Lab Dept:	**Chemistry**
Test Name:	**DIHYDRORHODAMINE FLOW CYTOMETRIC PMA, BLOOD**

General Information

Lab Order Codes:	DHRP
Synonyms:	Neutrophil Chemiluminescence Assay; Chemiluminescence; Neutrophil Oxidative Burst; Dihydrorhodamine Flow Cytometric Phorbol Myristate Acetate Test; Nitroblue Tetrazolium (NBT) Assay
CPT Codes:	86352
Test Includes:	Functional assay that measures the oxidation (and resultant fluorescence) of dihydrorhodamine 123 (DHR 123) due to oxygen radical generation during the oxidative burst. The DHR 123 is preloaded into the cells, PMA is added to stimulate the neutrophils, and the neutrophil fluorescence is quantitated as the blood is analyzed on a flow cytometer.

Logistics

Test Indications:	Evaluating chronic granulomatous disease (CGD), X-linked and autosomal recessive forms, complete myeloperoxidase deficiency Monitoring chimerism and nicotinamide adenine dinucleotide phosphate oxidase (NOX) function post-hematopoietic cell transplantation Assessing residual NOX activity pretransplant Identifying of female carriers for X-linked CGD Assessing changes in lyonization with age in female carriers
Lab Testing Sections:	Chemistry - Sendouts
Referred to:	Mayo Clinic Laboratories (MML Test: DHRP)
Phone Numbers:	MIN Lab: 612-813-6280 STP Lab: 651-220-6550
Test Availability:	Monday – Thursday ONLY
Turnaround Time:	3 -4 days

Special Instructions:	Specimen must arrive with 24 hours of collection. A control sample is required in addition to the patient sample. Obtain special tube from the laboratory (Green Sodium Heparin tube). **Restricted draw time, Monday-Thursday, ONLY**.

Specimen

Specimen Type:	Whole blood
Container:	Green top (Sodium Na Heparin) tube obtained from the lab
Draw Volume:	5 mL (Minimum: 1 mL) sodium heparinized whole blood
Processed Volume:	Same as Draw Volume
Collection:	Routine venipuncture
Special Processing:	Lab Staff: **Do Not** centrifuge. Send specimen in original collection container. **Lab must also collect a 5 mL Na Heparin "control" sample from a normal, unrelated person at the same time.** Simply label the control as NORMAL CONTROL and rubber band the control tube to the patient testing specimen. No patient information is needed on the control sample. Ship specimens at room temperature as priority delivery. **Ordering physician name and phone number are required with the specimen.** Testing is performed Monday through Friday. Specimens not received by 4 p.m. Central time on Friday may be canceled.
Patient Preparation:	None
Sample Rejection:	Specimen is more than 24 hours old; hemolyzed; clotted; mislabeled or unlabeled specimens

Interpretive

Reference Range:	Interpretative report provided. See the reference lab test catalog for further information.
Critical Values:	N/A
Limitations:	Specimens are optimally tested within 24 hours of blood draw, though the stability of the assay is within 48 hours of collection. Specimens should be collected in sodium heparin and transported under strict ambient conditions. Use of the Ambient Shipping Box-Critical Specimens Only (T668) is encouraged to ensure appropriate transportation of the specimen.

Some disease-causing variants in *NCF4* cause only a mild atypical form of chronic granulomatous disease (CGD) and may not be detected by this assay.

The DHR test may be normal or mildly impaired in patients who are NCF4 (p40phox) deficient.

Severe glucose-6-phosphate dehydrogenase deficiency can be a phenocopy of CGD both in cellular and clinical terms and can be the underlying reason for an abnormal DHR response (15).

Hemolyzed specimens may interfere with the assay (ie, high background).

Specimens with an absolute neutrophil count less than 200 will not be accepted for this assay. Complete myeloperoxidase deficiency can yield a false-positive result.

Methodology: Flow cytometry

References: Mayo Clinic Laboratories December 2024

Updates: 12/27/2024: Updated limitations, CPT code, turnaround time, special instructions, specimen stability.