NEUROIMMUNOLOGY LABORATORY
QUEEN ELIZABETH UNIVERSITY HOSPITAL

LABORATORY HANDBOOK
NEUROIMMUNOLOGY LABORATORY HANDBOOK

Contents

1. OVERVIEW .................................................................................................................. 3
2. CONTACT DETAILS .................................................................................................... 3
   2.1. Director of Neuroimmunology Laboratory ......................................................... 3
   2.2. Laboratory Manager .......................................................................................... 3
   2.3. Laboratory Secretary .......................................................................................... 3
   2.4. Laboratory Enquiries .......................................................................................... 3
   2.5. Postal Address ..................................................................................................... 4
   2.6. Normal Laboratory Working Hours .................................................................... 4
3. COSTS .......................................................................................................................... 4
4. SAMPLES/REQUESTS/RESULTS .............................................................................. 4
   4.1. Sample Identification Requirements .................................................................... 4
   4.2. High Risk Samples .............................................................................................. 5
   4.3. Sample Dispatch ................................................................................................... 5
   4.4. Packaging .............................................................................................................. 6
   4.5. Reports and Results ............................................................................................ 6
   4.6. Reference Ranges ............................................................................................... 6
   4.7. Requests for Additional Tests .............................................................................. 6
5. SAMPLE REQUIREMENTS ............................................................................................ 7
6. NEUROIMMUNOLOGY TESTS .................................................................................. 7
   6.1. In House Tests ....................................................................................................... 7
   Tests are UKAS accredited to ISO 15189 standards unless marked *
   6.1.1. Acetylcholine Receptor Antibodies .................................................................. 8
   6.1.2. Oligoclonal Bands in CSF and Serum ............................................................ 8
   6.1.3. Anti Glycolipid (Ganglioside) Antibodies ......................................................... 8
   6.1.4. Anti Myelin Associated Glycoprotein (MAG) Antibodies ......................... 8
   6.1.5. Paraneoplastic (Neuronal) Antibodies ......................................................... 8
   6.1.6. Anti-Glutamate Receptor (Type NMDA) Antibodies ..................................... 9
   6.1.7. Anti Voltage Gated Potassium Channel Associated Proteins (LGI1 and CASPR2) ........................................................ 9
   6.1.8. Glutamic Acid Decarboxylase (GAD) * ...................................................... 9
   6.2. Referred Tests ....................................................................................................... 9
   6.3. Feedback ............................................................................................................... 10
1. OVERVIEW

The Neuroimmunology Laboratory serves the diagnostic neuroimmunological requirements of patients within the Institute of Neurological Sciences Glasgow, NHS Greater Glasgow & Clyde, NHS Scotland and further afield, through the provision of its diagnostic services. The Neuroimmunology Laboratory is committed to providing a service of the highest quality and is accredited by the United Kingdom Accreditation Service (UKAS). UKAS Medical accreditation number 9713 (Accredited to ISO 15189:2012). A full list of tests in scope can be found on our schedule of accreditation:


2. CONTACT DETAILS

2.1. **Director of Neuroimmunology Laboratory**
Professor Hugh J Willison
Tel: 0141 201 2464/2529 (Hospital)
Tel: 0141 330 8384 (University)
Email: hugh.willison@glasgow.ac.uk

2.2. **Laboratory Manager**
Sylvia Arthur
Tel: 0141 354 9103
Email: sylvia.arthur@ggc.scot.nhs.uk

2.3. **Laboratory Secretary**
Denise Marshall
Tel: 0141 354 9023
Fax: 0141 232 4049
Email: denise.marshall@ggc.scot.nhs.uk

2.4. **Laboratory Enquiries**
Tel: 0141 354 9010/9023
Email: NeuroImmunology.Labs@ggc.scot.nhs.uk
2.5. **Postal Address**
Neuroimmunology Laboratory
Level 1B, Laboratory Medicine & Facilities Building
Queen Elizabeth University Hospital
1345 Govan Road
Glasgow
G51 4TF

2.6. **Normal Laboratory Working Hours**
08.30 to 17.00 Monday to Friday
There is no out of hours service

3. **COSTS**
Contact the laboratory for current assay charges.
Billing is by quarterly invoice in arrears to the hospital or institutional finance department or, if preferred, to a named individual within the requesting department.

