

ELECTIVE TITLE CLINICAL ELECTIVE IN PEDIATRIC HEMATOLOGY- ONCOLOGY		COURSE NUMBER PEDS 9003	LOCATION RUTGERS CANCER INSTITUTE OF NEW JERSEY & BRISTOL-MYERS SQUIBB CHILDREN'S HOSPITAL NEW BRUNSWICK
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BLOCKS AVAILABLE ALL	DURATION/WEEKS MIN 2; MAX 8	HOURS PER WEEK 40	STUDENTS MAX 1
LECTURES/SEMINARS YES	OUTPATIENT YES	INPATIENT YES	HOUSESTAFF NO
NIGHT CALL NO	WEEKENDS NO	LAB NO	EXAM REQUIRED NO

OVERALL EDUCATIONAL GOAL OF ELECTIVE

The chief objective of the rotation is for students early in their medical school training to gain increased clinical experience in the diagnosis, care and management of a variety of pediatric hematologic and oncologic disorders.

OBJECTIVES

I. Patient Care:

Goal: Provide family-centered patient care that is development- and age-appropriate, compassionate, and effective for the treatment of health problems and the promotion of health.

Objectives:

- Obtain accurate and appropriate medical information for each patient.
- Use a logical and appropriate clinical approach to the care of patients presenting for specialty care, applying principles of evidence-based decision-making and problem-solving.
- Describe general indications for subspecialty procedures and interpret results for families.
- See Medical Knowledge section below for further details.

II. Medical Knowledge:

Goal: Must consistently demonstrate proficiency in obtaining knowledge through reading of the literature and clinical discussions.

Objectives:

- Distinguish normal from pathologic states of the hematologic and lymphatic systems.
 - Describe the changes that occur over time in the hematologic indices of the normal infant and child (e.g., hemoglobin, hematocrit, MCV).
 - Explain the findings on clinical history and examination that suggest a hematologic or oncologic disease that requires further evaluation and treatment
 - Interpret clinical and laboratory tests to identify hematologic or oncologic disease (HPD, including indices and blood smear review, reticulocyte count, ESR, PT/PTT, hemoglobinelectrophoresis, iron, iron binding capacity, ferritin, transferrin, uric acid, LDH, electrolytes, renal function, urinalysis
- Evaluate, treat and/or refer patients with presenting signs and symptoms that may indicate a hematologic or oncologic disease process.

- Develop a strategy to determine if the following presenting signs and symptoms are caused by a hematology/oncology disease process and determine if the patient needs treatment or referral:
 - Fatigue/malaise
 - Fever
 - Bruising/bleeding
 - Headache
 - Limp pain/limp
 - Seizure
 - Lymphadenopathy
 - Hepatomegaly and/or splenomegaly
 - Weight loss
 - Abdominal pain
 - Vomiting
 - Dizziness and gait disturbances
 - Nevi
- Diagnose and initiate management of patients with hematological or oncological disorders that generally need referrals
 - Identify, explain and initially manage and seek consultation or refer the following hematology/oncology conditions:
 - Anemia (exclusive of common iron deficiency or transient erythropenia of childhood)
 - Abnormal bruising or bleeding (inherited and acquired)
 - Inherited bleeding disorders
 - Hemoglobinopathies (sickle cell disease), including severe pain crisis, fever, stroke, splenic sequestration and aplastic crisis
 - Urgent conditions in children under treatment for cancer, including fever and neutropenia, chicken pox exposure or illness, bleeding
 - Neutropenia
 - Thrombocytopenia, including ITP
 - Abdominal masses
 - Mediastinal masses
 - Lytic bone lesions
 - Suspected or confirmed CNS tumor
 - Conditions that might predispose to malignancy (e.g., neurofibromatosis, Bloom syndrome, Downs syndrome (transient myeloproliferative disorder), McCune Albright, familial cancer syndromes)
 - Coagulation disorders
- Discuss the presentation, pathophysiology and prognosis of important malignancies in children and adolescents
 - Summarize the common ages, presenting signs and symptoms, diagnostic procedures, principles of current therapy, prognosis and long-term complications (due to disease or treatment) for the following malignancies and conditions:
 - Leukemia (ALL, AML)
 - Brain tumors
 - Hodgkin's and Non-Hodgkin's lymphoma
 - Neuroblastoma
 - Wilm's tumor
 - Soft tissue sarcomas (rhabdomyosarcomas)
 - Bone tumors (Ewing's sarcoma and osteosarcoma)
 - Retinoblastoma
 - Langerhans' cell histiocytosis
 - Compare and contrast the common acute side effects of frequently used chemotherapeutic drugs, including: cyclophosphamide, cytarabine, vincristine, anthracycline compounds, methotrexate and prednisone.
 - Be familiar with adjunctive medications that increase patients' tolerance of chemotherapy, e.g. erythropoietin, granulocyte colony stimulating factors
 - Discuss the common late complications of childhood cancer treatment that may present in childhood or adolescence. These include: learning disabilities, endocrine suppression and second cancers.
- Discuss the appropriate methods of diagnosis and management of a patient with iron disorders.
 - Describe the normal requirements, absorption and metabolism of iron from birth through

