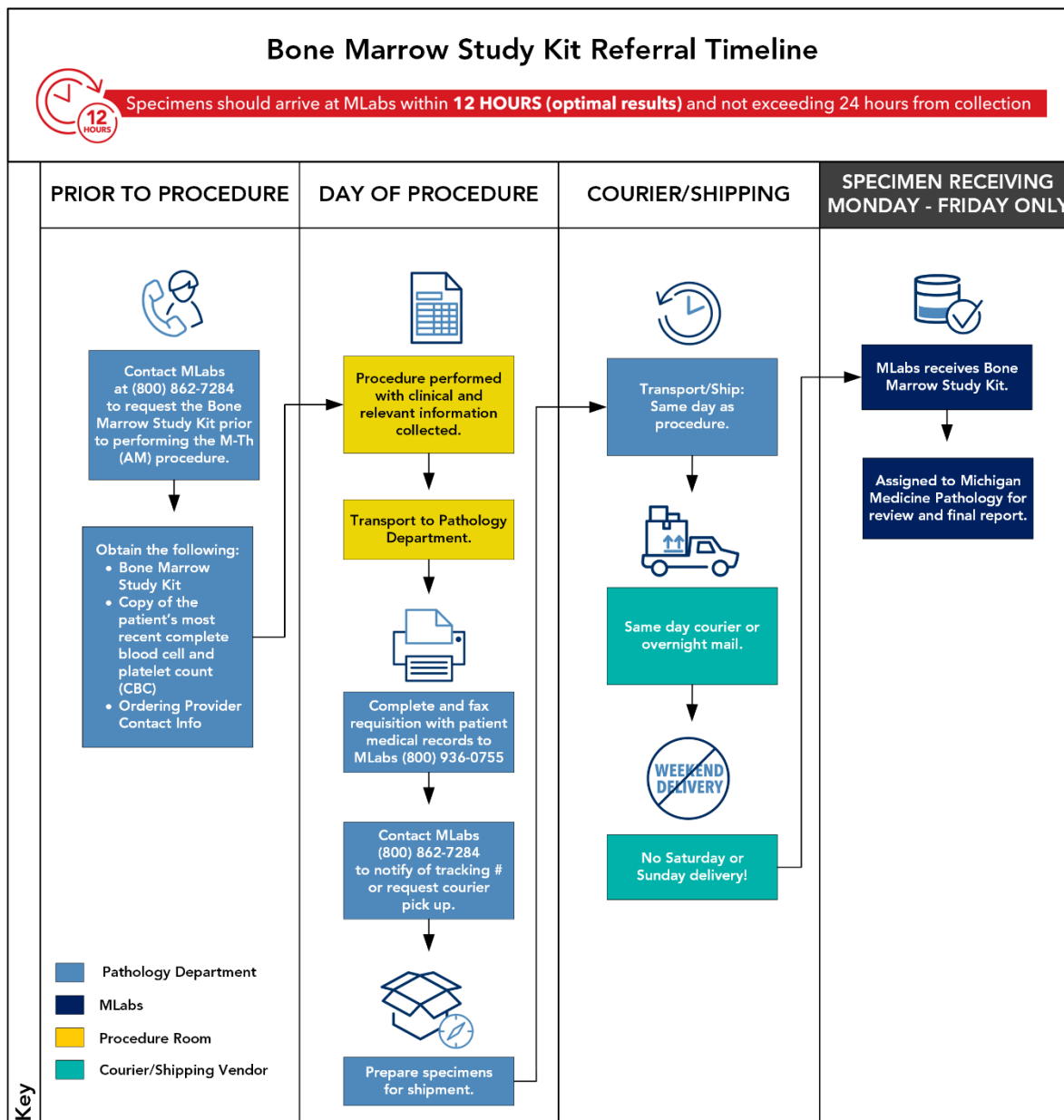


# BONE MARROW STUDY SUBMISSION PROTOCOL



Please notify Michigan Medicine Laboratories (MLabs) Client Services prior to sending bone marrow specimens for Hematopathology Consultation. Bone marrow biopsy collection kits are available from MLabs and will be required in advance of the procedure. MLabs Client Services can be reached at **800.862.7284** or **734.936.2598** (local).

MLabs **Comprehensive Primary Diagnosis on Referred Specimens** includes bone marrow morphology evaluation, Cytogenetics evaluation, and triage for Flow Cytometry and/or Molecular Diagnostics studies if indicated. MLabs recommends that bone marrow biopsy and aspirate 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.



