HEMATOLOGIC DISORDERS—SEND & HOLD
COST-EFFECTIVE STRATEGIES FOR DIAGNOSIS AND MANAGEMENT OF HEMATOLOGIC DISORDERS
Optimized Utilization Through Send and Hold

Diagnostic testing for hematologic disorders, especially neoplastic disorders of blood and bone marrow, continues to evolve into an extremely complex field. This increased level of intricacy, combined with changing guidelines and the difficulty of procuring additional samples for subsequent testing, commonly leads to over- and misutilization of testing.

To help optimize test utilization for hematologic disorders and ensure original specimens can be used for subsequent testing, Mayo Medical Laboratories offers a variety of send and hold options.

**Case Study: 9 Months Using Send and Hold**

- **220** Bed hospital in the US
- **69** Orders placed
- **42** Orders cancelled
- **61%** Cancellation rate
- **$36,675** Savings over 9 months

For many hematologic disorders, testing begins with morphology review and is typically followed by flow cytometry, chromosome, Fluorescence In Situ Hybridization (FISH), and molecular testing. However, by following the correct sequencing and observing brief pauses while early test results are returned, many of these cases can be diagnosed without requiring more expensive FISH and molecular tests.
CYTOGENETICS

CHROMOSOME ANALYSIS
HEMATOLOGIC DISORDERS, CHROMOSOME HOLD, BONE MARROW OR PERIPHERAL BLOOD (HCH)
This test holds the bone marrow or peripheral blood specimen in the laboratory and delays chromosome analysis while preliminary morphologic or flow cytometry assessments are in process. If assessment indicates the need for chromosome analysis, the held specimen will be tested upon approval by the ordering institution.

Conventional chromosome analysis is the gold standard for identification of the common, recurrent chromosome abnormalities for most hematologic malignancies. However, if the specimen does not show evidence of malignancy, chromosome analysis may not be necessary.

Based on morphologic review of the bone marrow or peripheral blood specimen by a hematopathologist, a determination of additional appropriate testing can be made. Furthermore, depending on the specific diagnosis, FISH assays may also be more informative.

FLOW CYTOMETRY

HEMATOLOGIC DISORDERS, LEUKEMIA/LYMPHOMA; FLOW HOLD VARIES (HLLFH)
This test delays the start of leukemia/lymphoma immunophenotyping until the preliminary assessment is completed and immunophenotyping is deemed necessary.

Immunophenotyping hematopoietic specimens can help resolve many differential diagnostic problems posed by the clinical or morphologic features. However, morphologic assessment of blood smears, bone marrow smears, and tissue sections remains the cornerstone of lymphoma and leukemia diagnosis and classification. Depending on the results of these morphologic assessments, immunophenotyping may not be necessary.

MOLECULAR

HEMATOLOGIC DISORDERS, DNA/RNA EXTRACT AND HOLD, BONE MARROW (EXHBM)
HEMATOLOGIC DISORDERS, DNA/RNA EXTRACT AND HOLD, BLOOD (EXHB)
These tests hold and preserve nucleic acid from any specimen for which molecular analysis may be necessary at a future date and stores it at -80 degrees Celcius for one year from the time of extraction.

It is frequently useful to obtain nucleic acid from clinical samples containing a hematopoietic neoplasm at the time of diagnosis to ensure appropriate material is available for molecular analysis should subsequent testing be necessary. For example, when a diagnosis of acute myeloid leukemia is made, there is a delay before karyotype information is available. This karyotype information determines whether testing for molecular prognostic markers is necessary. However, after the delay, the diagnostic sample is typically no longer available, or the nucleic acid has degraded to such an extent that it is no longer adequate for testing. Thus, it is useful to obtain nucleic acid on such specimens promptly at diagnosis and retain it until it is known whether additional testing is necessary.
## SPECIMEN REQUIREMENTS AND RETENTION TIME

<table>
<thead>
<tr>
<th>TEST NAME</th>
<th>SPECIMEN HOLD TIME</th>
<th>TYPE / VOL / CONTAINER</th>
<th>RETENTION TIME</th>
<th>PROCESS</th>
</tr>
</thead>
</table>
| **FLOW HOLD** (Mayo ID: HLLFH) | Client can cancel before 12 pm CST—2 days after collection (Mon–Sat)* | BM: 1–5mL ACD  
BLOOD: 10 mL ACD  
FLUID: 20 mL in sterile container  
TISSUE: biopsy or 5mm³ in media | BM/BLOOD: 14 days  
FLUID/TISSUE: 7 days | No processing |
| **HEME CHROMOSOME HOLD** (Mayo ID: HCH) | Client can cancel testing before 4 pm CST—2 days after collection** | BM: 2–3 mL NaHep  
BLOOD: 5–10 mL NaHep | ORIG. SAMPLE: 3 wks  
FIXED CELL PELLET: 3 wks | Culture initiated upon receipt |
| **HEME FISH HOLD** (Mayo ID: HFH) | Client can cancel testing before 4 pm CST—2 days after collection (PCPD testing cannot be ordered as a HOLD)** | BM: 2–3 mL NaHep  
BLOOD: 5–10 mL NaHep | ORIG. SAMPLE: 3 wks  
FIXED CELL PELLET: 3 wks | Fixed cell pellet prepared upon receipt |
| **DNA/RNA HOLD - BM** (Mayo ID: EXHBM) | None—DNA/RNA extracted upon receipt*** | BM: 2 mL EDTA | ORIG. SAMPLE: 2 wks  
EXTRACTED RNA/DNA: 1 yr | RNA/DNA extracted upon receipt |
| **DNA/RNA HOLD - BLOOD** (Mayo ID: EXHB) | None—DNA/RNA extracted upon receipt*** | BLOOD: 4 mL EDTA | ORIG. SAMPLE: 2 wks  
EXTRACTED RNA/DNA: 1 yr | RNA/DNA extracted upon receipt |

* Sunday communication deferred to Monday at Noon (CST)  
** Weekend communication deferred to Monday  
*** Samples extracted Monday–Saturday

For more information about Hematology testing, visit MayoMedicalLaboratories.com/hematology