

# Neuropathology Department - User Manual

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## Document History

Version no.	Date	Comment
1.	25/10/2005	Consolidates all earlier user information
2	07/01/2008	Revision of muscle biopsy section
3	28/01/2008	Emergency call out; specimen packing; change to tel. numbers
4	01/04/2011	Addition of: turn-around times; referral departments
5.	30/08/2014	Reviewed following move into Lime Walk Building
6.	09/02/2015	Revised to ISO:15189
7.	01/06/2016	Revised following move to Pathology Sciences Building
8.	15/06/2017	Change to trust structure, lab mobile no longer in use, change in LIMS, consent for tissue in research and education, insertion of how to obtain clinical advice
9.	13/04/2018	Update to personnel
10	16/07/18	Update to muscle biopsy booking procedure
11	20/11/19	No longer perform CJD cases, change in staff

## Circulation List

Copy no.	Location
1	Neuropathology dept. office
###	Copies to service users

(A list of all recipients is retained in dept. office)

## Table of Contents

Document History	1
Circulation List	1
Table of Contents	2
<b>1. Introduction</b>	<b>3</b>
1.1. Contact Information	3
1.2. Hours of Business:	4
1.3. Location of the Neuropathology Department	4
1.4. Specimen Labelling and Request Forms	4
1.5. Criteria for Rejection of Samples	5
1.6. Safety Information	5
1.7. Issuing of Diagnostic Reports	6
1.8. Referral of Cases to Another Department	6
<b>2. Packaging and Transport of Specimens</b>	<b>7</b>
<b>3. Urgent Intra-Operative Specimens</b>	<b>8</b>
3.1. Tissue Smears	8
3.2. Biopsies for Urgent Frozen Sections	9
<b>4. Neurosurgical Biopsies for Histology</b>	<b>10</b>
<b>5. Biopsies for Electron Microscopy</b>	<b>11</b>
<b>6. Cerebrospinal Fluid (CSF) for Cytological Examination.</b>	<b>12</b>
<b>9. Autopsy Specimens</b>	<b>18</b>
<b>10. Complaints Procedure</b>	<b>19</b>
<b>11. Data Protection</b>	<b>20</b>

## 1. Introduction

The Neuropathology Department at North Bristol NHS Trust is managed through the Trust's MSK & Neurosciences Division, and provides a diagnostic pathology service offering the following range of investigations:

- a neurosurgical biopsy service, to include urgent intra-operative reporting
- cytological examination of cerebrospinal fluid specimens
- a muscle and peripheral nerve biopsy service (specimens can be sent to the department from other hospitals, or alternatively, patients can be referred to us for the biopsy procedure to be performed by one of our own neuropathologists)
- macroscopic and microscopic examination of fixed brains, spinal columns and spinal cords, as well as a general autopsy histology service for cases both undergoing post-mortem examination within North Bristol NHS Trust, and for specimens referred to us from other Trusts.

### 1.1. Contact Information

**Address:**

Department of Neuropathology  
Pathology Sciences Building  
Southmead Hospital  
North Bristol NHS Trust  
Bristol  
BS10 5NB

**Telephone:**

All the department's telephone extensions can be direct dialled, using - (0117) 41##### (where ##### is the 5-digit extension number).

Extension numbers are:

Dr K Kurian	
(Consultant Neuropathologist/Laboratory Director)	42405
Dr K Uranker (Consultant Neuropathologist)	42406
Dr A Cuevas-Ocampo (Consultant Neuropathologist)	42404
Specialty Registrar	42407
Miss Emily Austin* (Laboratory Manager)	42401
Main Laboratory	42400
Secretarial Staff	42402 & 42403

\*Seconded into post October 2019 – April 2020

## 1.2. Hours of Business:

The department is staffed between 8:00 am and 5:15 pm, Monday to Friday, excluding bank holidays.

We do not offer an on call service. In case of emergency users may contact a Consultant Neuropathologist in office hours, who may be able to arrange for out of hours cover. This must be done as far in advance as possible and cannot be guaranteed.

## 1.3. Location of the Neuropathology Department

The Pathology Science Building is located within the Science Quarter of Southmead Hospital.

- Enter the hospital site from Southmead Road
- Follow the road onto Southmead Way
- Turn left at mini roundabout onto Beaufort Way
- The Pathology Sciences Building is on your left and is entered via main reception.