4. **SAMPLES/REQUESTS/RESULTS**
All Neuroimmunology tests are available on Trakcare. Where this facility is not available, please complete our laboratory request form, available on our website [www.nhsggc.org.uk/neuroimmunology](http://www.nhsggc.org.uk/neuroimmunology)

We cannot process samples unless we can be sure about the patient’s identity, the test(s) required and where to send the result.

4.1. **Sample Identification Requirements**
Samples must have:
- patient’s full name (or proper coded identifier)
- date of birth and hospital or CHI number
- date and time of sample.

Request forms must have:
- patient’s full name (or proper coded identifier)
- date of birth AND CHI number name of requesting hospital/laboratory
- destination for report
- name of patient’s consultant
- tests required
- date and time of sample
• relevant clinical information

Desirable:
• name and contact/pager number of requesting clinician
• Pre-printed adhesive labels (addressograph labels) should be used if available.

Where the information on request form and sample label (or if sample label is left blank) do not match, samples will not be tested.

4.2. **High Risk Samples**

These include samples from patients known or thought likely to have infectious diseases eg Hepatitis B or C, HIV infection, Creutzfeldt-Jacob disease. The nature of the hazard should be indicated and both the form and specimen(s) must be marked with the yellow ‘Danger of Infection’ labels.

4.3. **Sample Dispatch**

Local Users:

Local users from within the hospital can send whole blood and CSF samples via the porters or pod system. Users within GG&C can send whole blood, serum and CSF samples via the hospital transport systems.

External Users (Outwith GG&C):

Serum and CSF samples are not required to be sent frozen. Samples should be refrigerated and arrive within 2 days.

Users wishing to send frozen samples should do so by dispatching by courier on dry ice.

Samples from within the UK should be sent by first class mail and outwith the UK by courier.

The Neuroimmunology Laboratory also using the DX System: DX 6490400 Cardonald 90G. We share the box with several other laboratories so please ensure our address is clearly stated on the box.
4.4. **Packaging**

Packaging must meet the requirements of relevant UN3373 and postal regulations.

Place all specimen tubes into a secondary leak proof container; include absorbent material to absorb any spillage.

Place the leak proof container and a completed request form into an external package strong enough to withstand postal transit.

Avoid placing paperwork on the outside of the package as it may be discarded with packaging.

4.5. **Reports and Results**

Paper copies of results are sent out by internal or royal mail.

Electronic reports are available on Clinical Portal & SCI store where this facility exists.

4.6. **Reference Ranges**

Reference ranges and/or interpretative comments are available; on printed reports and Clinical Portal. Please contact the laboratory for advice where required.

4.7. **Requests for Additional Tests**

Samples sent for testing to Neuroimmunology are stored at -80°C for five years.

Add on requests may be made within this time-frame, where appropriate.
### 5. SAMPLE REQUIREMENTS

<table>
<thead>
<tr>
<th>TEST NAME</th>
<th>SAMPLE REQUIREMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anti Acetylcholine Receptor Antibodies (AchR, ACR)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>CSF Oligoclonal Bands</td>
<td>1ml CSF and 1ml Serum</td>
</tr>
<tr>
<td>Anti Ganglioside Antibodies (IgG and IgM)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>Anti Myelin Associated Glycoprotein Antibodies (Anti-MAG IgM)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>Anti Paraneoplastic Antibodies (Anti Neuronal Antibodies)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>Anti-glutamate receptor (Type NMDA) antibodies</td>
<td>1ml Serum or 1ml CSF</td>
</tr>
<tr>
<td>Anti-voltage gated potassium channel associated proteins (LGI1 and CASPR2)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>Anti-Glutamic Acid Decarboxylase (Anti-GAD)</td>
<td>1ml Serum</td>
</tr>
<tr>
<td>Referred Assays</td>
<td>2ml Serum</td>
</tr>
<tr>
<td></td>
<td>For more than 2 referred tests an additional 2ml Serum is required.</td>
</tr>
</tbody>
</table>

### 6. NEUROIMMUNOLOGY TESTS

#### 6.1. In House Tests

Tests are UKAS accredited to ISO 15189 standards unless marked *

* Refer to schedule of accreditation on our website.
6.1.1. Acetylcholine Receptor Antibodies

Sample - Clotted Blood or Serum

Antibodies to the acetylcholine receptor (anti-AChR) are present in a very high proportion of patients with the neuromuscular transmission disorder, myasthenia gravis (MG).

