



CSF Sample Requirements

- The tables give the CSF sample requirements for suspected meningitis/encephalitis; subarachnoid haemorrhage; demyelinating disorders and a range of other conditions.
- If meningitis and subarachnoid haemorrhage are differential diagnoses, then please use the subarachnoid haemorrhage table only.
- For microbiology tests requiring CSF samples, that are not listed, please discuss with the Duty Microbiologist prior to collection.
- **DO NOT** send CSF samples using the pneumatic post tube
- **DO** collect samples and number universals in the order given in the table.
- **Please send CSF samples to your local Pathology department for analysis or onward transport.**

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Working diagnosis: Meningitis/Encephalitis

| <i>CSF sample number</i> | <i>Tube</i> | <i>Test</i> | <i>Required Volume (ml)</i> | <i>Department</i> | <i>Location of Lab Performing Analysis</i> |
|--------------------------|--|--|-----------------------------|-------------------|--|
| 1 | Sterile universal  | Microbiological investigation – cell count and culture | 0.5ml | Microbiology | RWT for all requests |
| 2 | Sterile universal  | Protein | 0.5ml | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests |
| 3 | Sterile universal  | Microbiological investigation – cell count and culture | 0.5ml | Microbiology | RWT for all requests |
| 4 | Fluoride EDTA  | Glucose | 0.5ml | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests |

SWBH: SANDWELL AND WEST BIRMINGHAM NHS TRUST

DGFT: THE DUDLEY GROUP NHS FOUNDATION TRUST

RWT: THE ROYAL WOLVERHAMPTON NHS TRUST

WHT: WALSALL HEALTHCARE NHS TRUST

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| Working diagnosis: Subarachnoid Haemorrhage | | | | | |
|--|---|--|-----------------------------|-------------------|--|
| <i>CSF Sample number</i> | <i>Tube</i> | <i>Test</i> | <i>Required Volume (ml)</i> | <i>Department</i> | <i>Location of Lab Performing Analysis</i> |
| 1 | Sterile universal  | Microbiological investigation – <i>cell count and culture</i> | 0.5ml | Microbiology | <i>RWT for all requests</i> |
| 2 | Sterile universal  | Protein | 0.5ml | Chemistry | <i>SWBH for SWBH requests</i> <i>DGFT for DGFT requests</i> <i>RWT for RWT requests</i> <i>WHT for WHT requests</i> |
| 3 | Sterile universal  | Microbiological investigation - <i>cell count and culture</i> | 0.5ml | Microbiology | <i>RWT for all requests</i> |
| 4 | Sterile universal PROTECT FROM LIGHT & TRANSPORT IMMEDIATELY  | Bilirubin (Xanthochromia) | At least 1.0ml | Chemistry | <i>SWBH for SWBH requests</i> <i>DGFT for DGFT requests</i> <i>RWT for RWT requests</i> <i>WHT for WHT requests</i> |
| 5 | Fluoride EDTA  | Glucose | 0.5ml | Chemistry | <i>SWBH for SWBH requests</i> <i>DGFT for DGFT requests</i> <i>RWT for RWT requests</i> <i>WHT for WHT requests</i> |

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| Serum sample | Gel tube  | LFT and Total Protein | | Chemistry | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> |
|--------------|--|-----------------------|--|-----------|--|

Additional information for subarachnoid haemorrhage

- CSF xanthochromia must only be carried out on patients who have had a normal CT scan.
- The lumbar puncture must be carried out a minimum of 12 hours post onset of symptoms.
- CSF bilirubin may be raised for up to two weeks post event, however, data after one week post event is limited.
- A serum (yellow top) sample is required to be sent with the CSF sample for Xanthochromia to aid interpretation of the results.
- Please indicate on the request:
 - Result of CT scan
 - Time of sample in relation to onset of symptoms
- Patients consuming pharmacological doses of some antibiotics (e.g. doxycycline, tetracycline and metronidazole) may have falsely negative CSF bilirubin results
- For SWBH xanthochromia requests out of hours please bleep the on call biomedical scientist prior to sending the sample.