## 1.4. Specimen Labelling and Request Forms

Note that the information provided below conforms to North Bristol NHS Trust's *Policy for request form and specimen labelling* (Ref CG45). This is posted on the Trust's Intranet resource.

Please label all **surgical specimen containers** with the following information:

- The patient's surname & forename;
- His/her hospital and NHS number, and his/her date of birth.
- And when appropriate, if the specimen is a potential inoculation risk (refer to section 1.6)

All surgical specimens must be accompanied by a request form, preferably a green Neuropathology form. These forms are available from this Department's Office. We will accept specimens accompanied by other request forms, but note that using a non-Neuropathology form can result in a delay in the specimens reaching us due to it being inappropriately delivered to the General Pathology Department, which is located in a different area. If you have not used a green request form, please label the specimen bag very clearly 'FOR NEUROPATHOLOGY'.

This **request form** must record the information required for the specimen container (see above), plus:

- Gender of patient
- Clinical details
- The site of the biopsy and specimen details
- The name of the consultant, and the source of the request
- The date and time of specimen collection
- Examination required

- And when appropriate, should be labelled clearly as a potential inoculation risk (see section 1.6)

All **autopsy specimens** sent to the Neuropathology Department at Southmead Hospital must be clearly labelled with the name of the deceased and accompanied by a copy of the autopsy report.

Written evidence from the next-of-kin must also be provided for:

- The consent of the autopsy examination
- The information concerning the ultimate fate of residual tissue, associated blocks and slides
- Any constraints on sampling

Failure to supply this information may result in the specimen being returned unexamined.

The collation of this information is performed by a department secretary, who will also coordinate requests for the urgent return of specimens.

### 1.5. Criteria for Rejection of Samples

The samples received by the Neuropathology Department are regarded as non-repeatable samples. When the department receives incorrectly labelled samples:

- the requestor will be informed and clearly advised that the final results of this sample will be withheld until such time that the sample is adequately labelled
- the requestor must, where practicable arrange for the sample to be correctly re-labelled as soon as possible so that the sample can be processed
- all incidents of non-conformity with the policy, identified by staff in Neuropathology, will be documented using departmental systems and may be escalated on the North Bristol Trust DATIX system for incident reporting.

### 1.6. Safety Information

**Formalin** and **glutaraldehyde** fixatives used for Neuropathology specimens are toxic by inhalation and ingestion, and can cause severe dermatitis on skin contact.

**95% Alcohol** used for fixing brain smears is harmful by ingestion, flammable and volatile.

Please wear nitrile gloves when handling containers of these fixatives, and ensure there is adequate ventilation. Specimen container(s) should be sealed in a plastic bag as soon as the labelled specimen(s) have been placed in them. Store the request form in the separate pocket on the specimen bag to ensure that it does not become contaminated.

Hazard data sheets for these substances are available on request from the Neuropathology Department.

Any patient with or suspected of any of the following are considered to be an Inoculation Risk:

- HIV
- Hepatitis B

- Hepatitis C
- Creutzfeld Jakob Disease
- Tuberculosis

For the safety of staff, please ensure that these investigations are kept to a minimum.

Forms and specimen pots must be clearly labelled as a "**Biohazard Risk**" or "**Inoculation Risk**".

### 1.7. Issuing of Diagnostic Reports

Once the reports have been authorised they are available on the ICE system (with the exception of post mortem reports) and are also securely emailed to the requesting Clinician.

Requests for reports should be directed through the Departmental Secretaries. Verbal reports, either in person or by telephone, should only be provided by a member of the Neuropathology Department's medical staff.

We aim to provide a histology report for at least 80% of cases within the target times indicated below for the various categories of specimens examined in this department.

- |                                      |         |
|--------------------------------------|---------|
| • Neurosurgical biopsies             | 8 days  |
| • Muscle & peripheral nerve biopsies | 11 days |
| • Autopsy histology                  | 65 days |
| • Cerebrospinal fluid analysis       | 7 days  |

Note that if additional work is required on a case (e.g. further immunocytochemistry, electron microscopy or molecular genetic testing), a later supplementary report will be issued.

If clinical advice is required, the Clinician should telephone the Departmental Secretaries in office hours who will direct them to the appropriate Neuropathologist.