6.1.2. Oligoclonal Bands in CSF and Serum

Sample - Cerebrospinal fluid plus Clotted Blood or Serum

The clinical diagnosis of multiple sclerosis can be supported by analysis of cerebrospinal fluid (CSF). In a very high proportion of patients with multiple sclerosis (>90%) the CSF contains oligoclonal bands that are not present in the serum.

6.1.3. Anti Glycolipid (Ganglioside) Antibodies

Sample - Clotted Blood or Serum

Anti Glycolipid antibodies are found in a significant proportion of patients with a variety of autoimmune peripheral neuropathies.

6.1.4. Anti Myelin Associated Glycoprotein (MAG) Antibodies

Sample - Clotted Blood or Serum

A clinically important form of IgM paraproteinaemic neuropathy is associated with antibodies to myelin associated glycoprotein (MAG).

6.1.5. Paraneoplastic (Neuronal) Antibodies

Sample - Clotted Blood or Serum

Anti Neuronal antibodies are present in the serum of patients with paraneoplastic disorders affecting the nervous system. These disorders have a very wide range of clinical presentations and often enter the differential diagnosis of complex neurological problems.
6.1.6. Anti-Glutamate Receptor (Type NMDA) Antibodies

Sample – Clotted Blood/Serum or CSF

Anti-NMDA receptor encephalitis manifests along a spectrum of psychosis, altered behaviour, movement disorder, seizures, autonomic dysfunction and decreased consciousness.

Antibodies against the NMDA receptor have a very high positive and negative predictive value.

6.1.7. Anti Voltage Gated Potassium Channel Associated Proteins (LGI1 and CASPR2)

Sample – Clotted Blood or Serum

Antibodies against the VGKC associated proteins LGI1 and Caspr2 are associated with a number of neurological syndromes.

6.1.8. Glutamic Acid Decarboxylase (GAD) *

Sample – Clotted blood or Serum

Antibodies against GAD are associated with Stiff-Person Syndrome.

6.2. Referred Tests

Arrangements with referral laboratories are reviewed and evaluated periodically to ensure that ISO 15189 standards are met (ISO 15189 4.5.1)

Antibodies to:

Voltage Gated Potassium Channels (VGKC)
Voltage Gated Calcium Channels (VGCC)
Aquaporin, Neuromyelitis Optica (AQUAP4, NMO)
Glycine Receptor Antibodies
Muscle Specific Kinase Antibody (MuSK)
Low Affinity (clustered) AchR or MuSK
Glutamate Receptor Antibodies (AMPA 1&2 and GABA)
Myelin Oligodendrocyte Glycoprotein (MOG) Antibodies.

These assays are referred to:
The Department of Immunology, Churchill Hospital, Old Road, Heddington, OXFORD OX3 7JL
Antibodies to:

Basal Ganglia
Beta Interferon (neutralising antibody)

These assays are referred to:
The Neuroimmunology Laboratory, UCLH Institute of Neurology, Queen Square, LONDON WC1N 3BS

Antibodies to:

Gliadin

This assay is referred to:
The Immunology Laboratory, Northern General Hospital, Herries Road, SHEFFIELD S5 7AU

Antibodies to:

Tysabri (Natalizumab) – (Local Users Only)
Samples to be brought to the laboratory within 60 minutes of collection.

This assay is referred to:
Barts and The London, Immunology Department, Pathology and Pharmacy Building, 2nd Floor, 80 Newark Street, Whitechapel, LONDON E1 2ES

6.3. Feedback

Suggestions about our service may be raised by email, letter, phone call or by calling personally at the laboratory.

All complaints are dealt with in accordance with the NHSGG&C Complaints Policy and the Neuroimmunology complaints document.

The laboratory manager will investigate the complaint and issue a response (within twenty days of receipt of the complaint), if a satisfactory outcome cannot be achieved the complaint will be passed to the Clinical Services Manager.