

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
12	17/05/2021	Minor amendments
13	17/03/2022	Updated Neuropathology requests to joint secretary email account
14.	19/05/2022	Included Peri-Mortem muscle biopsies. 3.2 amended to include information on time frames to retain specimen integrity of intra-operative specimens.
15.	24/05/2023	Updated Consultant details and waiting list coordinator. Section 3.2 intraoperative specimens must be received as promptly as possible Section 1.2.1 Voicemail instruction for out of hours.
16	E Miller/ B Benham	Section 1 updated to state requests are considered an agreement. Section 1.1 addition of second main laboratory phone number. Section 1.2 updated to highlight fresh tissue is only accepted at certain times. Section 1.2.1 updated to provide instructions for

dealing with specimens out of hours. Section 1.3 clarification of directions to the department. Section 1.4 updated to match current NBT Policy Ref CG-163 requirements, amended to require a Neuropathology specific request form, addition of email and link to access the Neuropathology request form. Section 1.5 updated to include risks associated with rejection. Section 1.6 separated out to highlight need to inform lab of inoculation risks – new section 1.7 made for other safety information. Section 1.7 Safety information – 95% alcohol for fixing smears removed, clarification of glutaraldehyde only for EM specimens. 1.9 Edited for consistent formatting. Section 2 addition of department address and contact number. Sections 3.1 Tissue Smears and 3.2 Biopsies for Urgent Frozen Sections merged into one in section 3. Section 3 removal of 95% ethanol for smears and saline for small frozen section specimens and addition for external sites to label outer packaging as urgent fresh specimen. Section 4 routine specimens should arrive at the lab by the next working day. Addition of Section 4.1 Samples for Molecular Genetics including requirement to tick box on request form, instructions for out of hours and WGS requirements. Section 5 update to sample requirements to match referral laboratory and clarification that specimens are referred externally for EM. Section 6 updated to prompt requirements for multiple pots of CSF for multiple departments and additional scheduling and packaging requirements for external sites. Sections 7 and 8 Notice period for muscle and nerve biopsies updated to state a minimum of 24 hours' notice required. Section 7.1 Neurology waiting list co-ordinator email updated and phone number included. Section 7.2 added that muscle biopsy kits are available from the secretaries and amended packaging and transport to clarify requirements for internal and external sites. Section 7.3 included request to leave a voicemail if a perimortem muscle is taken out of hours. Section 8 revision of the entire Peripheral Nerve Biopsies section. Section 11 updated to current Data Protection Act 2018.

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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.

All requests accepted by the laboratory will be considered an agreement to undertake testing as requested.

1.1. Contact Information

Address:

Department of Neuropathology
Pathology Sciences Building (Phase 2, Level 1)
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:

Professor K Kurian	
(Consultant Neuropathologist/Laboratory Director)	42405
Dr K Urankar (Consultant Neuropathologist)	42406
Dr J Davis (Consultant Neuropathologist)	42407
Specialist Registrar	42404
Laboratory Manager	42401
Main Laboratory	42400 & 42411
Secretarial Staff	42402 & 42403

To ensure the department deals with your request efficiently, please direct all Neuropathology requests to **NeuropathologySecretaries@nbt.nhs.uk**

1.2. Hours of Business:

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

Please note, fresh tissue is only accepted between 9am - 3pm if coming from an external site to allow for transport delays and 9am and 4pm if sent internally.

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.

1.2.1. Out of Hours

In the unlikely event of sending a specimen out of hours, please leave a voicemail detailing:

- Contact information including contact number and name
- Where you are calling from
- What the specimen request is
- If you would like us to call you back

If taking a fresh specimen out of hour this must be stored using the following instructions:

Specimen Type	Storage
CSF	Store in refrigerator and notify the lab as above. Send as soon as possible once lab opens.
Muscle/Nerve biopsy	Do not take. These can only be processed during lab hours with prior notice.
Peri-mortem muscle biopsy	Please see section 7.3.
Intraoperative frozen section	Do not take. These can only be processed during lab hours with prior notice.
HBCs and Red tops/cryovials/coakham pots	Store in freezer and notify when sending back in hours. Send as soon as possible once lab opens.

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

- To deliver specimens – when you reach the barrier, turn left to access Phase 2. Go to the Cellular Pathology reception and ask for Neuropathology.
- To visit the department – continue past the barrier to enter through the main reception in Phase 1 and ask for Neuropathology.

1.4. Specimen Labelling and Request Forms

Note that the information provided below conforms to North Bristol NHS Trust's *Request Form and Specimen Labelling Policy* (Ref CG-163). This is posted on the Trust's Intranet resource.