- adolescence.
- o Identify the common causes and features of iron deficiency in all age groups and compare and contrast with anemia caused by chronic inflammation.
- o Describe the diagnosis and treatment of iron deficiency and discuss the follow up necessary to assure success in treatment.
- o Develop a treatment and education plan for managing iron deficiency, to include dietary management, replacement therapy, parent education and follow up.
- Understand indications for and complications related to the use of blood products.
 - o Explain the appropriate indications for and potential risks of various blood products (e.g., red blood cell products, platelet concentrates and coagulation factors).
 - o Describe alternatives to blood transfusions. These should include: erythropoietin, G-CSF.
 - o Describe the indications for leukofiltration, irradiation of blood products and use of CMV negative blood products.
 - o Summarize the signs and symptoms of a transfusion reaction. Develop an effective treatment plan to manage a transfusion reaction.
- Understand the general pediatrician's role in the diagnosis and management of patients with sickle cell disease.
 - o Explain the findings on clinical history, examination and laboratory tests (including newborn screening) that suggest a diagnosis of sickle cell disease.
 - o Compare and contrast the different sickle cell syndromes, including presentation, treatment and complications. These syndromes include sickle cell anemia, hemoglobin SC, and hemoglobin S beta thalassemia.
 - o Discuss the common complications seen in a child with sickle cell disease. These include: hemolysis, hand-foot syndrome, anemia, aplastic crises, bone infarction, stroke, skin ulcers, pain episodes, priapism, sepsis and infections, cholelithiasis, chest syndrome, retinopathy, renal failure, and sequestration crises.
 - o Outline the management of a patient who presents with a sickle crisis. These should include discussion and proper use of IV fluids, analgesics, antibiotics, oxygen, blood transfusion and indications for hydroxyurea and stem cell transplant.
 - o Develop a preventive care plan for a patient with sickle cell disease, including use of folate, prophylactic antibiotics, immunizations, prompt evaluation of febrile episodes and stroke screening.
- Provide skillful medical care and empathic support to the terminally ill child and his/her family.
 - o Discuss principles in the medical management of the terminally ill child and demonstrate an understanding of the goals of treatment, including involving parents in the decision-making processes, redirection of goals of care, symptomatic management of pain, respiratory distress and nutrition, hospice care, 'do not attempt to resuscitate (DNAR) orders and termination of life support, use of bioethics committees in difficult decision-making situations.
 - o Discuss the principles of counseling parents regarding treatment options for terminally ill children, including the integration of relevant cultural and religious or spiritual values.
 - o Describe stages of the normal grieving process.
 - o Discuss the development capabilities of children at different ages regarding their understanding of death and dying and their manifestations of grief.
 - o Understand one's personal response and feelings when dealing with death and dying, including personal belief and religious/spiritual belief systems related to disease and management of the dying child and the need to share feelings with others during times of stress or death.