# BONE MARROW STUDY SUBMISSION PROTOCOL



## Resources Needed for this Protocol

- MLabs Client Services phone number (**800.862.7284** or **734.936.2598**)
- Shipment or courier method
- MLabs bone marrow biopsy kit
- Items included in bone marrow biopsy kit
  - Test requisition form
  - Specimen labels (5)
  - Specimen containers with formalin fixative (2)
  - Green top (sodium heparin) tubes (2)
  - Lavender top (EDTA) tube (1)
  - Plastic slide holders with five single frosted-end microscope slides (2)
  - Room temperature specimen bags (2), absorbent pads, protective packaging
  - UPS or FedEx shipping package and return shipping label or courier transport bag as applicable
- Syringe(s) for bone marrow specimen collection

## Preparation Instructions

1. Perform bone marrow biopsy and aspirate collections using sterile techniques. Prepare slides immediately after aspirate is collected. Collect or prepare the following specimens:
  - a. Bone marrow clot and core biopsy.
  - b. Two (2) green top (sodium heparin) tubes containing a minimum of 2 mL of bone marrow aspirate per tube. Send an additional (1) green top tube containing 2 mL of bone marrow aspirate if FISH Panel for Multiple Myeloma is requested.
  - c. One (1) lavender top (EDTA) tube containing a minimum of 2 mL of bone marrow aspirate.
  - d. Five (5) unstained bone marrow aspirate smears.
  - e. Three (3) unstained bone marrow core imprint (touch prep) slides.
  - f. Two (2) unstained peripheral blood smears. Send a lavender top (EDTA) tube containing 3 mL of peripheral blood if complete blood cell and platelet count (CBC) test results and/or peripheral blood smears are not available.
2. Please complete the **MLabs Hematopathology Consult Requisition** that is provided in the bone marrow collection kit. Send the completed requisition and most recent complete blood cell and platelet count (CBC) to MLabs with the specimens.

## Specimen Handling

Specimens should be shipped or transported within 12 hours of collection for optimal results and not to exceed within 24 hours of collection 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.

### BONE MARROW ASPIRATE AND PERIPHERAL BLOOD SPECIMENS

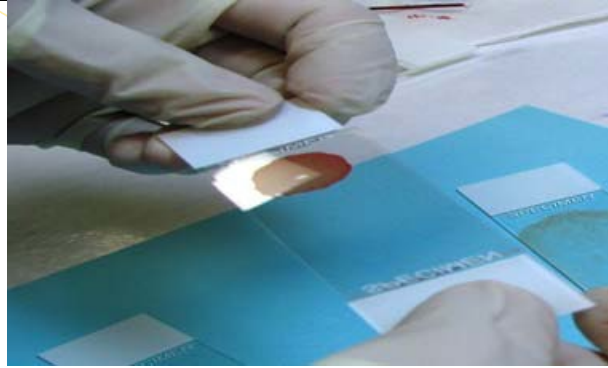

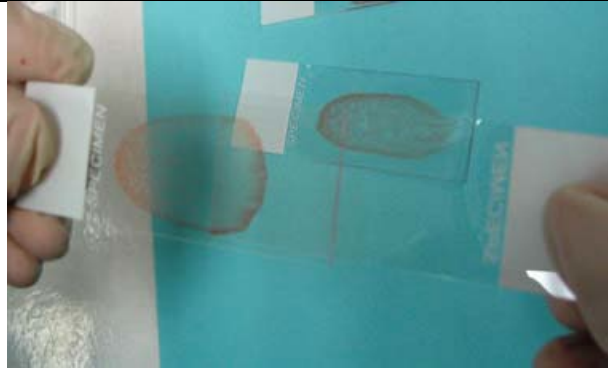
1. Prepare slides immediately once the aspirate is obtained.
2. Prepare 5 bone marrow aspirate smears.
3. Fill the green top and lavender top tubes quickly after making the slides. Invert each tube gently 8-10 times to prevent clotting.

# BONE MARROW STUDY SUBMISSION PROTOCOL

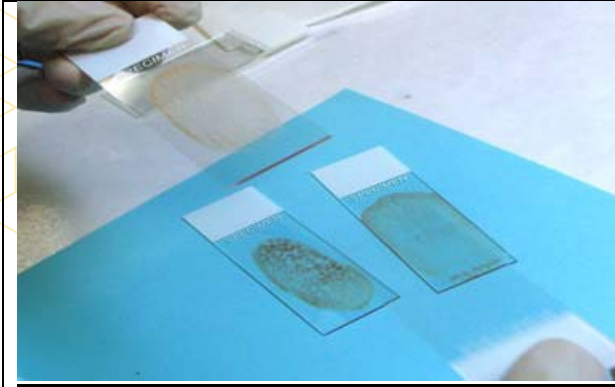


4. Collect a peripheral blood specimen and prepare 2 peripheral blood smears.
5. Place completely air-dried, labeled smears (5 bone marrow and 2 peripheral blood smears) into the plastic slide holders.
6. Label tubes and smears “bone marrow” or “peripheral blood” as appropriate.

