Overview

Useful For

Obtaining a rapid, expert opinion for diagnosis of hematologic and non-hematologic diseases using unprocessed bone marrow biopsy specimens referred by the primary pathologist

Obtaining special studies that are not available locally

Testing Algorithm

Laboratory approval is required prior to ordering this test. Contact Mayo Clinic Laboratories at 800-533-1710.

A Mayo Clinic hematopathologist will provide a full bone marrow workup that includes an evaluation of the specimen and determination of a diagnosis provided within a formal pathology report.

Ancillary Testing:

Based on Mayo Clinic-approved algorithms or at a staff hematopathologist's discretion, ancillary testing may be performed to assist in rendering an accurate diagnosis and provide important prognostic information. These test results (eg, cytochemical stains on bone marrow aspirate smear, immunohistochemical stains on bone marrow biopsy or clot sections, chromosome analysis, fluorescence in situ hybridization [FISH], flow cytometry, microarray, molecular and/or next-generation sequencing [NGS] testing) will be reported and billed separately. While reported separately, these results will continue to be considered and referred to in the pathology final interpretation.

If ancillary testing (eg, flow cytometry) is desired by the client outside of this consultation, each test must be ordered separately. Tests ordered outside of the consultation may or may not be integrated into the final pathology report based on the staff hematopathologist's discretion.

If the volume of bone marrow aspirate is limited, prioritization of testing will be determined by the staff hematopathologist. Testing requested or suggested by the referring physician (immunostains, molecular studies, etc) may not be performed if deemed unnecessary by the reviewing staff hematopathologist.

Note: Calls are not routinely made; however, depending on the nature of the case, a call may be placed to the ordering

provider or pathologist. These situations include, but are not limited to, a new diagnosis of acute leukemia or aggressive high-grade lymphoma. To contact a Mayo Clinic Hematopathologist, call the Hematopathology Communications tech at 507-284-5600.

See Pathology Consultation Ordering Algorithm

Special Instructions

- Hematopathology Patient Information
- Pathology Consultation Ordering Algorithm
- Bone Marrow Core Biopsy, Clot, and Aspirate Collection Guideline
- Assistance with Bone Marrow Collection

Highlights

If a bone marrow pathology consultation is requested, the Mayo Clinic hematopathologists approach the diagnosis in the same way as Mayo Clinic's own in-house cases.

It is the Division of Hematopathology's mission to provide the highest possible level of diagnostic consultative service, trying to balance optimal patient care with a cost-conscious approach to solving difficult diagnostic problems for all patients.

Reflex Tests

Test Id	Reporting Name	Available Separately	Always Performed
BMAPC	Bone Marrow Aspirate	No, (Bill Only)	No
BMBPC	Bone Marrow Biopsy	No, (Bill Only)	No
BMCPC	Bone Marrow Clot	No, (Bill Only)	No
DCALP	Decalcification	No, (Bill Only)	No
PBPC	Peripheral Blood	No, (Bill Only)	No
PBTC	Peripheral Blood, TC	No, (Bill Only)	No
PPPC	Particle Prep	No, (Bill Only)	No

Method Name

Medical Interpretation

NY State Available

Yes

Specimen

Specimen Type

Varies

Ordering Guidance

Prior laboratory approval is required to order this test. Contact Mayo Clinic Laboratories at 800-533-1710.

1. If requesting a peripheral blood smear evaluation only, order SPSM / Morphology Evaluation (Special Smear), Blood.

2. If requesting a hematopathology consultation on paraffin-embedded tissue and slides, order PATHC / Pathology Consultation. Also include a cover letter indicating hematopathology review requested.

3. If requesting a hematopathology consultation and only paraffin-embedded biopsy/clot samples and bone marrow aspirate are submitted, order HPCUT / Hematopathology Consultation, Client Embed.

Necessary Information

1. Collection date and patient date of birth are required.

2. The referring pathologist's and clinician's name and phone numbers are required.

3. A brief history (recent clinical note is preferred), patient information, and recent complete blood cell count results (within 14 days of bone marrow specimen) are required.

4. A complete pathology report is not expected. See Hematopathology Patient Information (T676) to provide patient information.

5. All specimens must be labeled with specimen type.

6. All specimens (bone marrow core biopsy, bone marrow aspirate clot, bone marrow aspirate, peripheral blood smears, and bone marrow aspirate slides), patient history, and requests should be clearly labeled with correct patient information and case number.

7. All pending and final reports for ancillary testing on above specimens.

Specimen Required

Multiple specimens are required to perform testing.

Submit each of the following (additional information below):

1. Unprocessed bone marrow core biopsy and/or clot

2. Three bone marrow biopsy touch prep slides

3. Bone marrow aspirate

-Fresh, unfixed, unstained slides:

--Two direct prep

--Three unit prep

-Liquid (order of collection):

--Lavender top (EDTA): 3 mL

--Yellow top (ACD): 6 mL

4. Two unstained peripheral blood smears (fingerstick preferred)

Information on collecting, packaging, and shipping specimens is available:

-Bone Marrow Core Biopsy, Clot, and Aspirate Collection Guideline

-Assistance with Bone Marrow Collection

Supplies: Bone Marrow Collection Kit (T793)

Specimen Type: Bone marrow aspirate slides

Container/Tube: Transport in plastic slide holders

Preferred: Fresh prep slides made at the time of sample collection

Acceptable: Slides made from anticoagulated sample

Collection Instructions:

1. Prepare slides of bone marrow aspirate immediately after collection or prepare slides from bone marrow aspirate in EDTA within 2 hours of collection.

