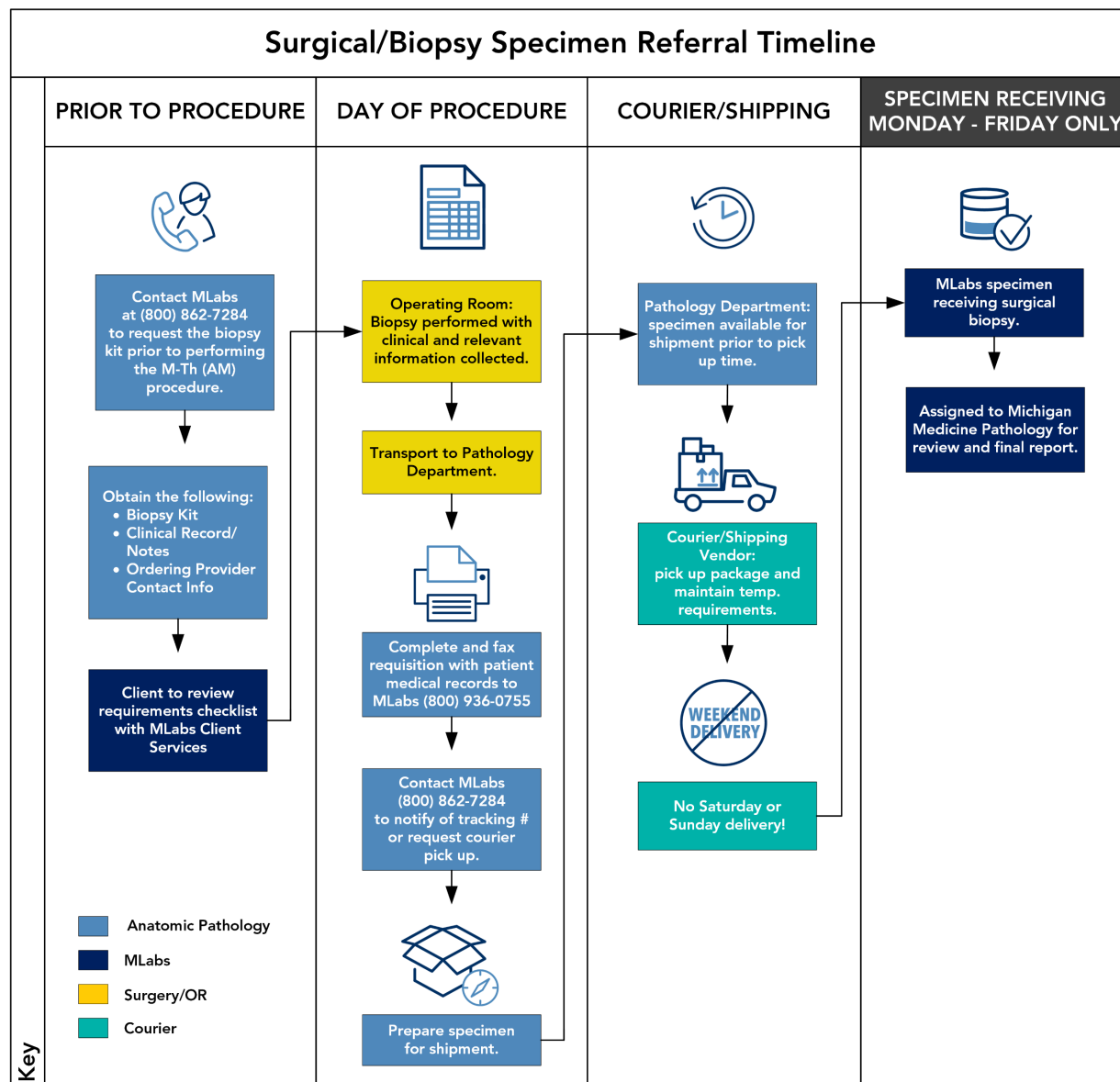


NERVE BIOPSY TISSUE SUBMISSION PROTOCOL



Please notify Michigan Medicine Laboratories (MLabs) Client Services prior to sending a nerve biopsy specimen. Nerve biopsy collection kits are available from MLabs and will be required in advance of the procedure. The glutaraldehyde fixative included in the kit must be refrigerated until ready for use; the entire kit may be refrigerated. MLabs Client Services can be reached at **800.862.7284** or **734.936.2598** (local). Please fax all associated paperwork to FAX **734.936.0755** prior to or at the time of notification to MLabs of the arriving specimen.

Nerve biopsy is performed to identify primary diseases of the nerve (neuropathies), inflammatory conditions of the nerve, vasculitis, hereditary or storage disorders, etc. Peripheral nerve biopsies are processed for light microscopy with special stains, plastic embedding/electron microscopy (EM) and fiber teasing when needed. The evaluation requires both specific surgical technique and unique handling that differs from routine tissue submitted for pathology evaluation. MLabs recommends that nerve biopsy procedures be performed Monday through Thursday and in the morning. This ensures that specimen handling can be completed in advance of pick up at your location.