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

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

All surgical specimens must be accompanied by a Neuropathology request form, preferably on green paper. Theatres at Southmead Hospital can contact the laboratory on x42400 to request forms to be sent via the pneumatic tube system. External sites can access the form by contacting the Neuropathology secretaries on **NeuropathologySecretaries@nbt.nhs.uk** or by downloading it from our website ([Neuropathology Laboratory Services | North Bristol NHS Trust \(nbt.nhs.uk\)](http://NeuropathologyLaboratoryServices|NorthBristolNHSTrust(nbt.nhs.uk))).

If a specimen is sent with a different request form, there is a risk it will be delivered to the wrong department which may delay processing or even result in it being processed by the wrong department.

ICE requests are acceptable for CSF samples. The CSF container must be clearly labelled for Neuropathology. Where CSF requires analysis in multiple departments, a separate sample must be sent for each department as analysis methods in other departments may damage the integrity of the sample. ICE requests are not acceptable for any other specimen types.

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

- The date and time of specimen collection
- Initial/ signature of specimen collector
- Name of the consultant, and the source of the request
- Gender of patient
- Clinical details including contact details of requester
- The site of the biopsy and specimen details
- Examination required
- Any 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 so the department will always try it's best to provide a diagnosis. When the department receives incorrectly labelled samples, this will result in a delay to the specimen being processed. This has a greater impact on specimens that are sent to the department fresh where the integrity of the sample is time dependant. When an unlabelled sample is sent, the following steps will be followed:

- the requester 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 requester 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. Query Inoculation Risk

Any patient **with or suspected** of having 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 and **do not send any unfixed/fresh samples without prior approval of the lab.**

Forms and specimen pots must be clearly labelled as a "**Biohazard Risk**" or "**Inoculation Risk**" even if the risk is only suspected.

1.7. Safety Information

Formalin fixative used for Neuropathology specimens is toxic by inhalation and ingestion and can cause severe dermatitis on skin contact.

Glutaraldehyde fixative used for electron microscopy is toxic by inhalation and ingestion and can cause severe dermatitis on skin contact.

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.

1.8. Issuing of Diagnostic Reports

Once the reports have been authorised, they are available on the ICE system (with the exception of postmortem 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.

1.9. 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

Electron Microscopy Unit
1LB5-71
Cellular Pathology
Cardiff & Vale UHB
University Hospital of Wales
Heath Park
Cardiff, CF14 4XW

Department of Histopathology
Great Ormond Street Hospital
Great Ormond Street
London, WC1N 3JH

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 to ensure that it does not become contaminated.

Specimens taken in Theatres in the Brunel Building can be sent via the pneumatic tube system or with the porters. Specimens sent via the pneumatic tube system 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.

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 clearly marked as **Pathological Specimens**. Outer packaging should also be labelled with the Neuropathology Department's address and contact number.

Address: Department of Neuropathology
 Pathology Sciences Building (Phase 2)
 Southmead Hospital
 Bristol
 BS10 5NB
 Contact number: 0117 414 2400

3. Urgent Intra-Operative Specimens

Intra-operative specimens are examined through a smear and frozen section. Some intra-operative specimens, particularly those of a hard or rubbery consistency, will not smear. Should this be the case, the specimen may be examined by frozen section only.

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

The sample must be sent fresh with no additives or fixatives such as saline or formalin.

It is imperative that the fresh sample is received as promptly as possible before the tissue begins to break down and a diagnosis cannot be made.

Neuropathology must be contacted on 0117 414 2400 (x42400) prior to sending an intraoperative specimen to allow the laboratory time to prepare and reduce delays in processing.

Urgent intra-operative biopsies must be accompanied with a Neuropathology request form and may be sent in a Universal container, labelled as described in **section 1.4** above.

Prior Notification	<p>The laboratory must be telephoned on 0117 414 2400 before sending an intra-operative specimen. If possible, please also contact the laboratory at the beginning of the procedure if you plan to send an intraoperative specimen. This will reduce the possibility of a delay in the provision of the result by a consultant neuropathologist.</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>
Container	<p>Fresh tissue should be sent in a universal container labelled as described in section 1.4 above.</p>