Practice-Based Learning and Improvement:

Goals: Demonstrate knowledge, skills and attitudes needed for continuous self-assessment, using scientific methods and evidence to investigate, evaluate, and improve one's patient care practice. In addition, residents at all levels should seek to be involved in palliative care or end-of-life care for children with terminal illnesses and their families.

Objectives:

- Consistently review the hematology/oncology literature using paper, computer and web-based resources.
- Consistently evaluate individual performance, identify gaps in knowledge, and target learning to fill these gaps.
- Consistently demonstrate learning from error.
- Work well with other learners to enhance the common knowledge.
- Provide, request, and accept feedback about performance.
- Facilitate the learning of students, junior residents, and other health care professionals
- Participate in informal discussions, tumor board and other relevant seminars.

- Attend the Hemepath Pathology Lecture + Clinical Conference – Tuesdays at 8:00 a.m.
 - Pathology Resident Room – RWJUH Middlesex Pavilion, 4th floor

Interpersonal Skills and Communication:

Goals: Demonstrate interpersonal and communication skills that result in information exchange and partnering with patients, their families and professional associates. They must be able to approach the patients and families in a patient-centered manner.

Objectives:

- Create and sustain a therapeutic and ethically sound relationship with patients and their families.
- Use effective listening skills (nonverbal, explanatory, and questioning) to elicit and provide information during the medical interview.
- Understand and explain issues of confidentiality, disclosure, and consent.
- Use consultants appropriately and communicate effectively with them in a timely fashion.
- Maintain accurate and timely medical records.

Professionalism:

Goal: Understand and demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

Objectives:

- Consistently act in the best interest of patients.
- Consistently demonstrate a caring and respectful demeanor when interacting with patients and families.
- Maintain patient/family confidentiality.
- Provide effective patient education, including reassurance, for conditions common to this subspecialty
- Communicate effectively with primary care and other physicians, other health professionals, and health-related agencies to create and sustain information exchange and teamwork for patient care.
- Demonstrate sensitivity to and respect for differences in race, ethnicity, culture, socioeconomic status, educational attainment, age, gender, sexual preference, and disability.
- Apply fundamental bioethical principles to the provision of care.
- Be conscientious, punctual, reliable, and dressed in an appropriate and professional manner.

Systems-based Practice:

Goals: Understand how to practice high-quality health care and advocate for patients within the context of the health care system. They should be able to work effectively with a multi-disciplinary team of providers to aid in the best outcomes possible.

Objectives:

- Consistently advocate for patients and families and help them navigate the healthcare system by assisting them in making appointments, scheduling studies in a timely manner, and calling other providers to communicate about the patient, when necessary.
- Appropriately refer and follow-up patients when necessary.
- Demonstrate appropriate communication and collaboration with subspecialty consultants and ancillary staff.

BRIEF DESCRIPTION OF ACTIVITIES

The student's expectations must be discussed with elective advisor before scheduling, as some clinical settings may not be available during the time slot requested. Students have the option to participate in general outpatient clinic, inpatient hospital service, or several other specialized clinical settings. Depending upon the length of the elective, the student may choose more than one environment. The student will be encouraged to observe in the diagnostic laboratories for a day (hematology, coagulation, pathology) to understand the limitations of diagnostic testing and how to apply specific laboratory assays in the clinical setting.

Students with a specific area of interest may arrange their time to gain increased exposure to a specific disease or area of care. Particularly motivated students will have the option to pursue a brief, limited, clinical study such as a case report or chart review.

METHOD OF STUDENT EVALUATION

A written evaluation of performance will be submitted.

ARE THERE ANY PREREQUISITES FOR THIS ELECTIVE? Yes, Pediatrics

IS THIS ELECTIVE AVAILABLE TO THIRD YEAR MEDICAL STUDENTS AS WELL? Yes