NERVE BIOPSY TISSUE SUBMISSION PROTOCOL



Resources Needed for this Protocol

- MLabs Client Services phone number (**800.862.7284** or **734.936.2598**).
- HIPAA secure fax method
- Shipment or courier method
- MLabs nerve biopsy kit
- Items included in nerve biopsy kit
 - Test requisition form
 - Patient specimen labels (2)
 - Specimen container with 10% formalin fixative
 - Specimen container with glutaraldehyde fixative (store refrigerated)
 - Index card (3x5)
 - Refrigerated specimen bag, absorbent pad, bubble wrap
 - Styrofoam container
 - Rubber band
 - Cold pack (refrigerate at 4°C for at least 24 hours prior to shipping)
 - MLabs Exempt Human Specimens transport bag and return service label
- Scalpel
- Nerve from patient biopsy
 - Entire thickness of the nerve
 - Minimum of 6.0 cm in length
- Telfa gauze pad(s)
- Sterile saline
- Refrigerator

Preparation Instructions

1. In the majority of cases, a sural nerve biopsy is sufficient for diagnosis. However, in the case of pure motor neuropathy, a radial nerve or a branch of peroneal nerve may yield better results.
2. Advise the surgeon to cut out the entire thickness of the nerve, not a single fascicle and to avoid traumatizing the nerve. The specimen should be 6.0 cm or longer.
3. Please complete the [MLabs Nerve Biopsy Requisition](#) that is provided in the nerve biopsy collection kit. Send the completed requisition, clinical notes, and relevant laboratory values to MLabs with the specimens. See Required Information page 4 for a detailed listing of the information to include.
4. See also Specimen Handling page 2, Packaging and Transport page 4, and Packaging Diagram page 5.

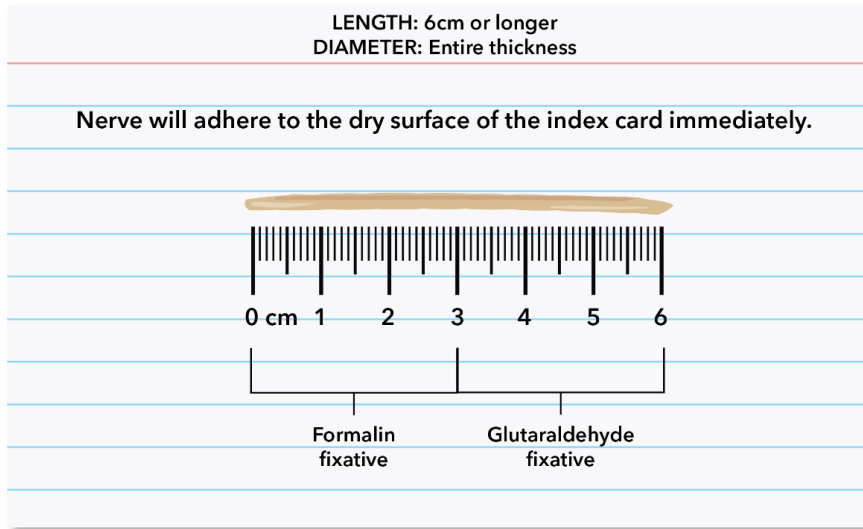
Specimen Handling

Specimens should be shipped or transported to arrive Monday – Friday by 5:00 PM, excluding holidays. Specimens cannot be accepted during observed Michigan Medicine holidays. Please contact MLabs Client Services for observed holiday dates and hours. Specimens that cannot be shipped for arrival within these timeframes should be refrigerated until ready to ship.

NERVE BIOPSY TISSUE SUBMISSION PROTOCOL

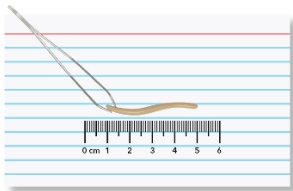
FORMALIN AND GLUTARALDEHYDE FIXED TISSUE

1. Carefully stretch the entire nerve across an index card or piece of dry cardboard. The nerve will adhere to the dry surface immediately.

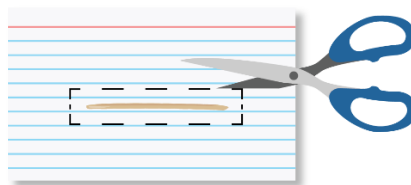


2. Divide the nerve adhered to the index card into halves with a sharp blade or scissors using a single cut and avoiding jagged movements. Cut off the excess of the index card and place one piece of the nerve with the index card into **glutaraldehyde** (for Electron Microscopy) and the other piece into 10% neutral buffered **formalin** (for Histology). Refrigerate until ready to ship.

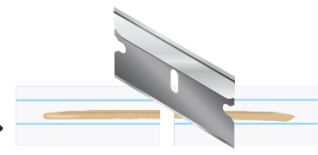
1. Gently stretch nerve out straight onto the index card. The nerve will adhere to the index card immediately. Do not allow the specimen to dry out.



