

**Purpose:** To define technician responsibilities and interactions with collection nurse during collection and sample processing of bone marrow.

## Procedure

Follow general instructions below to prepare for **bone marrow sample collection**.

Step	Action
1	Clearly identify patient and procedure.
2	<p>Assemble collection materials and tubes. Use syringes <b>not</b> rinsed with heparin for slide preparation and clot. The standard bone marrow collection consists of:</p> <ul style="list-style-type: none"> <li>• Empty tube with cap: 1/2 mL for clot (drawn in blank syringe with no heparin in it)</li> <li>• One lavender top (EDTA) tube: 3 mL for possible molecular testing</li> <li>• One yellow top (ACD solution B) tube: 4 mL for possible flow cytometric testing</li> <li>• One yellow top (ACD solution B) tube: 4 mL for possible chromosome analysis and/or FISH testing</li> <li>• Two formalin containers</li> </ul> <p>Place 7 clean slides on the work surface for collection. Have other slides available for use if needed.</p> <ul style="list-style-type: none"> <li>• 2 slides (peripheral blood smear)</li> <li>• 5 slides (bone marrow aspirate)</li> <li>• 3 slides (biopsy touch preps)</li> </ul>
3	Label slides, tubes, and containers.

**Peripheral blood smears** preferred by **fingerstick** made for review with bone marrow. Follow instructions below to collect this sample.

Step	Action
1	Perform fingerstick.
2	Make 2 direct smears manually, adjusting as necessary for proper length and thickness.

Follow steps below to obtain **bone marrow core biopsy, clot, and aspirate specimens**.

Step	Action
1	Syringes used for bone marrow slides and clot <b>should not</b> be rinsed with heparin. All other syringes can be pre-rinsed with liquid heparin to prevent clotting.
2	<p>Expel some of the aspirate onto a slide to check for units.</p> <ul style="list-style-type: none"> <li>• If adequate units are present, continue.</li> <li>• If the sample is inadequate, request <b>redirect of needle</b> for better unit sample.</li> </ul> <p><b>Note:</b> Due to drug therapy or patient disease, some samples may not have good units.</p>
3	<p><b>Make slides from the aspirate collected</b></p> <ul style="list-style-type: none"> <li>• Make slides immediately once aspirate is obtained.</li> <li>• Decant excess fluid from slide or tip the slide so the excess fluid drains away from the units.</li> <li>• <b>Direct smears:</b> Use a glass rod to place a drop of aspirate toward the frosted end of the slide and make a wedge smear with a clean slide. Make 2 good direct smears.</li> <li>• <b>Unit preps:</b> Use a glass rod to place a drop on slide, slightly above the center, and use a clean slide to <b>gently</b> “squash” the units to spread them out. (Forceful “squashing” will break the cells.) Pull the 2 slides in opposite directions horizontally until the smear is complete. <ul style="list-style-type: none"> <li>◦ Pull at a steady speed, but not too fast, to prevent cell distortion.</li> <li>◦ Make 3 good unit preps per unilateral collection.</li> </ul> </li> <li>• Make your best effort to prepare evenly distributed slides without crush artifact, of correct length and thickness.</li> <li>• <b>Touch preps:</b> Prepare 3 touch prep slides from biopsy.</li> </ul>

## Assistance With Bone Marrow Collection (continued)

4	<p>Fill sample tubes quickly after making the slides.</p> <ol style="list-style-type: none"> <li>1. Use sample in non-heparinized syringe.</li> <li>2. Put 1/2 mL in empty tube.</li> <li>3. After clotted, move clot to formalin vial.</li> <li>4. Priority of filling sample tubes is:             <ol style="list-style-type: none"> <li>a. <b>Lavender top (EDTA):</b> 3 mL</li> <li>b. <b>Yellow top (ACD):</b> Two x 4 mL</li> </ol> </li> <li>5. Recap and gently invert to mix.</li> </ol>
5	<p>Check the biopsy core for adequacy as soon as collected (1 cm length <b>minimum</b>).</p> <ul style="list-style-type: none"> <li>• Assess whether biopsy piece appears to be bone, cartilage (inadequate) or fat (inadequate).             <ul style="list-style-type: none"> <li>◦ Bone has a spongy, porous texture.</li> <li>◦ Cartilage has a hard, white appearance and texture. Sometimes tumors will appear to be white or black, but will not usually have the hard texture of cartilage.</li> <li>◦ Fat has a yellow appearance and soft feel.</li> </ul> </li> <li>• If inadequate, ask for a redirect for better core biopsy sample.             <ul style="list-style-type: none"> <li>◦ Even if some of the core appears inadequate, <b>keep all pieces for processing.</b></li> </ul> </li> </ul> <p><b>Touch prep instructions</b></p> <ul style="list-style-type: none"> <li>• Use forceps to move biopsy core to a clean slide and gently roll core across the full length of the slide.             <ul style="list-style-type: none"> <li>◦ <b>Do not</b> crush the biopsy.</li> <li>◦ Make 3 touch preps.</li> </ul> </li> <li>• Gently remove clot, if necessary.</li> <li>• Place all collected biopsy pieces into the formalin vial separate from the clot.</li> </ul>

### Transport

Step	Action
1	<p><b>To transport specimen</b></p> <ul style="list-style-type: none"> <li>• Place slides in plastic slide holder and stretch parafilm around container.</li> <li>• Core and clot should be in separate formalin jars, with parafilm stretched around lids.</li> </ul> <p>To avoid formalin contamination, slide carriers must not have been previously used to carry fixed slides. Place slide carriers in a separate bag and apart from any formalin-fixed biopsy specimens during transport.</p>