

**Protocol for collection, handling and transport of CSF samples**  
**For the investigation of suspected meningitis or subarachnoid haemorrhage (SAH)**

**1. Purpose of investigation****Meningitis**

If meningitis, but not SAH, is suspected a lumbar puncture should be performed if safe to do so. Appropriate antibiotics **must** be administered without delay and without waiting to perform lumbar puncture or for CSF results. CSF cell counts and microscopy should be performed promptly to inform whether to also administer steroids.

**Subarachnoid haemorrhage**

If SAH is suspected but the CT scan is negative, a lumbar puncture should be performed **at least 12 hours after a suspected event / onset of severe headache** for spectrophotometric bilirubin (xanthochromia) analysis. The result will provide evidence for or against SAH and determine the need for cerebral angiography and preventative surgery.

**2. Request form**

In addition to patient demographics, please record the following details on the request form:

- Indication for request and differential diagnosis
- Time of LP
- Previous failed LP attempts (may have introduced blood into the CSF)
- Clinician's contact details

If applicable, please also record the following on the request form:

- Result of CT scan
- Time of onset of symptoms/event
- Antibiotic therapy
- Whether patient has had meningococcal, pneumococcal or haemophilus vaccinations

**3. Lumbar puncture**

The opening pressure should always be recorded. Lumbar puncture is contra-indicated in patients with abnormal clotting, local soft tissue infection around the lumbar spine, papilloedema, focal neurological deficit and reduced consciousness.

**4. Samples**

- The first sample should be taken in a small fluoride oxalate tube (grey top)
- Use 3 x 28ml sterile white top universal containers
- Label with full patient demographics
- Label tubes with numbers 1-4 to indicate order of sampling, ie. tube 1 contains 1<sup>st</sup> drops of CSF.
- In suspected SAH, the samples must be **protected from light** for bilirubin analysis by placing sample bag in brown envelope.
- A paired blood sample must be taken for serum glucose, protein and bilirubin. (CSF concentrations are evaluated in relation to serum concentrations.)
- Use the following table for CSF sample requirements:

### CSF sample requirements for suspected SAH or meningitis.

Sample No.	? SAH and/or Meningitis mL (drops)	? Meningitis in Neonate mL (drops)	Container	Test
1	0.5 (10)	0.5 (10)	Fluoride oxalate tube (Small grey top)	Glucose (Biochem)
2	2 (40)	1 (20)	Plain universal	Microscopy + culture (Micro)
3	2 (40)	1 (20)	Plain universal	PCR (Micro)
4	1.0* (20)	0.5 (10)	Plain universal, protected from light for bilirubin analysis	Bilirubin + protein (Biochem)
Total	5.5 (110)	3 (60)		

\*If testing for meningitis only then 0.5 mL is sufficient for CSF protein analysis

nb. Volumes for microbiology samples 2 and 3 are meant as a guide and may vary depending on microorganism being investigated. If a specific microorganism is suspected, eg. mycobacterium, please contact microbiology department for specific advice.

#### **5. Transport**

Samples must be delivered to the laboratory by hand without delay.  
CSF samples **must not** be transported by the pneumatic tube system.

#### **6. Contact laboratory**

It is important that you inform the biomedical scientist staff in both Biochemistry and Microbiology that CSF samples are on their way to the laboratory using the following extension numbers.

	Biochemistry	Microbiology
Wishaw (01698 36)	6446	6406
Monklands (01236 71)	2113	2120
Hairmyres (01355 58)	4340	4326

**Out of hours Microbiology - Via switchboard**

#### **7. Reporting**

All abnormal CSF results will be phoned to the ward and available electronically

- Protein and glucose: Results reported 24/7
- Xanochromia scan: Results reported 08:00-19:00 (Mon- Sun)
- Microscopy: Results reported 24/7 within 1 hour
- Culture: Results communicated as appropriate by Duty Consultant Microbiologist