



Summary - Collecting Bone Marrow Specimens

To ensure sample adequacy and avoid recollection of bone marrow, great care must be taken in specimen processing. MPLN provides this specimen collection summary and instructions to assist office personnel to ensure specimen integrity.

Testing Performed	Specimen Requirements
Flow Cytometry, FISH, Molecular Studies,** Cytogenetics***	4 mL bone marrow aspirate* in green top (Sodium Heparin) AND / OR** 3 mL bone marrow aspirate* in purple top (EDTA) When a dry tap (packed with tumor, unable to aspirate marrow) is encountered: collect a second core biopsy in MPLN RPMI-based Transport Media
Morphology & Special Stains	Clotted bone marrow aspirate in B-Plus fixative. 4-6 air-dried bone marrow aspirate smears TWO peripheral blood smears with CBC report if available, OR 4 mL peripheral blood in purple top tube (EDTA) Core biopsy of bone marrow in B-Plus fixative. (The core biopsy can be placed in the same B-Plus fixative container as the clot. Secure lid tightly to avoid damaging other samples with fixative fumes.) NOTE: When a dry tap is encountered: Roll the core biopsy (touch prep) on a slide before placing the core into B-Plus fixative

* **Individual studies** on bone marrow aspirate can be performed with a minimum of: 0.5 mL for flow cytometry, 1 mL for cytogenetics, 1 mL for FISH, 1 mL for each molecular study.

** **Molecular studies** are preferentially collected in EDTA.

*** **Cytogenetics testing** requires collection in Sodium Heparin.

Specimens are shipped at ambient temperature avoiding temperature extremes by using a gel pack. A room temperature gel pack can absorb cold temperatures in winter weather and a cooled gel pack can be used to maintain ambient temperature in hot weather conditions. Specimens should not be allowed to become frozen in shipping. The gel pack should not touch the specimens.

If you have any questions about bone marrow collection, storage and/or shipping, please contact a technical service specialist at **800.932.2943**.



Instructions for Collecting Bone Marrow Specimens

Anatomic Pathology Studies

Bone marrow core biopsy in B-Plus fixative

B-Plus is a formalin-based tissue fixative that includes a small amount of Barium to accentuate nuclear staining for morphologic review and any additional IHC stains. B-plus fixative has a shorter fixation time than formalin. It is not suitable for flow cytometry or cytogenetic testing.

When packaging the sample, place in B-Plus fixative immediately and secure the lid tightly. It is extremely important that fumes of formalin DO NOT escape since the fixative properties can render the remaining specimens unusable and a recollection of bone marrow will be required.

Dry Tap (Packed unspirable marrow)

When no aspirate can be obtained because the marrow cavity is packed with tumor or fibrotic material prepare a Touch Prep. Roll the core biopsy along the center of a clean glass microscope slide to leave a monolayer of cells to be used for morphology. Place remaining core biopsy in B-Plus fixative.

Clotted bone marrow aspirate in B-plus fixative.

Bone marrow aspirate is collected in 2 stages. The first aspirate ensures the needle is correctly placed in the marrow and is used to make smears (below). The second aspirate is used for morphological and special stain evaluation. This sample is allowed to clot first and placed in B-plus fixative.

Aspirate smears, 4-6 air-dried slides

Bone marrow aspirate smears are critical to the proper interpretation of many aspects of the bone marrow evaluation. Spicules, grainy in macroscopic appearance, are concentrated precursor cells for all marrow hematopoietic cell lines and are pivotal to proper slide preparation. It is important to avoid crush artifact when preparing these 'pull' smears. They must be air-dried prior to staining. They must be labeled with utmost accuracy (patient name, accession identifier, type sample). If bone marrow smears are not prepared, MPLN will use the EDTA (preferably) or sodium heparin to prepare smears when sample arrives for testing.

TWO peripheral blood smears with CBC report

It is important to prepare bloods for evaluation or it can compromise the overall conclusion by the interpreting pathologist. The peripheral blood smear should be tongue shaped, margin free, and not contain platelets. WBC should be pushed to the edge and the edge should be feathered. It is requested that the most recent CBC data be submitted with the samples for testing.

Flow Cytometry, Cytogenetics, FISH and Molecular Studies

Bone marrow aspirate in anticoagulant

Collection of the bone marrow aspirate in Sodium Heparin (Green top) can be used for flow cytometry, FISH and cytogenetic testing, but not optimum for molecular studies.

To perform molecular studies, bone marrow aspirate is preferably collected in EDTA (purple top). Flow cytometry and FISH can also be performed on an EDTA sample, but not cytogenetics.

Dry Tap

When no aspirate can be obtained, a second core biopsy is obtained and placed in MPLN's RPMI-based Transport Media.

MPLN can perform studies on packed marrow for flow cytometry, FISH, cytogenetics, and molecular testing.

Shipping of bone marrow specimens

Specimens should be shipped with a gel pack in a Styrofoam shipping box to prevent exposure to temperature extremes. The gel pack must not come in contact with the specimen in the packaging.