## BONE MARROW ASPIRATE SMEAR PREPARATION

	<p>Place a drop of bone marrow on a slide.</p> <p>Using a second clean slide, place it directly on top of specimen.</p>
	<p>Allow the drop to spread.</p>
	<p>Gently and evenly pull the slides apart.</p>

# BONE MARROW STUDY SUBMISSION PROTOCOL



The bone marrow slide should be a round oval prep.

## BONE MARROW CLOT AND CORE BIOPSY SPECIMENS

1. Prepare bone marrow core imprint (touch prep):
  - a. Use forceps to move biopsy core to a clean slide and gently roll core across the full length of the slide.
  - b. Do not crush the biopsy.
  - c. Prepare 3 touch preps.
  - d. Place touch preps into a plastic slide holder
2. Gently remove clot, if necessary, and place into a formalin vial.
3. Place all collected biopsy pieces into a separate formalin vial.

## Required Information

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

- Completed Hematopathology Consult Requisition form to include:
  - o Client and Ward codes unique to your institution
  - o Patient first name, last name, and date of birth
  - o Patient medical record number (MRN) if available
  - o Billing instruction and patient insurance information and demographics (or attached face sheet)
  - o Collection date and time.
- Include a copy of the patient's most recent complete blood cell and platelet count (CBC) (preferred), or a lavender top tube (EDTA) containing 3 mL of peripheral blood if a recent CBC is not available and/or if peripheral blood smears are not available.
- Notify MLabs of arriving specimen by calling MLabs Client Services at **800.862.7284** or **734.936.2598** (local) prior to sending the bone marrow biopsy.

## Packaging and Shipping

1. All specimen containers and slides 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.

# BONE MARROW STUDY SUBMISSION PROTOCOL



- c. Specimen source (e.g., peripheral blood or bone marrow)
2. Package specimens for transport to MLabs in the supplied bone marrow study collection kit box for tracking.
3. Once the formalin specimens have been placed in their liquid containers and the tops secured, place them inside the room temperature specimen bag with the absorbent pad and seal. Secure the bag with bubble wrap and place inside transport box. Please be careful to not contaminate the outside of the transport bags, paperwork, or box when handling.
4. To avoid formalin contamination, slide carriers must not have been previously used to carry fixed slides. Place slide carriers in a separate room temperature specimen bag and apart from any formalin-fixed biopsy specimens during transport. Place the green top and lavender top tubes into the second room temperature specimen bag with the absorbent pad and seal. Secure the bag with bubble wrap and place inside transport box.
5. If shipping by **UPS**, place closed box inside Laboratory Pak and seal according to instructions on the Laboratory Pak. Call 800.742.5877 to schedule pick up. Couriered specimens should be transported to arrive within 12 hours of collection for optimal results. Specimens sent via UPS or FedEx should be sent by Next Day Air (UPS) (guarantees delivery by 12:00 noon the next business day) or Priority Overnight (FedEx) (guarantees delivery by 10:30 am the next business day). Specimens should be shipped or transported at room temperature to arrive Monday – Friday by 5:00 pm, excluding Michigan Medicine holidays. Do not send specimens outside of these timeframes unless prior arrangements have been 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.

# BONE MARROW STUDY SUBMISSION PROTOCOL



## Packaging Diagram

### HEMATOPATHOLOGY CONSULT KIT Bone Marrow STORE AND SHIP AT ROOM TEMPERATURE



Specimens should arrive at MLabs within **12 HOURS (optimal results)** and not exceeding 24 hours from collection



To avoid formalin contamination of slides, package the formalin vials and slides/vacutainer tubes in two separate room temperature specimen bags.



Secure each specimen bag in a separate bubble wrap pouch.



Place bubble wrap pouches in box along with completed requisition. Include a copy of the patient's most recent complete blood cell and platelet count (CBC) (preferred), or additional lavender top tube (EDTA) containing peripheral blood if CBC is not available. Transport specimen in this box for tracking.

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## Questions

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