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Working diagnosis: Demyelinating Disorders

| Sample number | Tube | Test | Required Volume (ml) | Department | Location of Lab Performing Analysis or Referring Sample for Analysis |
|-------------------|--|--|----------------------|--------------|--|
| 1 | Sterile universal  | Microbiological investigation - cell count and culture | 0.5ml | Microbiology | RWT for all requests |
| 2 | Sterile universal  | Protein | 0.5ml | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests |
| 3 | Sterile universal  | Microbiological investigation - cell count and culture | 0.5ml | Microbiology | RWT for all requests |
| 4 | Sterile universal  | Oligoclonal bands | 0.5ml | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests Referred to Clinical Immunology, Birmingham Health Innovation Campus |
| 5 | Fluoride EDTA  | Glucose | 0.5ml | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests |
| Serum sample | Gel tube | Oligoclonal bands | | Chemistry | SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests |
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| |  | | | | <i>WHT for WHT requests Referred to Clinical Immunology, Birmingham Health Innovation Campus</i> |
|--|--|----------------------|--------------|--|---|
| Other CSF Investigations – Please note separate container for each test | | | | | |
| Investigation | Tube | Required Volume (ml) | Department | Location of Lab Performing test or Referring Sample for Analysis | Lab Performing Analysis |
| Mycobacterial PCR (?TB) | Sterile universal  | 5.0 mL | Microbiology | <i>RWT for all requests</i> | UKHSA PHL Birmingham |
| Viral PCR (for common viral pathogens) | Sterile universal  | 0.5 mL | Microbiology | <i>RWT for all requests</i> | RWT Microbiology – Biofire will be performed on CSF with WCC >10 (meningitis). If encephalitis or on request UKHSA PHL Birmingham do PCR for viruses. |
| Cryptococcal Ag (in immunocompromised) | Sterile universal  | 0.5 mL | Microbiology | <i>RWT for all requests</i> | RWT Microbiology |
| Specialist PCR (check with Laboratory) | Sterile universal  | 0.5 mL | Microbiology | <i>RWT for all requests</i> | Dependent on Test |
| Creutzfeldt-Jakob disease testing | Sterile universal  | 1.0 mL | Microbiology | <i>RWT for all requests – sample to be frozen upon receipt.</i> | National CJD reference laboratory in Edinburgh. Clinician must email referral to Edinburgh. Frozen sample couriered to Edinburgh. |
| Angiotensin Converting Enzyme | Sterile universal  | 1.0 mL | Chemistry | <i>SWBH for SWBH requests DGFT for DGFT requests</i> | Department of Neurological Chemistry |

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|--|---|--------------------|-------------|--|--|
| | | | | <i>RWT for RWT requests WHT for WHT requests</i> | Queen's Square London |
| Glycine | Sterile universal | 0.5 mL | Chemistry | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> | Clinical Chemistry, Birmingham Children's Hospital |
| Lactate | Fluoride EDTA | 0.5 mL | Chemistry | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> |
| Neurotransmitters (Neopterin) | Contact lab – tube kit required from Birmingham Children's Hospital | Collect on dry ice | Chemistry | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> | Department of Neurological Chemistry Queen's Square London |
| Malignancy Cytospin. PLEASE SEND URGENTLY | Sterile universal | 1.0 mL | Cytology | <i>RWT (BCPS Consultants) for all requests</i> | RWT Cytology (A18 West Entrance at New Cross Hospital) |
| Immunophenotyping for Malignancy | Sterile universal | 1.0 mL | Haematology | <i>SWBH for SWBH requests DGFT for DGFT requests RWT for RWT requests WHT for WHT requests</i> | Clinical Immunology, Birmingham Health Innovation Campus |
| Aquaporin 4 antibodies | Sterile universal | 0.3 mL | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Clinical Immunology, Birmingham Health Innovation Campus |

