Pediatric Hematology/Oncology Inpatient Service 7280 Syllabus

Contact Information

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Course Information

Brief Description of Course

The Hematology/Oncology Inpatient Service will provide students with a four-week inpatient experience where students will be assigned Hematology/Oncology hospitalized patients as a ward intern and will be responsible for their care under the supervision of Heme/Onc PL2 residents, fellows and attending physicians. This class is open to students as a Core Sub-I or as an elective. If complete this course as a Core Sub-I, you must complete the PED 7030 requirements. During this rotation, students will participate in all teaching and service responsibilities including participating in cross-cover with other ward sub-intern patients, and might include an overnight call requirement. Students will gain skills in procedures such as lumbar puncture, bone marrow aspiration and biopsy.

Course Goals

Required Objectives:

1. Professional Qualities
   - The student will practice and improve skills **working as an effective team member** with other healthcare staff as well as other medical students.
   - The student will incorporate **work habits and time management skills** essential to good patient care such as timely completion of medical documentation (orders, progress notes, discharge summaries, cost of therapies, utilization management) and the importance of early discharge planning.
   - The student will practice and improve **communication skills with other health professionals** including referring and primary care physicians, health plan managers, consulting physicians, personnel in radiology and clinical laboratory, and representatives of Social Services, Dietary, Respiratory Therapy and Discharge Planning. This also includes learning strategies to maintain patient confidentiality.
   - The student will practice and improve **communication skills.** Specifically incorporating strategies for effective communication about concerns and the **patient's status with patients and their families,** focused around situations with ill children in a hospital setting.
   - The student will **share teaching responsibilities** for purposes of team learning about clinical questions as theyarise.

2. Knowledge
   - The student will **incorporate and interpret** information gathered from a history and physical, laboratory data and imaging to formulate a focused differential diagnosis appropriate to the age of the patient.
   - The student will **develop and expand knowledge base** about normal pediatric development and care through discussing example specific to the hospitalized patient population.

3. Skills
   - The student will **practice and demonstrate the skills of performing a pediatric history and physical examination,** including obtaining and communicating information. Specific components including history taking, exam approach, case presentation, documentation and interpretation with analysis of information.
   - The student is encouraged to **participate in procedures** on his/her patients with supervision from the PL2 residents, fellows, attending physicians or nursing staff when appropriate including:
     - Lumbar puncture
     - Bladder catheterization

        - Intravenous access
        - Bone marrow aspiration and biopsy.
    - The student is expected to **construct independent interpretations of chest radiographs** on children and adolescents with review by supervising physician or radiologist.
    - The student is expected to **attain the skill of independently performing daily patient care responsibilities** in the hospital setting including patient evaluation, case presentation and documentation, calling consults, discharge coordination and dictations.

4. Understand the role of the inpatient Heme/Onc attending physician in preventing some of the acquired hematological disorders, and in counseling and screening individuals at risk for hematological and oncologic diseases.
- Provide routine preventive counseling about hematology to all patients and families.
- Provide preventive counseling to parents and patients with specific hematology/oncology conditions.
- Provide regular hematology/oncology screening for patients.

5. Distinguish normal from pathologic states of the hematological and lymphatic systems.
- Describe the developmental changes in the hematological indices of the normal infant and child at various ages and point out the difference from the values in adults.
- 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
- Explain indications for central venous access and arterial access.
- Explain the findings on peripheral blood film examination in various disease processes, involving any of the three cell elements in the blood (the RBC, WBC and platelets).
- Explain the interpretation of a bone marrow aspirate in health and common disease of childhood and the difference from adult's normal bone marrow.

6. 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 presenting signs and symptoms are caused by a hematology/oncology disease process and determine if the patient needs treatment or referral
    - Presenting signs may include: Fatigue/malaise, Fever, Bruising/bleeding, Headache, Limb pain/limp, weight loss, Seizure, Lymphadenopathy, Hepatomegaly and/or splenomegaly, Abdominal pain, Vomiting, Dizziness and gait disturbances, Nevi manifestation and others.

7. Diagnose and manage patients with hematological disorders that generally do not need referral.
- Diagnose, explain, and manage appropriate hematologic or oncologic conditions:
    - Iron deficiency
    - Sickle cell/Hgbs, Hb, C, E, D , E or other rare abnormal hemoglobins.
    - Imbalance of globin chains such as alpha and beta thalassemia, traits, intermedia or major.
    - Transient erythrocytopenia of childhood (TIC)
    - Minor, common reactions to blood transfusions
    - Benign bone cyst
    - Un-complicated Idiopathic thrombocytopenic purpura (ITP)

8. Diagnose and initiate management of patients with hematological or oncological disorders that generally need referrals.
- Identify, explain, initially manage, and seek consultation or refer appropriate hematology/oncology conditions, such as:
    - Anemia (exclusive of common iron deficiency or transient erythropenia)
    - Abnormal bruising or bleeding (inherited and acquired)
    - Major complications of inherited bleeding disorders
    - Hemoglobinopathies (sickle cell and other sickling disorders), including severe pain crisis, fever, stroke, sequestration and aplastic crises
    - Urgent conditions in children under treatment for cancer, including fever and neutropenia, chicken pox exposure or illness, bleeding
    - Neutropenia
    - TTP, HUS and others.
    - Abdominal masses
    - Mediastinal masses
    - Lytic bone lesions
    - Suspected or confirmed CNS tumor

- Conditions that might predispose to malignancy (e.g., neurofibromatosis, Bloom syndrome (retinoblastoma), Down's syndrome, McCune Albright, and familial cancer)
- Coagulation disorders and suspected venous thrombotic events (VTE)

- In cases of serious or life-threatening disease, counsel the patient's families with sensitivity to their desire and need to know
- Identify the role and general scope of practice of hematology/oncology; recognize situations where children benefit from the skills of specialists trained in the care of children.