### 1.8. Referral of Cases to Another Department

In circumstances where a further diagnostic opinion is required for a case, material will be referred to another pathologist who is considered to have a high degree of specialist knowledge in that particular field, either within North Bristol NHS Trust, or elsewhere. The following departments are frequently used as referral centres:

- Department of Cellular Pathology  
Southmead Hospital  
Westbury-On-Trym  
Bristol BS10 5NB
- Bristol Genetics Laboratory  
Pathology Sciences  
Southmead Hospital  
Westbury-on-Trym  
Bristol BS10 5NB

- Institute of Neurology  
Muscle Pathology Laboratory  
1st Floor, Queen Square House  
Queens Square  
London WC1N 3BG
- Department of Neurology  
Mitochondrial Diagnostic Service  
4th Floor, Cookson Building  
The Medical School  
Framlington Place  
University of Newcastle-Upon-Tyne NE2 4HH
- Department of Neuropathology  
St Jude Childrens Research Hospital  
332 N.Lauderdale Street  
Memphis TN38105  
USA
- Electron Microscopy Unit  
1LB5-71  
Cellular Pathology  
Cardiff & Vale UHB  
University Hospital of Wales  
Heath Park  
Cardiff  
CF14 4XW

All referral centres are checked annually to ensure they are accredited with the appropriate accreditation body.

## 2. Packaging and Transport of Specimens

All specimens sent to the Neuropathology Department at Southmead Hospital must be packed and labelled in compliance with the current Health and Safety and Transport legislation.

Note that the request form must be stored in a separate pocket to the specimen. This will ensure that it does not become contaminated.

All specimens delivered to North Bristol Trust from external users must be packaged in accordance with **UN 3373** guidance.

There must be the primary receptacle, secondary packaging and a **UN 3373** certified outer packaging. There must be adequate cushioning and if required absorbent material between the secondary and outer packaging. All outer packaging must be labelled as **UN 3373** and also clearly marked as **Pathological Specimens**.

Specimens taken in Theatres in the Brunel Building can be sent via the pneumatic tube system. Specimens sent in this way must **ONLY** be sent in the tubes labelled for Neuropathology as these are leak-proof. Query CJD specimens must **NEVER** be sent via the pneumatic tube system. Training is available for all staff using the system via Neuropathology. Only one case should be put in the tube at one time and senders should ensure there is adequate cushioning around the specimen.

### 3. Urgent Intra-Operative Specimens

#### 3.1. Tissue Smears

A smear preparation is the preferred type of specimen for urgent intra-operative diagnosis.

If the tissue sample will not smear readily, frozen sections will need to be prepared (refer to **section 3.2** below).

Urgent intra-operative biopsies may be sent in a universal container for smears or frozen sections to be prepared by the Neuropathology Department. The container should be labelled as described in **section 1.4** above.

<b>Prior Notification</b>	<p>Please inform us before sending the smear if possible. This will reduce the possibility of a delay in the provision of the result by a consultant neuropathologist.</p> <p>If sending a smear via the pneumatic tube system then the laboratory must be telephoned when it is sent.</p> <p>Consultant neurosurgeons should book out-of-hours requests as far in advance as possible by arrangement with a consultant neuropathologist, who should be contacted by telephone.</p>
<b>Container</b>	<p>If smears are prepared by the Neuropathology Department:</p> <p>Fresh tissue should be sent in a universal container.</p> <p>If smears are prepared in theatres:</p> <p>A plastic (polypropylene) screw-top container, specifically designated for smears should be used.</p> <p>The container should be filled with 95% ethanol (available from the Neuropathology Laboratory) and must be clearly labelled. Place it in a self-seal specimen bag and transport upright.</p> <p>In both instances the container should be clearly labelled as described in <b>section 1.4</b> above</p>
<b>Accompanying Information</b>	<p>Completed green Neuropathology request form, as outlined in '<b>section 1.4</b>', placed in the separate pocket of the specimen bag.</p> <p>Ensure form fully completed including tissue taken for freezing and consent for use of tissue for research and education.</p>
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory or Cellular Pathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the</p>



	<p>Neuropathology Department is contacted by telephone.  <b>Never leave an urgent intra-operative sample in the Specimen Reception without speaking to a member of the Neuropathology team.</b> The sample is urgent so it is imperative that it is dealt with in the quickest possible manner.</p> <p>Intraoperative samples may be sent via the pneumatic tube system. Please telephone the laboratory on x42400 when the specimen is put into the pneumatic tube system.</p>
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### 3.2. Biopsies for Urgent Frozen Sections

Some intra-operative specimens, particularly those of a hard or rubbery consistency, will not smear. Should this be the case, cryostat sectioning of frozen tissue is necessary to prepare a specimen for an urgent diagnosis.

