



KAISER PERMANENTE®

Hematology

Supervisor: Anne Avery, MD

Location: Kaiser Permanente Regional Laboratory and Kaiser Sunnyside Medical Center

Duration: 12 weeks

No. Residents: One per rotation

Prerequisite: None

Goals & Objectives:

1. The resident will demonstrate the ability to institute and oversee procedures for collection and processing of blood smears, bone marrow aspirates and core biopsies, lymph node aspirates and biopsies, and other hematopoietic tissues.
2. The resident will demonstrate thorough knowledge of basic hematologic mechanisms, including erythropoiesis, granulopoiesis, thrombopoiesis, and immunology.
3. The resident will demonstrate familiarity with the basic principles of routine hematology instrumentation, and will have exposure to special procedures and methodologies used in the clinical hematology laboratory.
4. The resident will demonstrate proficiency in the classification of acute and chronic leukemias, myelodysplastic syndromes, and myeloproliferative disorders.
5. The resident will demonstrate expertise in the diagnosis of the hematologic manifestations associated with ITP, AIDS, lymphoma staging, monoclonal gammopathies, anemias, and other abnormal conditions of the hematopoietic system.
6. After evaluation of appropriate clinical and laboratory data, the resident will demonstrate the ability to offer consultative advice on the diagnosis and limited management of hematologic problems to referring physicians. The resident will also be able to generate a consultative report.

Duties & Responsibilities:

1. The resident will perform bone marrow aspirate and biopsy procedures, supervised by the Kaiser pathologist involved with the case.
2. The resident will become knowledgeable in preparation of high quality bone marrow and blood specimens for examination.
3. The resident will perform differential cell counts on all peripheral bloods and marrows obtained during the rotation, training differential counting to be performed by the Kaiser pathologists.
4. The resident will review the bone marrow and peripheral blood findings on all patients with a pathologist, dictate the reports of findings and interact with clinicians regarding the results.
5. The resident will review the morphologic findings of abnormal body fluids with a pathologist on a regular basis.
6. The resident will attend and participate in all Leukemia/Lymphoma Tumor Boards.
7. The resident will read the appropriate chapters in a hematology textbook of his/her choice on erythropoiesis, granulopoiesis, thrombopoiesis. Specific goals include:
 - Red blood cell morphology and maturation
 - Peripheral blood and marrow WBC morphology and maturation
 - Cells other than RBC and WBC in blood and marrow
8. In the laboratory instrumentation section of the rotation, the resident will become familiar with the procedures and methodologies used in the clinical hematology laboratory. Where applicable, the resident should become familiar with the specimen requirements and stability, method(s) and principle(s), interferences, contaminants, physiologic variations, normal values, clinical interpretation, sensitivity, specificity, precision, time for analysis, cost, technical skill level

needed, instrumentation used, types and availability of controls, QC method, and method of choice for high, medium, low volume, and pediatric services for the tests listed below:

- Automated hematology analyzers
- Hematocrit
- Hemoglobin
- RBC indices
- Reticulocyte counts
- Erythrocyte sedimentation rate
- Plasma hemoglobin determination
- Osmotic fragility
- Sickle cell screen
- Leukocyte alkaline phosphatase stain
- Heinz body stain
- Cytochemical stains for white blood cells
- Kleihaun Bathes

Be familiar with the procedures, causes for abnormal results,,controls, limitations, technical errors, and interpretation of the following stains:

- Leukocyte alkaline phosphatase
- Myeloperoxidase
- Sudan black B
- Dual esterase (Naphthal AS-D chloracetic acetate exterase)
- PAS
- Acid phosphatase and TRAP (tartrate resistant acid phosphatase)

Graduated Responsibility:

Level I - Able to observe and then perform bone marrow biopsies and aspirates under mentor supervision, participate in review of peripheral blood and bone marrow findings with a pathologist, participate in tumor board presentations.

Level II - Able to competently perform bone marrow biopsies and aspirates independently, review peripheral blood and bone marrow findings subject to review by a pathologist, dictate reports of findings, present tumor board cases and converse meaningfully with clinicians to report findings and recommend additional testing strategies.

Supervision:

The resident is closely supervised during the first part of the rotation with staff attendance during biopsy procedures and prospective review of most stages of case work-ups. As skills are demonstrably improved, supervision of all aspects, including clinical communications, become less direct. All slides and formal reports are reviewed by the staff pathologist before release.

Evaluation Methods:

By demonstrated proficiency in the above listed activities as assessed through regular contact with hematology mentors.