adults 0 - 5 cells x 10<sup>6</sup>/L

When possible the WBC count will be differentiated into lymphocytes and polymorphs.

##### Erythrocytes(RBC)

Newborn 0 - 675 cells x 10<sup>6</sup>/L  
Adults 0 - 10 cells x10<sup>6</sup> /L

##### Protein (Performed by Biochemistry)

Neonates ≤6d 0.7 g/L  
Others 0.2-0.4g/L (<1% of serum protein concentration)

##### Glucose (Performed by Biochemistry)

≥60% of simultaneously determined plasma concentration (CSF: serum ratio ≥0.6)

**Turnaround time:** 30 mins to 1 hour for microscopy  
2-3 working days for culture

### Clinical information

**Factors known to significantly affect the results:** Cells disintegrate and a delay may produce a cell count that does not reflect the clinical situation of the patient.

The laboratory will be unable to perform cell counts on clotted samples.

**(Last updated December 2020)**