A tissue sample at least 3mm across should be selected for this type of preparation.

<b>Prior Notification</b>	<p>Inform a consultant neuropathologist before sending the specimen, if possible.</p> <p>If sending a smear via the pneumatic tube system then the laboratory must be telephoned when it is sent.</p> <p>Consultant neurosurgeons should book out-of-hours requests as far in advance as possible by arrangement with a consultant neuropathologist, who should be contacted by telephone. A biomedical scientist will need to be called in to prepare the specimen for microscopy.</p>
<b>Container</b>	<p>A specimen jar of appropriate size. If the specimen is small, sufficient saline should be added to keep it moist.</p> <p>No fixative should be used.</p> <p>The specimen jar must be labelled and placed in a sealable specimen bag.</p>
<b>Accompanying Information</b>	<p>Completed green Neuropathology request form, as outlined in '<b>section 1.4</b>', placed in the separate pocket of the specimen bag.</p> <p>Ensure form fully completed including tissue taken for freezing and consent for use of tissue for research and education.</p>
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory or Cellular Pathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone.</p> <p><b>Never leave an urgent intra-operative sample in the Specimen Reception without speaking to a member of the Neuropathology team.</b> The sample is urgent so it is imperative</p>

	<p>that it is dealt with in the quickest possible manner.</p> <p>Intraoperative samples may be sent via the pneumatic tube system. Please telephone the laboratory on x42400 when the specimen is put into the pneumatic tube system.</p>
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#### 4. Neurosurgical Biopsies for Histology

The routine neurohistology specimens generated during surgery at Southmead Hospital are normally collected in the theatre suite for delivery to the Neuropathology Department by the theatre porter, or via the pneumatic tube system.

Special arrangements should be made for specimens from other departments to be delivered to the Neuropathology Department.

<b>Prior Notification</b>	Not usually required.
<b>Container</b>	<p>Specimen jar of appropriate size (at least twice the specimen volume) containing formalin fixative.</p> <p>If a large container is required, this can be provided by the Neuropathology Department.</p> <p>If molecular genetic analysis may be required, an additional specimen sample should be put in a screw-top plastic NUNC tube. No fixative solution should be added, as the sample will be frozen on receipt in the laboratory, and then stored at -80°C pending further laboratory investigations.</p> <p>The container(s) must be clearly labelled, as outlined in '<b>section 1.4</b>', and placed in a sealable specimen bag.</p>
<b>Accompanying Information</b>	<p>Completed green Neuropathology request form, as outlined in '<b>section 1.4</b>', placed in the separate pocket of the sealable specimen bag.</p> <p>Ensure form fully completed including tissue taken for freezing and consent for use of tissue for research and education.</p>
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory or Cellular Pathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone.</p> <p>Neuropathology has a sample box located on the counter in the Specimen Reception. This box is routinely checked throughout Neuropathology's hours of business so biopsy samples (<b>in fixative</b>) can be left in here.</p>

	Small containers may be sent via the pneumatic tube system in the pods for Neuropathology.
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## 5. Biopsies for Electron Microscopy

We accept a range of tissue samples from both within North Bristol Trust and from other establishments for ultrastructural examination for a variety of neurological conditions, for example, skin biopsies for CADASIL and Batten's disease.

For this technique to provide reliable results the tissue must be immersed in a suitable fixative (see below) as soon after resection as possible, preferably within a couple of minutes. If in doubt regarding the type or availability of a fixative solution, please contact the laboratory *before* taking a tissue sample.