2. If bone marrow units are sparse or absent or aspirate is a dry tap, make biopsy touch prep slides.

3. Make 2 good direct smears and 3 good unit preps, per unilateral collection.

4. Air dry slides.

5. Send 5 slides unfixed/unstained.

6. Place Parafilm around the slide carriers holding unstained slides to prevent exposure to formalin fumes during transport and place slides in a separate bag apart from any formalin-fixed clot or core biopsy specimens during transport. If using slide carriers, make sure they have not been used to carry fixed slides previously.

Specimen Type: Bone marrow aspirate in anticoagulant for possible ancillary testing

Container/Tube: Lavender top (EDTA) and yellow top (ACD)

Specimen Volume: 2 x 3 mL in EDTA and 2 x 6 mL in ACD

Collection Instructions:

1. Aspirate per standard bone marrow collection procedure.

2. Send specimens in original tubes. Do not transfer to other tubes or containers.

Specimen Type: Bone marrow clot

Container/Tube: Bone marrow clot in 10% formalin

Collection Instructions:

1. Place 0.5 mL bone marrow aspirate in clot tube.

2. After clot has formed, place clot in 10% formalin.

3. Place Parafilm around the container to prevent exposure.

Specimen Type: Bone marrow core biopsy

Container/Tube: Fixed biopsy core in 10% formalin solution for transport

Collection Instructions:

1. If bone marrow units are sparse or absent or aspirate is a dry tap, make biopsy touch prep slides.

2. Place biopsy core in 10% formalin immediately after collection.

3. Fix in 10% formalin for 1 to 2 hours.

4. Place Parafilm around the 10% Formalin container to prevent exposure.

Specimen Type: Peripheral blood

Slides: 2

Container/Tube: Transport in plastic slide holders.

Preferred: 2 fresh prep fingerstick slides

Acceptable: 2 slides made from whole blood in EDTA, made within 8 hours of collection

Collection Instructions:

1. Prepare 2 good quality smears of even thickness from fingerstick.

2. Alternatively, prepare good quality smear from EDTA whole blood within 8 hours of collection.

3. Submit unstained and unfixed slides.

4. Place Parafilm around the slide carriers holding unstained slides to prevent exposure to formalin fumes during transport and place slides in a separate bag apart from any formalin-fixed clot or core biopsy specimens during transport. If using slide carriers, make sure they have not been used to carry fixed slides previously.

Forms

1. Hematopathology Patient Information (T676) is required.

2. If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:

-Hematopathology/Cytogenetics Test Request (T726)

-Benign Hematology Test Request (T755)

Reject Due To

No specimen should be rejected.

Specimen Minimum Volume

See Specimen Required

Specimen Stability Information

Specimen Type	Temperature	Time	Special Container
Varies	Ambient (preferred)		

Clinical & Interpretive

Clinical Information

Diagnosis of a hematologic disease requires thorough and accurate morphologic examination of peripheral blood, bone marrow and interpretation of ancillary testing results (eg, cytochemistry, immunohistochemistry, flow cytometric immunophenotyping, chromosome analysis, and fluorescence in situ hybridization [FISH] and molecular testing) by a highly qualified hematopathologist. With recent advent of new understanding and more treatment options, more ancillary tests are available. Efficient utilization and accurate interpretation of these tests are crucial in patient care. These tests can assist in rendering an accurate diagnosis and could also provide prognostic prediction and potential indication or guidance of therapy.

Reference Values

An interpretive report will be provided.

Interpretation

Results of the consultation are reported in a formal pathology report that includes a description of ancillary test results (if applicable) and an interpretive comment. When the case is completed, results may be communicated by a phone call.

This consultative practice strives to bring the physician and patient the highest quality of diagnostic pathology, in all areas of expertise, aiming to utilize only those ancillary tests that support the diagnosis in a cost-effective manner, and to provide a rapid turnaround time for diagnostic results.

Cautions

All appropriate stained/unstained slides, biopsy tissue and aspirate are required in order to make a diagnosis. The referring pathologist's and clinician's name and phone numbers are essential. Specific diagnosis may require correlation with clinical information; this information must be sent with the specimen.

Clinical Reference

Sundaram S, Jizzini M, Lamonica D, et al: Utility of bone marrow aspirate and biopsy in staging of patients with T-cell lymphoma in the PET-Era-tissue remains the issue. ,Leuk Lymphoma. 2020 Dec;61(13)3226-3233. doi: 10.1080/10428194.2020.1798950

Performance

Method Description

All requests will be processed as a consultation case. Ancillary testing will be performed as appropriate to be diagnostically indicated and at an additional charge.

PDF Report
No

Specimen Retention Time
Specimens embedded by Mayo Clinic will be returned to the client when testing is complete. Slides prepared at Mayo Clinic: Indefinitely. Bone Marrow aspirate: 2 weeks

Performing Laboratory Location
Rochester

Fees & Codes

Test Classification
Not Applicable

CPT Code Information
85007 (if appropriate)

85060 (if appropriate)

85097 (if appropriate)

88305 (if appropriate)

88311 (if appropriate)

LOINC® Information

Test ID	Test Order Name	Order LOINC Value
HPWET	Hematopathology Consult	In Process

Result ID	Reporting Name	LOINC®
71098	Interpretation	60570-9
71099	Participated in the Interpretation	No LOINC Needed
71100	Report electronically signed by	19139-5
71101	Addendum	35265-8
71102	Gross Description	22634-0
71446	Material Received	85298-8
71103	Disclaimer	62364-5

71827	Case Number	80398-1