Hematology Consultation Service- 4 Months

General Expectations

Fellows run the hematology consult service under the direct supervision of a benign hematology attending. Fellows are responsible for evaluating all hematology consults received before 5 PM. A thorough consultation requires a detailed history, past medical history, physical exam, review of imaging and review of peripheral smear and bone marrow aspirate (as indicated). Fellows should come up with their own differential diagnosis and management recommendations. Fellows will then present the patient to the attending who will evaluate the consult personally, review the peripheral smear with the fellow, and give feedback to the fellow on the fellow's work-up. The attending will then finalize any management recommendations. Fellows must communicate recommendations to the primary team. Daily follow-up on hematology consultations is generally required and will be at the discretion of the attending.

The hematology fellow on the consult service also has primary responsibility for hemophilia and bleeding disorder patients admitted to the hospital for bleeding or for procedures. Hematology fellows are required to attend the multi-disciplinary hemophilia clinic at Wednesday afternoons. Fellows are strongly encouraged to attend thrombophilia clinic on Wednesday mornings.

Medical Knowledge- First Year Fellows

Understand normal hematopoiesis.
- Stem cell plasticity, embryology and differentiation
- Erythropoiesis and erythropoetic growth factors
- Hemoglobin synthesis, structure and function
- Leukocyte differentiation, maturation and trafficking
- Basics of lymphocyte biology
- Thrombopoiesis and the role of thrombopoietin and other platelet growth factors.

Red Blood Cell Disorders

Anemias
- -understand what the RBC indices represent and what leads to their abnormality, demonstrate the ability to interpret and recognize all morphologic variations of RBCs
- Understand the role of B12 and folate in hematpoiesis
- Diagnosis and treatment of anemia of chronic disease
- -Cause of red cell aplasia and hypoplasia and treatment with immunologic modifiers
- Pathophysiology and management of sideroblastic anemias

Hemoglobinopathies
- Thalassemias

Sickle cell anemia and variant sickle cell syndromes- genetics, complications and management
Other congenital hemoglobinopathies

Hemolytic anemias
Autoimmune hemolytic anemias- diagnosis and treatment
Metabolic enzyme deficiency hemolytic anemias and biochemical pathways
Paroxysmal nocturnal hemoglobinuria (PNH)
RBC membrane disorders
Microangiopathic hemolytic anemias (MAHA)
Non-autoimmune, acquired hemolytic anemias

Porphyrias

Hemochromatosis
interpret molecular diagnosis assays, including those that identify the C282Y and H63D mutations of the hemochromatosis gene (HFE)
complications of hemochromatosis on systemic organ systems
Medical management

White Blood Cell Disorders
Granulocyte Dysfunction Disorders
Granulocytopenia- mechanisms, diagnosis and management
Lymphopenia and Lymphocyte Dysfunction Syndromes
common variable immunodeficiency, severe combined immunodeficiency, adenosine deaminase deficiency, Wiskott-Aldrich syndrome, ataxia-telangiectasia, DiGeorge anomaly, selective immunoglobulin deficiencies, Omenn syndrome, reticular dysgenesis
Leukocytosis

Platelet and Megakaryocyte Disorders

Hereditary Platelet Disorders
von Willebrand's disease, Bernard-Soulier syndrome (glycoprotein Ib-IX deficiency or defect), platelet collagen receptor deficiency, Glanzmann thrombasthenia (glycoprotein IIb-IIIa deficiency), gray platelet syndrome (α-granule deficiency, α-storage pool disease), dense granule deficiency (δ-storage pool disease), primary secretion defects and platelet procoagulant activity disorders, among others. .

Acquired Platelet Function Disorders

Thrombocytopenia
Decreased Platelet Production.
Increased Destruction or Consumption of Platelets
hypersplenism, immune etiologies, drug effects, heparin-induced thrombocytopenia, microangiopathic disorders, disseminated intravascular coagulation (DIC), infections, bleeding and cardiopulmonary bypass.
immune thrombocytopenic purpura (ITP).

Thrombocytosis- Diagnosis and management
Anti-platelet function drugs aspirin, ticlopidine/clopidogrel, dipyridamole, GP IIb/IIIa inhibitors, etc).

Medical Knowledge- Second Year Fellows

Bone Marrow Failure States
- Inherited and congenital forms of bone marrow failure
- Chemical and infectious
- Aplastic Anemia- diagnosis and therapy
- Pancytopenia .

Hemostasis and Bleeding Disorders
- pathophysiologic mechanisms of hemostasis.
- von Willebrand's disease diagnosis of subtypes and management
- Hemophilias A and B, and other inherited factor deficiency states.
- Interpret platelet function studies, bleeding time, coagulation factor assays, and coagulation factor inhibitor screens and assays.

Thrombotic Disorders and pathophysiology
- Genetic testing for risk of thrombosis

Prophylaxis of thrombosis

Heparin-Induced Thrombocytopenia

Antiphospholipid Syndrome

Pharmacologic Manipulation of Bleeding and Thrombosis
- heparins, warfarin, anti-thrombins, anti-platelet agents, fibrinolytic agents, factor replacement products, inhibitor "bypass" products, antifibrinolytic agents, and the role of blood products for the management of bleeding disorders

Patient Care First Year Fellows

Perform diagnostic bone marrow aspiration and biopsy- Attending must document competency

Interpretation of blood smears indicative of common red cell, white call and platelet disotrders

Management of anticoagulation

Management of venous thrombosis prophylaxis

Management of blood product and factor replacement

Attend weekly multidisciplinary hemophilia clinic

Diagnostic approach and management of patients with thrombophilia

Patient Care Second Year Fellows

Management of patients undergoing leukopheresis

Management of patients receiving plasmapheresis

Long term care of patients with sickle cell anemia

Preoperative assessment and clearance for patients with bleeding disorders

Interpretation of blood smears and marrow aspirates for common hematologic diseases

Design an appropriate diagnostic approach to diagnose disorders of hemostasis and thrombosis

Professionalism- First and Second Year Fellows

Interact with primary teams seeking hematology consultation
Show respect for all members the patient care team
Respect patient confidentiality

Communication- First and Second Year Fellows

Communicate diagnosis to patients and families
Understand cultural differences in communication styles
Use bilingual interpreter or interpreter phone to communicate with patients who don't speak English
Communicate with a referring physician and assuming an appropriate level of responsibility for the care of the patient.

Systems Based Learning First and Second Year Fellows

Learn to facilitate patient care
Work effectively with social workers, chaplains, physical therapists and nutritionists to improve patients function and quality of life
Understand outpatient resources available to support patients and families
Arrange appropriate post discharge follow-up care and instructions

Practice Based Learning First and Second Year Fellows

Use evidence based medical resources to diagnose and treat patients
Understand clinical trial design and application to specific patient populations.