<b>Prior Notification</b>	Is not usually required.
<b>Container</b>	<p>Universal containing buffered glutaraldehyde fixative (available on request from the Neuropathology Department).</p> <p>Several small specimens can be added to the container but none should exceed ~5 mm in maximum diameter.</p> <p>The vial should be clearly labelled with details of the patient, as outlined in '<b>section 1.4</b>' and placed in a sealable specimen bag.</p>
<b>Accompanying Information</b>	A request form (preferably a green Neuropathology form), completed as outlined in ' <b>section 1.4</b> ', providing adequate clinical information including an indication of what pathological condition is suspected. The form should be stored in a separate pocket to the specimen to prevent contamination.
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory or Cellular Pathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone. Neuropathology has a sample box located on the counter in the Specimen Reception. This box is routinely checked throughout Neuropathology's hours of business so specimens (<b>in fixative</b>) can be left in here.</p> <p>Alternatively, specimens from other hospitals can be sent to the department by post or courier service provided they are appropriately and securely packed. In this case please notify the laboratory that you are sending the sample.</p>

	Samples are then sent on to our referral laboratory for processing.
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## 6. Cerebrospinal Fluid (CSF) for Cytological Examination.

Please note that these specimens must be sent or delivered to the **Neuropathology Department**, not to General Pathology, as soon as possible, and always within 72 hours of collection from the patient.

Failure to do this may result in the specimen being left in the wrong department for a significant period of time before Neuropathology staffs are notified of its existence. The deterioration of the specimen during this period may affect the quality of the diagnostic result.

CSF specimens may be left in a ward fridge for up to 72 hours if they are collected outside of the Neuropathology Department's opening times. **Storage in a fridge for longer periods or at room temperature for more than a few hours will render the specimen diagnostically useless.**

<b>Prior Notification</b>	Is not usually required.
<b>Container</b>	A universal plastic specimen pot, clearly labelled with the patient's details, as outlined in ' <b>section 1.4</b> '.  Ideally at least 1ml of CSF is required. No fixative should be added to the container.  The pot must be placed in a sealable specimen bag.
<b>Accompanying Information</b>	Completed green Neuropathology request form, as outlined in ' <b>section 1.4</b> ', placed in the separate pocket of the sealable specimen bag, or a request on ICE.
<b>Point of Delivery</b>	Neuropathology Main Laboratory or Cellular pathology Specimen Reception, preferably no later than 2.00 pm, to allow time for immunocytochemical procedures to be performed on the same day, if required.  Samples may be sent via the pneumatic tube system when in working hours and the laboratory must be telephoned prior to sending.

## 7. Muscle Biopsies

### 7.1. Arranging for a Muscle Biopsy Procedure to be Performed by the Neuropathology Department

Please note that the following information applies to the booking of both muscle and nerve biopsy procedures.

There is a theatre slot for up to three muscle (or, less commonly, nerve) biopsies to be performed at Southmead Hospital approximately every four weeks.

In order to request a muscle biopsy, it is necessary to complete a Muscle Biopsy Booking Form (**NP-MGT-FM-039v1**), available from the Neuropathology secretaries ([neuropathologySecretaries@nbt.nhs.uk](mailto:neuropathologySecretaries@nbt.nhs.uk)) and emailed back to them together with any relevant referral/clinic letters. As much information as possible should be supplied regarding the patient's clinical history and recent investigations.

The referral will then be reviewed by the consultant neuropathologist at which point the choice of biopsy site, and the size and orientation of specimen, can, if necessary, be discussed.

Once the referral has been approved, it will be triaged with the Neurology Waiting List Co-ordinator ([sharon.houston@nbt.nhs.uk](mailto:sharon.houston@nbt.nhs.uk)) and added to the next available theatre slot (which may well be several weeks from the original date of referral). The Waiting List Co-ordinator will write to the patient with the appointment date and include an information pack relating to the muscle biopsy procedure, and will liaise with them if there are any issues over the suitability of the theatre slot.

The Neuropathology secretaries will be able to advise you on the progress of the referral.

### 7.2. General Guidelines for Sending a Muscle Biopsy Specimen to the Neuropathology Department

#### Prior Notification:

As much notice as possible should be given to the Neuropathology department of the referral of the muscle biopsy specimen. All referrals should be accompanied by the Muscle Biopsy Booking Form (**NP-MGT-FM-039**), available from the Neuropathology secretaries ([allison.finnie@nbt.nhs.uk](mailto:allison.finnie@nbt.nhs.uk)), and or/ as much information as possible regarding the patient's clinical history and recent investigations. Ideally this paperwork can be emailed in advance to the secretaries.

