

## COLLECTING A BONE MARROW SAMPLE

### General Information

1. It is important to have all supplies ahead of time.
2. It is important to collect the specimens in the correct order. This order would be aspirate, aspirate with heparin for Cytogenetics and/or Flow Cytometry if needed, and needle biopsy.
3. Specimens may be collected Monday through Friday

**Materials needed on Bone Marrow Collection Tray:** Supplies are available from UVM Medical Center laboratory

- Lavender Top Tubes
- 1 box frosted end glass slides
- 4 containers of 1% Zinc Formalin fixative  
**CAUTION:** Contains Formaldehyde.
  - Toxic by inhalation and if swallowed.
  - Irritating to eyes, respiratory system, and skin
  - Risk of serious damage to eyes.
  - May cause cancer; repeated or prolonged exposure increases risk.
  - Keep container covered except when adding specimen. Reseal immediately to prevent spread of Formalin fumes.
  - Refer to MSDS Manual for further information.
- 2 Millipore Swinex-125 filters with Whatman Spectrum polypropylene Macro Filter mesh
- 20 mL of Plasmalyte Solution
- Venipuncture Equipment
- Bone Marrow Tube (RPMI)
- Bone Marrow Culture Tube (SPS)
- Heparin, 5 - 10,000 units, 1 mL vials
- Sodium Heparin tubes for flow cytometry
- **Cytogenetics/Flow Cytometry/Bone Marrow Exam** form including patient's birth date, clinical diagnosis or indication for study, previous or current chemo/radiotherapy, collection date, ordering physician, and tests requested.

Additional supplies needed: Not provided by University of Vermont Medical Center Laboratory

- 2 Plastic cups (for expelled Plasmalyte)
- Gloves
- Tweezers
- Gauze 4 x 4's
- Alcohol Swabs

### Collecting the Aspirate

1. Assemble all materials and equipment for the bone marrow collection tray and put on gloves.
2. Inquire if any "optional" procedures are requested on the marrow specimen. If so, refer to the "Optional Procedure" section on the following page.
3. The provider performing the bone marrow will give the Technologist two types of specimens (1) 0.5-1.0 mL bone marrow aspirate and (2) a biopsy.
4. On the aspirated specimen perform the following:

6-8 thin "push" smears

For a standard collection 1 – 2 mL aspirate into EDTA (lavender top tube), mix well

The remaining marrow material in the syringe should be diluted with Plasmalyte and filtered through the polypropylene mesh filtration system

- a. Draw 5-10 mL of Plasmalyte into the syringe with the marrow, mix immediately
  - b. Attach the Millipore Swinex-125 with mesh filter and expel contents of syringe through the millipore with gentle pressure
  - c. Repeat steps a and b
  - d. Open the Millipore and examine for particles (spicules). If insufficient amount, inform the clinician so additional marrow can be aspirated.
  - e. Using tweezers, place the mesh with particles into a bottle of 1% Zinc Formalin fixative. Reseal container immediately to prevent spread of Formalin fumes.
  - f. If aspirated specimen is clotted, place the clot directly into the fixative.
5. On the biopsy specimen perform the following:  
3-4 imprint or touch-prep slides of the bone marrow biopsy should be made using tweezers and a light touch. (The biopsy should be tan colored and firm. A blood clot appears red and gel-like.) Take care not to break the biopsy specimen.

Place the biopsy specimen into the second jar of 1% Zinc Formalin fixative, resealing the container immediately to prevent the spread of Formalin fumes.

**If an aspirate cannot be collected, please submit a second biopsy in an extra Bone Marrow Tube (RPMI) container.**

6. Write the date and approximate time when the specimen was collected on both jars of fixative and the Bone Marrow Requisition. Label jars and all smears with patients full name. Smears should also be dated.
7. The provider **must sign** and complete the Cytogenetics/Flow Cytometry/ Bone Marrow Exam form and check off the testing requested. This should include diagnosis.
8. A CBC with differential and peripheral smear collected within 72 hours of the bone marrow must be included. If this is not possible, record this information as well as the reason for not being available.

### Optional Procedures

1. Culture: A separate specimen is collected into a Bone Marrow Culture Tube (SPS) stored at room temperature. The stopper should be well sterilized first with betadine and then alcohol first before injection. Approximately 1 mL of bone marrow should be injected through the rubber stopper. If the specimen is clotted, remove stopper and place the clotted specimen directly into the culture tube. Use caution to avoid contamination.
2. Chromosome Analysis (Karyotype): Use the **second** bone marrow aspirate which should be collected in a **heparinized** syringe and transferred to a Bone Marrow Tube (RPMI) stored at 4°C (do not use media if it has turned yellow) or Sodium Heparin Tube. At least 1-2 mL of bone marrow should be put into the tube. After collection, specimen should be kept at room temperature; the specimen should **never** be refrigerated. If there are any problems or questions concerning bone marrow cytogenetics samples, call Laboratory Customer Service at (802)847-5121 and ask to speak to the Cytogenetics Department.
3. Bone Marrow Leukemia/Lymphoma Panel: Use the **second** bone marrow aspirate which should be collected in a **heparinized** syringe and transferred to a sodium heparin, special tube, supply #032051, or EDTA, supply #78529. After collection, specimen should be kept at room temperature; the specimen

should **never** be refrigerated. If there are any problems or questions concerning Bone Marrow Leukemia/Lymphoma Panels, call Laboratory Customer Service at (802)847-5121 and ask to speak to the Immunopathologist or Immunology Charge Tech.

Samples collected in a sodium heparin tube, supply #032050, or a sodium heparin, special tube are stable for up to 48 hours. EDTA samples are stable only up to 30 hours.

### **Transport to UVM Medical Center**

1. Please call Laboratory Customer Service at 847-5121 or 1-800-991-2799 and inform them that a bone marrow specimen will be arriving.
2. Put slides into a slide box or folder. Put these and all specimen material into 1 transport bag with the paperwork and mark "Deliver to Hematology"
3. Specimen must be received in a timely manner. If the collection site has Priority pick-up, please send it the day of collection. If specimen is to be sent by Federal Express overnight, send it the day of collection. Samples sent by Federal Express on Friday must have Saturday delivery indicated. Call Laboratory Customer Service at 847-5121 or 1-800-991-2799 and inform them that a sample is being sent and provide requested information.