2. Remove the excess index card.



3. Cut in half with a sharp blade avoiding jagged movements.



4. With the nerve side facing down, fully submerge the specimen into the **formalin fixative**.



5. With the nerve side facing down, fully submerge the specimen into the **glutaraldehyde fixative**.



NERVE BIOPSY TISSUE SUBMISSION PROTOCOL



Required Information

Please complete all documentation and labeling with indelible ink to preserve documentation during the shipping and handling process. Include the following documentation to accompany the specimens:

- Completed [Nerve Biopsy Requisition](#) form to include:
 - Client and Ward codes unique to your institution
 - Patient first name, last name, and date of birth
 - Patient medical record number (MRN), if available
 - Billing instruction (client, patient, patient insurance). If patient insurance billing is selected, attach complete patient and insurance demographics.
 - Clinician requesting the biopsy (e.g., neurologist, rheumatologist, or primary care provider)
 - Surgeon who performed the biopsy
 - Collection date
 - Laterality and anatomic site of the biopsy
- The name and telephone number of the clinician who requested the biopsy (e.g., neurologist, rheumatologist, or primary care provider). The surgeon's contact information alone is not sufficient. Failure to include proper clinical history and clinician contact information may delay or yield incomplete interpretation.
- A copy of the patient's most recent comprehensive medical record from the clinician that requested the biopsy, such as an outpatient clinical note or inpatient consultation note or discharge summary. The clinical record should include:
 - Chief complaint of the neuromuscular disorder, clinical impression, and differential diagnosis
 - Family history
 - Current medications
 - Creatine kinase (CK) laboratory test results
 - Rheumatologic and serologic laboratory test results as applicable (REQUIRED) including: myositis panel, rheumatoid factor (RF), antinuclear antibody (ANA), anti-Ro, anti-La, anti-dsDNA, anti-synthetase antibodies (e.g., anti-Jo, PL7, PL12, etc.), anti-Sm, ANCA, cryoglobulins, anti-SRP, anti-HMCGCR, anti-Mi2, anti-NXP2, anti-MDA5, anti-TIF1, anti-FHL1, anti-cN-1A, etc.
 - Imaging and nerve conduction studies
- Notify MLabs of arriving specimen by calling MLabs Client Services at **800.862.7284** or **734.936.2598** (local) prior to sending the nerve biopsy.
- Fax all paperwork to MLabs Client Services at FAX **734.936.0755** prior to sending the nerve biopsy.

Packaging and Transport

1. All specimen containers must be labeled with the following required information. Printed labels are preferred to handwritten labels.
 - a. Patient's first and last name.
 - b. A second patient identifier such as date of birth or medical record number.
 - c. Laterality and atomic site of the biopsy.
2. Package specimens for transport to MLabs in the supplied nerve biopsy collection kit box for tracking.
3. Once the formalin and glutaraldehyde fixed tissue specimens have been placed in their liquid containers and the tops secured, place them inside the refrigerated specimen bag with the absorbent sheet and seal. Secure the specimen bag in bubble wrap. Set a refrigerated 4°C cold pack at the bottom of the Styrofoam box. Put the wrapped specimen bag on top of the refrigerated cold pack and secure the Styrofoam lid on top of the Styrofoam box. Slide

NERVE BIOPSY TISSUE SUBMISSION PROTOCOL



the completed requisition and clinical history documentation into the sleeve on top of the Styrofoam box. Fasten a rubber band around the box.

4. Please be careful not to contaminate the outside of the transport bags, paperwork, or box when handling. Refrigerate until ready to ship. Specimens should always be kept refrigerated at 4°C.
5. Place Styrofoam box inside the MLabs Exempt Human Specimens transport bag and seal. Any paperwork that doesn't fit inside the sleeve should be set on top of the Styrofoam box within the transport bag. The MLabs transport bag should be used for UPS, FedEx, and couriered specimens. Call 800.742.5877 to schedule a UPS pick up. Specimens should be shipped or transported to arrive Monday – Friday by 5:00 PM, excluding Michigan Medicine holidays. Do not send specimens outside of these timeframes unless prior arrangements are made through MLabs Client Services.

PLEASE BE ADVISED: The client is responsible for following all applicable U.S. Department of Transportation (DOT), International Air Transport Association (IATA), and International Civil Aviation Administration (ICAO) shipping guidelines for safety and compliance. Training and certification are available from Michigan Medicine via the links below and is required every two years to remain compliant.

- Create a '[Friend Account](#)' at University of Michigan
- [REGULATIONS FOR SHIPPING BIOLOGICS - INFECTIOUS SUBSTANCES CATEGORY B](#)
- [REQUIREMENTS FOR SHIPPING NON-DANGEROUS GOODS WITH DRY ICE](#)
- Contact MLabs Client Services if you have questions.

Packaging Diagram



V.06202024

NERVE BIOPSY TISSUE SUBMISSION PROTOCOL



Questions

Call MLabs Client Services at **800.862.7284** or visit our website **mlabs.umich.edu**.