

Residency Program: Hematology/Oncology Learning Goals and Objectives

Residents rotating on the inpatient Hematology/Oncology rotations, Red and Aqua, will have an opportunity to learn about many diseases specific to the specialty, with a primary focus on an understanding of basic disease process, evaluation and management. The following Competency based, level-specific, Goals & Objectives were created to match the anticipated exposure of the resident to common hematologic and oncologic disease. Residents in all three years will have exposure to these topics, though some may be particularly more relevant by year of training. With each topic is an expected competence by level of training and assignment to one or more of the required Competencies.

1. Attain an understanding of changes in the cbc in the normal child and infant. Appropriately order and interpret laboratory tests to identify hematologic or oncologic disease (cbc, indices, peripheral smear, reticulocyte count, PT, PTT, hemoglobin electrophoresis, iron, iron binding capacity, ferritin, transferrin, lead, electrolytes, LDH, uric acid, BUN, Cr, UA).
Level 1,2,3
Competencies: PC, MK, PBL, SBP
2. Evaluate and manage a child with anemia: differentiate between nutritional (iron, B12, folate deficiencies), hemolytic (red cell membrane and enzyme deficiencies), autoimmune and acquired anemias, transient erythroblastopenia of childhood; bone marrow failure syndromes, hemoglobinopathies, and thalassemia.
Level 1,2,3
Competencies: PC, MK, PBL
3. Evaluate patients with Sickle Cell disease and manage common acute illnesses such as vaso-occlusive episodes, fever, acute chest syndrome, dactylitis, stroke, priapism, cholelithiasis, renal failure, and splenic sequestration. Be familiar with newborn screening and preventive measures (including PCN prophylaxis, folate, immunizations, hydroxyurea, and prompt evaluation of fever or illness).
Level 1,2,3
Competencies: PC, MK, PBL
4. Be able to manage pain, acute and chronic, with a PCA or other analgesics for patients with Sickle Cell disease, post-operative, or patients with chronic pain or end of life pain management. Understand other components of pain management (psychosocial assistance, massage, heat, exercise, TENS, biofeedback, etc) and utilization of a pain tool.
Level 1,2,3
Competencies: PC, MK, PBL
5. Know the indications for transfusion and appropriately order blood products for Hematology and Oncology patients. Understand potential risks of blood products, including red cells, platelets, granulocytes, plasma, immune globulin, and factor concentrates. Describe indications for leukofiltration, irradiation, and use of CMV negative products. Summarize the signs and symptoms of a transfusion reaction and develop an effective treatment plan. Understand the current indications and usage of cytokines, including erythropoietin and G-CSF.
Level 1,2,3
Competencies: PC, MK, PBL, SBP

ACGME Competencies:

PC = Patient Care MK = Medical Knowledge PBL = Practice-Based Learning and Improvement
ICS = Interpersonal and Communication Skills PL = Professionalism SBP = Systems-Based Practice