The choice of biopsy site, and the size and orientation of specimen, may need prior discussion with a consultant neuropathologist.

Please schedule the procedure early enough in the day to ensure the specimen arrives at the laboratory before 3pm, allowing time for the specimen to be sampled and prepared immediately after its arrival.

Early on the day of the procedure contact the laboratory to provide us with an expected delivery time for the specimen. This helps us manage the day's workload. Arrangements for delivering the specimen to the Neuropathology Department should bear in mind that the time elapsing between taking the biopsy and its delivery to the laboratory should be kept to a minimum. If you anticipate a delay in excess of 30 minutes, liaise with a consultant neuropathologist or Biomedical Scientist.

### Open Biopsies:

There are specific requirements for taking the tissue sample:

1. Open muscle biopsies may be performed under local or general anaesthesia. However if the biopsy has to be taken under local anaesthesia, please avoid infiltration of the muscle itself by the anaesthetic, which will seriously affect its suitability for assessment of some conditions. It is also important that the muscle fascicles are removed without prior diathermy.
2. We recommend that at least two strips of muscle of approximately pencil thickness and around 15mm in length are dissected from the surface of the muscle. These need to be in alignment with the natural direction of the muscle fibres.
3. The specimen should not be tethered or pinned in any way.
4. Ensure that there is **no specimen contact with any fluid**, for example fixative or saline solutions.
5. a) The specimen(s) should be gently wrapped in cling-film and placed in an airtight container for transport to the laboratory. **Ensure that the specimen is not crushed whilst being wrapped**. If the specimen is taken in Brunel theatres, it can then be sent to the department via pneumatic tube system, and the laboratory should be telephoned on x42400 prior to putting in the tube. If the specimen is taken elsewhere then it should be couriered to the department as soon after taking it as possible and the department should be notified when it is on its way by calling the laboratory on 0117 4142400.  
b) If cling film is not available, the specimen can be placed on a non-absorbent support (e.g. a small piece of dental wax or foil), and this must be taken to the department via porter. The specimen must be delivered to the laboratory within 20 minutes of resection if the specimen is not wrapped in cling-film.

### Needle Biopsies:

If for clinical reasons a needle biopsy procedure is preferable to performing an open biopsy, bear in mind that the small muscle samples taken are more prone to desiccation. Follow the guidelines in sections (4) and (5) above. Note that **all needle biopsy specimens should be contained as in section 5a above**.

### Accompanying Documentation:

The specimen container must be clearly labelled with the patient's details, and should be accompanied by a specimen request form (NP-LAB-FM-039).

### Packaging and Transport:

If the specimen is to be sent to the Neuropathology Department from another hospital site, follow the instructions provided below:

- **Do not pack the specimen container with ice:** if the courier is delayed and the specimen begins to freeze slowly, the examination and diagnosis will be compromised. Also any water formed if the ice begins to melt will damage the specimen if it comes into contact with it.
- All specimens should be placed inside a sealed specimen bag, and appropriate labelling and outer packaging should be used. Specimens being transported between hospitals must be clearly labelled with a contact telephone number.
- Transport arrangements for delivering the specimen to the Neuropathology Department must be made well in advance, bearing in mind that the time elapsing between taking the biopsy and its delivery to the laboratory should be kept to an absolute minimum.
- **The courier should be on standby to take delivery of the specimen as soon after resection as is practically possible, and should immediately transport it to the Neuropathology Department at Southmead Hospital.** Ensure that the courier is aware of the importance of hand delivering the sample directly to a member of the Neuropathology team and that they should **NEVER** leave the sample in Specimen Reception without speaking to a member of the Neuropathology team first. There are details on finding the department in section 1 of the User Manual.

Please notify the laboratory once the specimen has been despatched, to provide us with an expected delivery time and a contact telephone number for the courier, in case the specimen does not arrive within the expected time.

## 8. Peripheral Nerve Biopsies

### 8.1. General Guidelines for Sending a Nerve Biopsy Specimen to the Neuropathology Department

#### Prior Notification:

As for muscle biopsies, all peripheral nerve biopsy procedures should be pre-booked through the Neuropathology Department Office, preferably providing at least one week's notice.