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| Autoimmune Encephalitis screen (GABAB1/B2, NMDA receptor, AMPA1/2, LGI1, CASPR2, DPPX) | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Clinical Immunology, Birmingham Health Innovation Campus |
| Glycine receptor antibodies | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Immunology, Churchill Hospital, Oxford |
| Paraneoplastic antibodies (Purkinje (PCA1/anti-Yo), anti-Hu (ANNA1), anti-Ri (ANNA2), Ma, CRMP5 (CV2), Amphiphysin, SOX1, Zic4, Tr (DNER)) | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Clinical Immunology, Birmingham Health Innovation Campus |
| Fixed N-methyl-D-aspartate (NMDA) receptor antibodies | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Clinical Immunology, Birmingham Health Innovation Campus |
| Voltage gated potassium channel antibodies (VGKC) | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Immunology, Churchill Hospital, Oxford |
| Voltage gated calcium channel antibodies | Sterile universal  | 0.25ml | Immunology | <i>RWT for RWT, DGFT, SWBH & WHT requests</i> | Immunology, Churchill Hospital, Oxford |

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Contact Details for Laboratory Enquiries

| | Chemistry external callers | Chemistry internal callers | Immunology - external callers | Immunology internal callers | Microbiology Laboratory external | Microbiology Laboratory internal | Cytology -external callers | Cytology- internal callers |
|-------------|----------------------------------|----------------------------------|--|---|--|--|-----------------------------------|----------------------------------|
| SWBH | 01215073712 01212761627 | 3712 | 01902 695279 rwh-tr.immunologylab@nhs.net | 85279 rwh-tr.immunologylab@nhs.net | 01902 307999 ext 88257 | 88257 | 01902 307999 (ext 88722) | 88722 |
| DGFT | 01384456111 ext. 2482 | 2482 | | | | | | |
| RWT | 01902307999 ext. 88266 | 88266 | | | | | | |
| WHT | 01922 656782 | 6782 | | | | | | |

Contact Details for Clinical Enquiries
Clinical Chemistry:

| | External callers | Internal Callers | Out of hours | Email address (0900-1700 only) |
|------------------|------------------|------------------|---|------------------------------------|
| All sites | 01902 695290 | 85290 | Ring relevant Trust switchboard and ask for consultant on call | rwh-tr.bcpsdutybiochemist3@nhs.net |

Immunology:

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Please contact the referral lab

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| Immunology, Churchill Hospital, Oxford | immunology.office@nhs.net or 01865 225995 |
| Clinical Immunology, Birmingham Health Innovation Campus | 0121 4144069 |

Microbiology (Mon-Fri: 9am-5pm)

| | Microbiology doctor -external callers | Microbiology doctor -internal callers |
|-------------|--|---|
| SWBH | 0121 554 3801 to switchboard who keep list of duty doctors at each site. | Via switchboard who keep list of duty doctors at each site. |
| DGFT | 01384 456 111 to switchboard who keep list of duty doctors | Via switchboard who keep list of duty doctors |
| RWT | 01902 307999 (Ext 88249) | 88249 – Consultants operate call windows for routine calls between 9-11am and 2-4pm. Other routine enquiries for Wolverhampton can be made by email using the proforma available on the Microbiology webpage and we will respond to email enquiries that arrive before 3.30pm that day. Urgent and emergency calls and consultant/GP to consultant calls will be answered throughout. |
| WHT | 01922 721172 to switchboard who keep list of duty doctors | Via switchboard who keep list of duty doctors |

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**Microbiology clinical advice (out-of-hours)**

Routine calls should not be made out of normal weekday working hours.

At a weekend cover is available for problems that arise. Contact on call microbiologist via the relevant switchboard for urgent or emergency management only.

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