6. Evaluate a child or adolescent with a suspected bleeding disorder. Differentiate between platelet disorders (quantitative and qualitative), von Willebrand disease, and specific factor deficiencies (hemophilia A, B, C and acquired deficiencies). Be able to evaluate and manage patients with ITP.
Level 1,2,3
Competencies: PC, MK, PBL
7. Evaluate a patient with suspected thrombosis and utilize appropriate imaging for assessment. Be familiar with the laboratory evaluation of a pro-thrombotic state (acquired and congenital) and medical management of acute and long term thrombosis (tPA, heparin, LMWH).
Level 1,2,3
Competencies: PC, MK, PBL
8. Evaluate children and adolescents with leukocyte disorders, including neutropenia, lymphopenia, and qualitative neutrophil dysfunction. Be familiar with the evaluation for congenital versus acquired, immune and non-immune mediated neutropenia. Understand the role of etiologic factors such as infection and drugs. Understand basic therapeutic interventions such as prophylactic antibiotics, cytokines, and neutropenic precautions.
Level 1,2,3
Competencies: PC, MK, PBL
9. Evaluate a patient with pancytopenia. Be familiar with basic clinical and laboratory assessments and differentiate between potential marrow infiltrative processes (malignancy, storage disease), infection, acquired (aplastic anemia) or congenital marrow failure states (Fanconi's anemia, Diamond-Blackfan anemia), peripheral destruction (splenic sequestration), or autoimmune disease. Understand basic therapeutic approaches.
Level 2,3
Competencies: PC, MK, PBL
10. Recognize signs and symptoms of malignancy. Be able to initiate an evaluation for a child with a suspected malignancy, including leukemia, abdominal masses, and brain tumors. Be familiar with common malignancies of childhood and adolescence, including presentation, genetic predisposition, evaluation with clinical and laboratory testing and imaging, basic management concepts (chemotherapy, surgery, radiation, transplant), prognosis, and long term adverse effects for such malignancies as: leukemia (ALL, AML), brain tumors, Hodgkin's disease, non-Hodgkin's lymphomas, neuroblastoma, Wilms' tumors, sarcomas (bone and soft tissue), retinoblastoma, and Langerhans cell histiocytosis. Be familiar with clinical trials and informed consent.
Level 1,2,3
Competencies: PC, MK, PBL, PL, ICS
11. Understand basic concepts of bone marrow transplantation, including indications and types of transplants (cord blood, allogeneic, matched unrelated, haplo, peripheral blood stem cell), and collection methods (pheresis, bone marrow harvest). Differentiate between transplant for hematologic, oncologic or immune deficiency states. Understand common post-transplant complications such as engraftment delay, veno-occlusive disease, graft versus host disease, and infection with unusual pathogens.
Level 2,3
Competencies: PC, MK, PBL
12. Become familiar with supportive care measures for chronically ill children, including nutritional support with hyperalimentation or NG feedings, care and complications of central venous catheters, general infection prophylactic measures, and education of families.
Level 1,2,3
Competencies: PC, MK, PBL, ICS, PL

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13. Diagnose and manage emergent situations in Oncology patients such as fever and neutropenia, bleeding, infection and sepsis, exposure to Varicella, typhlitis, tumor lysis syndrome and other metabolic derangements, hyperleukocytosis, mediastinal mass, superior vena cava syndrome, spinal cord compression, pulmonary infiltrates, and invasive fungal disease.
Level 1,2,3
Competencies: PC, MK, SBP
14. Attain competence in technical and therapeutic procedures, including bone marrow aspirates/biopsies, intrathecal chemotherapy, and intravenous medications.
Level 1,2,3
Competencies: PC
15. Become familiar with common chemotherapeutic agents, their administration, and acute and late adverse effects. Understand general supportive measures such as anti-emetics, antihypertensive and antacid therapies. Know when and how to evaluate for possible cardiac, pulmonary, renal or ototoxicity.
Level 1,2,3
Competencies: PC, MK
16. Become proficient in the education of families with respect to their child's particular disease. Become involved with the health care team in delivery of care and education, including the informed consent process, discussion of patient status including updates on prognosis, new complications, and possibly end of life care. Counsel the families with sensitivity and be able to discuss the impact of the disease, its' prognosis, treatment plans, and decision making. Become familiar with support services in the hospital and community.
Level 1,2,3
Competencies: PC, MK, ICS, PL, SBP
17. Attain competency in the ordering and interpretation of imaging and nuclear medicine studies in the context of hematologic and oncologic disease, including: abdominal ultrasound, flat plate of the abdomen, chest x-ray, head CT, head MRI, extremity X-ray and MRI, and nuclear medicine studies (GFR, bone scan, gallium scan, Meckel's scan, PET scan).
Level 1,2,3
Competencies: PC, MK, SBP, PBL
18. Work efficiently with consultants and understand the process of asking for and providing consultation. This includes: a complete understanding of the current patient status and medical issues, formulation of questions for consultants, preparation of materials and literature searches, in addition to direct discussion.
Level 1,2,3
Competencies: PC, MK, PL, ICS
19. Attain communication skills with referring and primary physicians. Ensure continued and rapid communication, verbal and written, with all involved healthcare providers. Provide clinical information and also serve an educational role in the understanding of the patient's unique disease process and evaluation and management in the hospital.
Level 1,2,3
Competencies: PC, MK, PL, ICS, SBP

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