A4-sized green booking forms are available from the Neuropathology Secretaries and should be completed and returned before the procedure is carried out.

If in doubt about the choice of biopsy site, please discuss the case with a Consultant Neuropathologist before booking the procedure.

**The Biopsy Procedure:**

Please note the following guidelines for taking a specimen:

- Normally the sural nerve is sampled. This biopsy specimen should be at least 2cm in length, providing sufficient tissue for frozen sectioning, paraffin wax processing for light microscopy, and electron microscopy.
- The specimen should not be tethered or pinned in any way.
- To prevent desiccation, the specimen(s) should be placed on a non-absorbent substrate and wrapped in cling-film for transport to the laboratory.
- Ensure that there is **no specimen contact with any fluid**, for example fixative or saline solutions.
- Refer to the appropriate section below for instructions on sending the biopsy samples to the laboratory.
- In some cases, frozen sectioning may not be necessary, in which case the specimen can be fixed locally and transported less urgently to the Department of Neuropathology (see 8.4 below). In such cases the resected nerve specimen should be divided into two lengths, one of which must be immersed in 5% buffered glutaraldehyde solution immediately following resection, and the other in buffered formalin. If necessary, the buffered glutaraldehyde can be supplied by the Neuropathology Department.

## 8.2. Nerve Biopsy Procedures Performed by Other Departments at Southmead Hospital

Please schedule the procedure early enough in the day to ensure the specimen arrives at the laboratory well before the end of the afternoon, allowing time for the specimen to be sampled and prepared immediately after its arrival.

Early on the day of the procedure, contact the laboratory to provide us with an expected delivery time for the specimen. This helps us manage the day's workload. Also, if a delay becomes unavoidable, please keep the laboratory staff informed.

Make arrangements for delivering the specimen to the Neuropathology Department, bearing in mind that the time elapsing between taking the biopsy and its delivery to the laboratory should be kept to a minimum. If you anticipate a delay in delivery in excess of 15 minutes, liaise with a Consultant Neuropathologist or Biomedical Scientist.

<p><b>Packaging and Transportation</b></p>	<p>If the biopsy can be delivered to the department within 30 minutes of removal, the specimen can be placed on a piece of dental wax in a Petri dish, or other shallow container with flat bottom.</p> <p>The specimen container must be clearly labelled and placed in a sealable specimen bag.</p> <p>Follow the notes above regarding transportation to the Neuropathology Department.</p>
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<b>Accompanying Information</b>	Completed green Neuropathology request form, as outlined in ' <b>section 1.4</b> ', placed in the separate pocket of the specimen bag (if this has not previously been sent to the department)
<b>Point of Delivery</b>	Neuropathology Main Laboratory or Cellular Pathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone. <b>Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team.</b> It is imperative that the sample is dealt with in the quickest possible manner.

### 8.3. Nerve Biopsy Procedures Performed at Other Hospitals

In order to provide a satisfactory diagnostic service for peripheral nerve biopsy specimens taken at locations away from Southmead Hospital, it is important that the following guidelines are followed:

- In addition to booking the procedure with the Neuropathology Department in advance, ensure that a pot of glutaraldehyde fixative will be available at the time of biopsy. We can provide this, together with appropriate packaging, but allow sufficient time for it to be sent. Placing part of the specimen in this fixative will provide us with tissue suitable for resin embedding for light and electron microscopy, and if considered appropriate, teased nerve preparations. The fixative formulation we use provides significantly better ultrastructural results compared with general purpose fixatives used in most cellular pathology departments.
- As this service is practicable only in cases for which there is no need to send an unfixed specimen to the Neuropathology Department, there isn't any urgency in delivering the specimen. If it is not possible for the specimen to be delivered personally, it can be sent, either by hospital transport, or by courier, or through the post following the appropriate Royal Mail guidelines regarding packaging and labelling.

Please notify the laboratory once the specimen has been despatched, to provide us with an expected delivery time.

<b>Specimen Preparation</b>	Ideally, the excised specimen should be at least 2cm in length. After excision, place it on a piece of dental wax <i>at room temperature</i> . The specimen should then be divided transversely (approx. 3:2 ratio) into two pieces.
<b>Packaging and Transportation</b>	Place the larger piece (at least 1cm long) into the glutaraldehyde fixative which <i>must be at room temperature</i> .