	<p>The sample must be sent fresh with no additives or fixatives such as saline or formalin.</p> <p>The specimen pots must be clearly labelled and placed in a seal-able specimen bag.</p>
Accompanying Information	<p>Completed green Neuropathology request form, as outlined in section 1.4, placed in the separate pocket of the specimen bag.</p> <p>If sending from an external site, any outer packaging such as a box or envelope should be appropriately labelled as described in section 2 with the Neuropathology Department's address and contact number. It should also be clearly labelled as an urgent fresh specimen to prevent delays if delivered to the wrong department.</p> <p style="text-align: center;">Address: Department of Neuropathology Pathology Sciences Building (Phase 2) Southmead Hospital Bristol BS10 5NB Contact number: 0117 414 2400</p>
Point of Delivery	<p>Contact the laboratory on 0117 414 2400 (extension 42400) before sending the specimen.</p> <p>Pneumatic tube system – use the pods labelled 'Neuropathology 5050' only.</p> <p>By porter or courier – preferably directly to Neuropathology Main Laboratory. Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected immediately. Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team.</p> <p>The sample is urgent, so it is imperative that it is dealt with in the quickest possible manner.</p>

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.

Routine specimens in formalin should arrive at the lab on the day they are taken or on the morning of the next working day.

Prior Notification	Not usually required.
Container	Specimen pot of appropriate size (at least twice the specimen volume) containing formalin fixative. If a large container is required, this can be provided by the Neuropathology Department. The container(s) must be clearly labelled as outlined in section 1.4 and placed in a sealable specimen bag.
Accompanying Information	Completed green Neuropathology request form as outlined in section 1.4 , placed in the separate pocket of the sealable specimen bag. Ensure the request form is fully completed including, if applicable, ticking the boxes for tissue taken for freezing and consent withheld for use of tissue for research and education.
Point of Delivery	Pneumatic tube system – the laboratory should be contacted on x42400 prior to sending specimens in the pod. By porter – preferably directly to Neuropathology Main Laboratory. Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected. Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team.

4.1. Samples for Molecular Genetics

If molecular genetic analysis may be required, an additional specimen sample should be put in a labelled screw-top plastic coakham pot (also called cryovials, HBC, NUNC tubes). 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.

Ensure that the “tick box if tissue taken for freezing for Molecular Genetics” on the bottom of the Neuropathology request form (NP/MGT/FM/011) has been ticked.

If fresh specimens for molecular genetics are taken out of hours, they should be stored in the freezer until the lab re-opens.

Requirements for Whole Genome Sequencing

- 5mm x 5mm x 2mm of tumour tissue or 15mm x 2mm needle core biopsy
- necrotic and haemorrhagic areas should be avoided
- if other genetics tests will be required additional tissue should also be sent

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.

Good fixation is essential for electron microscopy. For the best preservation of ultrastructure, samples should be approximately 1-2mm in size and should be immersed in 2.5% glutaraldehyde in phosphate buffer as soon as possible after resection. Glutaraldehyde fixative is available from neuropathology – please contact the lab on 0117 414 2400 to arrange. If this is not possible, it is acceptable to fix the specimen in formalin.

Specimens are not processed in house for electron microscopy – they will be sent on to our referral laboratory.

Prior Notification	Is not usually required.
Container	<p>Universal containing buffered glutaraldehyde fixative (available on request from the Neuropathology Department).</p> <p>Several small specimens can be added to the container. Sample size should be approximately 1-2mm with none exceeding ~5 mm in maximum diameter.</p> <p>The vial should be clearly labelled with details of the patient, as outlined in 'section 1.4' and placed in a sealable specimen bag.</p>
Accompanying Information	A Neuropathology request form), completed as outlined in ' section 1.4 '. The form should clearly state the specimen is for Electron Microscopy and should provide 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.
Point of Delivery	<p>Pneumatic tube system – ensure that the department is telephoned (x42400) immediately prior to sending the specimen.</p> <p>By porter – preferably directly to Neuropathology Main Laboratory. Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected immediately.</p>

	<p>Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team.</p> <p>Electron microscopy is not done in house, samples will be sent on to a referral laboratory for processing.</p> <p>Specimens from other hospitals are accepted and will be sent on to the referral electron microscopy laboratory, however it may be more efficient to make arrangements directly with an electron microscopy laboratory. If sending the specimen to Neuropathology, notify the lab on 0117 414 2400 prior to sending. The specimen may be sent by post or courier provided they are appropriately and securely packed as described in section 2.</p>
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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.

If the specimen is taken outside of Neuropathology working hours, the specimen may be kept in a ward fridge until the department is open. **Storage in a fridge for longer than 72 hours or at room temperature for more than a few hours will render the specimen diagnostically useless.**

For external sites - please schedule the procedure early enough in the day to ensure the specimen arrives at the laboratory before 3pm, this is to account for any problems or delays in transport.

