Overview

Useful For
Detection of low level (minimal residual disease) myeloma cells after therapy

Highlights
High-sensitivity flow cytometry test for detection of minimal residual myeloma cells, post treatment

Adopted EuroFlow guidelines and Cytognos software

Sensitivity of 10^-5 or better, depending on the antigenic profile of abnormal plasma cells

Method Name
Immunophenotyping for Minimal Residual Disease (MRD)

NY State Available
Yes

Specimen

Specimen Type
Bone Marrow

Ordering Guidance
MRDMM should be ordered when monitoring Multiple Myeloma patients after treatment. This test should not be ordered on known relapsing patients or at diagnosis, see PCPRO / Plasma Cell DNA Content and Proliferation, Bone Marrow or MSMRT / Mayo Algorithmic Approach for Stratification of Myeloma and Risk-Adapted Therapy Report if indicated for these situations.

Shipping Instructions
It is recommended that specimens arrive within 48 hours of draw. Draw and package specimen as close to shipping time as possible.

Necessary Information
1. Include patient's disease state (untreated, treated, monoclonal gammopathy of undetermined significance, stable).
2. Indicate if patient is on anti-CD38 therapy.
3. Provide Immunofix information if available.

Specimen Required
Specimen Type: Redirected bone marrow

Container/Tube:
Test Definition: MRDMM
Multiple Myeloma Minimal Residual Disease
by Flow, Bone Marrow

Preferred: Yellow top (ACD)
Acceptable: Lavender top (EDTA)
Specimen Volume: 4 mL

Forms
If not ordering electronically, complete, print, and send a Hematopathology/Cytogenetics Test Request (T726) with the specimen.

Specimen Minimum Volume
2 mL

Reject Due To
All specimens will be evaluated at Mayo Clinic Laboratories for test suitability

Specimen Stability Information

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<tr>
<th>Specimen Type</th>
<th>Temperature</th>
<th>Time</th>
<th>Special Container</th>
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<tbody>
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<td>Bone Marrow</td>
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<tr>
<td></td>
<td>Refrigerated</td>
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Clinical & Interpretive

Clinical Information
Multiple myeloma is an incurable malignant neoplasm of plasma cells. One of the best prognostic factors in multiple myeloma is the level of minimal residual disease post chemotherapy or autologous stem cell transplantation. The greater depth of the response (less malignant cells present), the longer time to progression and overall survival.(1)

Reference Values
An interpretive report will be provided.
This test will be processed as a laboratory consultation. An interpretation of the immunophenotypic findings and correlation with the previous patient history will be provided by a hematopathologist for every case.

Interpretation
The interpretation of the test is done by an evaluating automated and manually gated populations to isolate abnormal plasma cells. If there is an abnormal plasma cell population (cluster of 20 cells or more), then the result is minimal residual disease (MRD)-positive, with the percentage of abnormal plasma cells out of total analyzed events. If no abnormal population is found, then the result will be interpreted as MRD-negative.

Cautions
There are situations in which current gating strategies are insufficient to identify abnormal plasma cells. This can occur if the abnormal plasma cells do not phenotypically differ from normal plasma cells. In addition, in patients who have undergone therapeutic antibody treatment (anti-CD38, for example), decreased antigen expression on plasma cells may interfere with the gating strategy.
**Clinical Reference**


**Performance**

**Method Description**

Flow cytometric immunophenotyping for minimal residual disease of bone marrow is performed using the following antibodies:


Abnormal plasma cell populations are detected through demonstrating CD38 (multiepitope) and CD138 positivity along with immunoglobulin light chain restriction (ie, the presence of either predominately kappa or predominately lambda light chains) and abnormality of CD56, CD117, CD27, CD81, CD19 and/or CD45 expression.

The percentage of clonal plasma cells estimated by flow cytometry is affected by specimen processing and antigen loss with specimen aging. Minimal residual disease reporting is affected by sample volume and cellularity. (Unpublished Mayo method)

**PDF Report**

No

**Day(s) Performed**

Monday through Friday

**Report Available**

2 to 4 days

**Specimen Retention Time**

14 days

**Performing Laboratory Location**

Rochester
Fees & Codes

Fees
- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their Regional Manager. For assistance, contact Customer Service.

Test Classification
This test was developed, and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. This test has not been cleared or approved by the US Food and Drug Administration.

CPT Code Information
88184-Flow Cytometry; first cell surface, cytoplasmic or nuclear marker
88185 x 9-Flow Cytometry; additional cell surface, cytoplasmic or nuclear marker
88188-Flow Cytometry Interpretation, 9 to 15 Markers

LOINC® Information

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<td>Multiple Myeloma MRD by Flow, BM</td>
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<td>CK147</td>
<td>% Normal Plasma Cells (of total PC)</td>
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