	<p>The remaining piece of tissue should be immersed in formalin fixative for paraffin histology.</p> <p>The specimen pots must be clearly labelled and placed in a seal-able specimen bag. Refer to the notes above regarding delivery to the Neuropathology Department.</p>
<b>Accompanying Information</b>	Completed green Neuropathology request form, as outlined in ' <b>section 1.4</b> ', placed in the separate pocket of the specimen bag (if this has not previously been sent to the department)
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory or Cellular Pathology and Neuropathology Specimen Reception, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone. Neuropathology has a sample box located on the counter in the Specimen Reception. This box is routinely checked throughout Neuropathology's hours of business so biopsy samples (<b>in fixative</b>) can be left in here.</p> <p>Alternatively, specimens from other hospitals can be sent to the Department by post or courier service provided they are appropriately and securely packed. In this case please notify the laboratory that you are sending the sample.</p>

## 9. Autopsy Specimens

The Neuropathology Department provides an autopsy brain, spinal column and spinal cord examination service, not only for North Bristol NHS Trust, but also for other NHS Trusts, Coroners and Police.

To provide this service, it is essential that all specimens sent to us are clearly labelled, and are accompanied by an autopsy report and appropriate consent. Please refer to section 1.4 of this manual for more comprehensive information.

If the fixation time for the brain specimen is less than 3 weeks, this should be indicated so that further fixation of the specimen can be carried out in the Neuropathology Department before the specimen is dissected and examined by a Neuropathologist.

<b>Prior Notification</b>	Is not required. Inform the department when sending/bringing specimens.
<b>Specimen Preparation</b>	Whole brain specimens should be fixed by suspension from the basilar artery in a 20% formalin solution for a minimum period of one week, but preferably a full three weeks, before being sent to us.

	<p>Spinal cords should be fixed by immersion in formalin.</p> <p>Other tissue samples sent for examination should be immersed in formalin in clearly labelled specimen pots.</p>
<b>Packaging</b>	<p>The formalin should be drained off, and the brain packed in a polythene bag, which is then wrapped in cotton wool and sealed in a second polythene bag.</p> <p>The specimen(s) should then be placed in a plastic bucket.</p> <p>One or more plastic buckets can be packed together in an appropriately sized <b>UN3373</b> certified transport box together, with any pots containing other tissue samples for transportation to the Neuropathology Department. Use absorbent packaging around the specimen containers to ensure they are held firmly in place within the outer container.</p> <p>The box should be securely fastened and clearly marked as <b>Pathological Specimens</b>.</p> <p>See 'Biological agents: Managing the risks in laboratories and healthcare premises (Appendix 1.2)' published by the Health and Safety Executive Advisory Committee on Dangerous Pathogens, and available in PDF format at <a href="http://www.hse.gov.uk/publications">www.hse.gov.uk/publications</a>, for detailed advice on transport of specimens.</p>
<b>Accompanying Information</b>	<p>The autopsy report and information concerning consent etc. (Please refer to <b>section 1.4</b> of this manual)</p>
<b>Point of Delivery</b>	<p>Neuropathology Main Laboratory (via Cellular Pathology Specimen Reception), Pathology Sciences Building. The department should be pre-warned when to expect the specimen. Ensure that if sending by courier they are aware of the importance of delivering the specimen carefully and directly to the department. The specimen should <b>NEVER</b> be left elsewhere.</p>

## 10. Complaints Procedure

The department has a full complaints procedure and complaints can be made either in person or via telephone, email or letter to the Laboratory Manager (or in his/her absence the most senior member of the team).

The timescales for dealing with complaints are as follows:

<b>Response by the end of the next working day</b>	This applies to verbal or written concerns that can be handled on the spot, or require a minimum of fact finding for resolution.
<b>Response within</b>	Verbal or written concerns that require

<b>5-10 Working days</b>	input from other work areas, for example from other departments within the Trust.
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Once a full root cause analysis has been done and corrective/preventative action taken then the complainant will be made aware of the actions taken.

## **11. Data Protection**

All data and information in the Neuropathology Department is handled in accordance with the North Bristol Trusts' Data Protection Policy and the Data Protection Act 1998.