Prior Notification	Is not usually required.
Container	<p>A universal plastic specimen pot, clearly labelled with the patient's details, as outlined in 'section 1.4'.</p> <p>Ideally 1-2ml of CSF is required. No fixative should be added to the container.</p> <p>The pot must be placed in a sealable specimen bag.</p> <p>Where CSF requires analysis in multiple departments, a separate CSF pot must be sent for each department as alternate analysis methods can damage the integrity of the sample.</p>
Accompanying Information	Completed green Neuropathology request form, as outlined in ' section 1.4 ', placed in the separate pocket of

	the sealable specimen bag, or a request on ICE. ICE requests should be completely filled out, including clinical details and any potential infection risks.
Point of Delivery	<p>Pneumatic tube system – during working hours only. Ensure that the department is telephoned (x42400) immediately prior to sending the specimen.</p> <p>By porter – preferably directly to Neuropathology Main Laboratory. Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected immediately. Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team. It is imperative that the sample is dealt with in the quickest possible manner if fresh.</p> <p>For external sites - any outer packaging such as a box or envelope should be appropriately labelled as described in section 2 with the Neuropathology Department's address and contact number. It should also be clearly labelled as an urgent fresh specimen to prevent delays if delivered to the wrong department.</p> <p style="text-align: center;">Address: Department of Neuropathology Pathology Sciences Building (Phase 2) Southmead Hospital Bristol BS10 5NB Contact number: 0117 414 2400</p>

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-039**), available from the Neuropathology secretaries (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 (obi.rose@nbt.nhs.uk, 0117 414 0441) 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:

A minimum of **24 hours' notice** must be given for all muscle biopsies. All referrals should be accompanied by the Muscle Biopsy Booking Form (**NP-MGT-FM-039**), available from the Neuropathology secretaries (neuropathologysecretaries@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.

A muscle biopsy kit including a petri dish, cling film and Neuropathology request form can be requested from the neuropathology 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 (0117 414 2400) to provide us with an expected delivery time for the specimen. Arrangements for delivering the specimen to the Neuropathology Department should be made in advance to minimise the time between taking the biopsy and its delivery to the laboratory. 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 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 a labelled universal container or other 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 in cling-film as in section 5a above.**

Accompanying Documentation:

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

Packaging and Transport:

From Southmead Hospital	<p>The specimen should be carefully wrapped in cling-film and put in a labelled universal container. The specimen must not come into contact with any fluid, including saline, formalin or other fixatives.</p> <p>The specimen container must be clearly labelled and placed in a sealable specimen bag.</p> <p>Specimens may be sent by through the pneumatic tube system or by porter.</p>
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	<p>Please notify the laboratory once the specimen has been despatched, to provide us with an expected delivery time.</p>
From external sites	<p>The specimen pots must be clearly labelled and placed in a seal-able specimen bag. Any outer packaging such as a box or envelope should be appropriately labelled with the Neuropathology Department's address and contact number. It should also be clearly labelled as an urgent fresh specimen to prevent delays if delivered to the wrong department.</p> <p style="text-align: center;">Address: Department of Neuropathology Pathology Sciences Building (Phase 2) Southmead Hospital Bristol BS10 5NB</p> <p style="text-align: center;">Contact number: 0117 414 2400</p> <p>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.</p> <p>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. The specimen will also be damaged if it comes into contact with any water formed if the ice begins to melt.</p> <p>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.</p> <p>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 1.4 of the User Manual.</p>
Point of Delivery	<p>Preferably directly to Neuropathology Main Laboratory.</p> <p>Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected immediately. Never leave the sample</p>

	in Specimen Reception without speaking to a member of the Neuropathology team. It is imperative that the sample is dealt with in the quickest possible manner.
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7.3. Peri-Mortem Muscle Biopsies

Peri-mortem muscle biopsy samples are taken by the University Hospital Bristol and Weston NHS Foundation Trust (UHBW). The clinical teams are not aware in advance of these cases as it is related to the clinical condition, usually there is an unexpected deterioration of the patient condition.

Peri-mortem muscle biopsies may need to be taken out of hours. If this is the case, they cannot be sent to the Department of Neuropathology as there will be no one available to receive them. The muscle biopsy must still be collected urgently. Arrangements for this should be made with the out of hours (OOH) biomedical scientist at UHBW, who can be contacted on bleep 2331. The muscle will be stored in their freezer and transported to Neuropathology on dry ice during working hours. More information can be found on the UHBW protocol 'SPECIMEN COLLECTION'.

It is helpful to leave inform the Neuropathology department that a peri-mortem muscle biopsy is planned/ has been taken out of hours. This can be done by leaving a voicemail on the laboratory phone 0117 414 2400. Please include a contact number and name, where you are calling from and the patient's details.

If the peri-mortem muscle biopsy is taken during Neuropathology opening hours it may be sent in the same way as a routine muscle biopsy, as described in **section 7.2**.

8. Peripheral Nerve Biopsies

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 but a minimum of **24 hours' notice**. Contact 0117 414 2402/3 or email neuropathologysecretaries@nbt.nhs.uk

A nerve biopsy kit including a petri dish, cling film and Neuropathology request form can be requested from the neuropathology secretaries.

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

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 (0117 414 2400) to provide us with an expected delivery time for the specimen. Arrangements for delivering the specimen to the Neuropathology Department should be made in advance to minimise the time between taking the biopsy and its delivery to the laboratory. If you anticipate a delay in excess of 30 minutes, liaise with a consultant neuropathologist or Biomedical Scientist.

The Biopsy Procedure:

Please note the following guidelines for taking a specimen:

- Normally the sural nerve is sampled.
- The excised specimen should be at least 2cm in length
- The specimen should not be tethered or pinned in any way.

If sending fresh tissue:

Fresh nerve biopsies should be delivered to the Neuropathology Department within 1 hour of being taken. The specimen should be carefully wrapped in cling-film and put in a labelled universal container. The specimen must not come into contact with any fluid, including saline, formalin or other fixatives.

If you think the sample will take longer than 1 hour to arrive, then carry out the following –

Divide transversely (approx. 2:1 ratio) into two pieces. Place the larger piece (at least 1cm long) into formalin fixative for paraffin histology and EM. The smaller piece should be kept fresh, carefully wrapped in cling-film and placed into a labelled universal container. The fresh piece must not come into contact with any fluid, e.g., formalin or saline.



If sending fixed tissue only:

The entire nerve biopsy can be immersed in formalin and sent in a labelled formalin pot.

Accompanying Documentation:

Completed green Neuropathology request form, as outlined in '**section 1.4**', placed in the separate pocket of the specimen bag (if this has not previously been sent to the department).

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:

From Southmead Hospital	<p>The specimen should be carefully wrapped in cling-film and put in a labelled universal container. The specimen must not come into contact with any fluid, including saline, formalin or other fixatives.</p> <p>The specimen container must be clearly labelled and placed in a sealable specimen bag.</p> <p>Specimens may be sent by through the pneumatic tube system or by porter.</p> <p>Please notify the laboratory once the specimen has been despatched, to provide us with an expected delivery time.</p>
From external sites	<p>The specimen pots must be clearly labelled and placed in a seal-able specimen bag. Any outer packaging such as a box or envelope should be appropriately labelled with the Neuropathology Department's address and contact number. It should also be clearly labelled as an urgent fresh specimen to prevent delays if delivered to the wrong department.</p> <p style="text-align: center;">Address: Department of Neuropathology Pathology Sciences Building (Phase 2) Southmead Hospital Bristol BS10 5NB Contact number: 0117 414 2400</p> <p>Please notify the laboratory once the specimen has been despatched, to provide us with an expected delivery time and</p>

	<p>a contact telephone number for the courier, in case the specimen does not arrive within the expected time.</p> <p>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. The specimen will also be damaged if it comes into contact with any water formed if the ice begins to melt.</p> <p>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.</p> <p>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 1.3 of the User Manual.</p>
Point of Delivery	<p>Preferably directly to Neuropathology Main Laboratory.</p> <p>Alternatively, the specimen can be delivered to Cellular Pathology Specimen Reception, Phase 2, Pathology Sciences Building. If delivered to Specimen Reception, ensure the Neuropathology Department is contacted by telephone so the sample can be collected immediately. Never leave the sample in Specimen Reception without speaking to a member of the Neuropathology team. It is imperative that the sample is dealt with in the quickest possible manner.</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.

Prior Notification	Is not required. Inform the department when sending/bringing specimens.
Specimen Preparation	<p>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> <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>
Packaging	<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 UN3373 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 Pathological Specimens.</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 www.hse.gov.uk/publications, for detailed advice on transport of specimens.</p>
Accompanying Information	The autopsy report and information concerning consent etc. (Please refer to section 1.4 of this manual)
Point of Delivery	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 NEVER be left elsewhere.

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:

Response by the end of the next working day	This applies to verbal or written concerns that can be handled on the spot or require a minimum of fact finding for resolution.
Response within 5-10 working days	Verbal or written concerns that require input from other work areas, for example from other departments within the Trust.

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 2018.