9. Summarize the common stages, presenting signs and symptoms, diagnostic procedures, principles of current therapy, prognosis, and long-term complications (due to disease or treatment) for common malignancies and conditions
- Compare and contrast the common acute side effects of frequently used chemotherapeutic drugs.
- Be familiar with adjunctive medications that increase patients' tolerance of chemotherapy such as granulocytes colony, stimulating factor (G-CSF)
- Discuss the common late complications of childhood cancer treatment that may present in childhood or adolescence, and be familiar with the availability of late-effect clinic for follow-up of such patients.

10. Discuss the appropriate methods of diagnosis and management of a patient with iron deficiency disorder.
- Describe the normal requirements, absorption, and metabolism of iron from birth through adolescence.
- Identify the common causes and features of iron deficiency (including anemia) in all age groups and compare and contrast with anemia caused by chronic inflammation.
- Describe the diagnosis and treatment of iron deficiency, and discuss the follow-up necessary to assure success in treatment.
- Develop a treatment and education plan for managing iron deficiency. This should include: dietary management, replacement therapy, parent education, and follow-up.

11. Understand indications for and complications related to the use of blood products.
- Explain the appropriate indications for and potential risks of various blood products
- Describe alternatives to blood transfusions
- Describe the indications for leukofiltration, irradiation of blood products, and use of CMV negative blood products in immunocompromised patients.
- Summarize the signs and symptoms of a transfusion reaction. Develop an effective treatment plan to manage a transfusion reaction.
- Be familiar with the comprehensive type and cross-match for patients who are expected to receive blood transfusions for a long period of time.

12. Understand the general pediatrician's role in the diagnosis and management of patients with sickle cell disease.
- Explain the findings in the clinical history, the physical examination, and laboratory tests that suggest a diagnosis of sickle cell disease (SCD) or one of its complications. Lab tests interpretation starting with cord blood screen could indicate the type of SCD in addition to making the diagnosis. Other tests such as elevated Hb F after the age of 2 years or the presence of alpha thalassemia trait could also predict a good prognosis and milder clinical course, contrary to a constant elevation of WBC counts.
- Compare and contrast the different sickle cell syndromes.
- Discuss the common complications seen in a child with sickle cell disease.
- Outline the management of a patient who presents with a sickle crisis.
- Develop a preventive care plan for a patient with a sickle disease.
- Identify the indicators for a hematology referral in a child with sickle cell disease.

13. Technical diagnostic and therapeutic procedures.
- Describe common tests or procedures, including how they work and when they should be used; competently perform those commonly used by the pediatrician in practice.
  - Bone marrow: aspiration/biopsy
  - Central line: use/care
  - Lumbar puncture
  - Medication delivery: IV
  - Blood smear
    - to distinguish abnormalities of red blood cell, white blood cell morphology and platelet number and morphology.
    - to identify hypochromasia, polychromasia, spherocytes, schistocytes, fragmented RBCs, polychromatophilic cells, nucleated RBCs, sickle cells, atypical lymphocytes and blast cells
  - Coombs test, direct and indirect.

- Osmotic fragility, interpretation and indications. EMA / Eosin-5 maleimide binding tests, a flow detecting band 3 mutations with very high specificity for the identifying of patients with hereditary spherocytosis (HS).
- Iron studies including; TIBC, serum Fe, and saturation, serum ferritin, and soluble transferring receptors (sTfR)
- free erythrocyte protoporphyrin/FEP
- fibrin degradation products
- hemoglobin evaluation, including Hgb. A and F levels.
- Coagulation studies: PT, PTT, PFA-100, fibrinogen and mixing studies
- VonWillebrand panel and multimers for patients with suggestive symptoms
- individual factors assays
- Radiologic interpretations: abdominal ultrasound, abdominal X-ray, chest X-ray, CT of head, extremity X-ray, MRI of head, renal ultrasound, renogram and PET scans.

Course Format & Schedule

Timeline

	Monday	Tuesday	Wednesday	Thursday	Friday
7:30 AM		Sarcoma Rounds* Bed Control Conference Room			Tumor Board (1st week) 3rd Floor Auditorium Heme Path (2nd week) PCH Pathology Conference Room Journal Club (4th week) Location TBD
8:00 AM	Multidisciplinary Huddle Daily in Heme-Onc Workroom			Grand Rounds PCMC Auditorium	Neuro-onc tumor board (3rd week) 3rd Floor Auditorium
8:30 AM	Rounds ICS	Rounds ICS	Rounds ICS	Rounds ICS	Rounds ICS
12:00 PM		Heme/Onc Noon Conference Weekly			
4:00 PM	Blastoma Conference* Mt. Olympus Conference Room		Leukemia/Lymphoma Conference* Classroom C and D		

*Sarcoma rounds, blastoma conference and leukemia/lymphoma conference are all working division meetings where we review out patients. These meetings aren't mandatory but you're welcome to come to learn more about our patients

Educational and Instructional Modalities

See course schedule above

Role of the Student in this Course

Objectives and Aims: Student Performance

Student Activities

- Student will see new hematology consults while on rotation and will examine their blood smear when appropriate.
- Students will be involved in new oncology consults when appropriate or educationally beneficial
- Student will see inpatients that arise from new or educationally interesting admissions or consults.
- Student will function as an intern and follow own patients daily through hospital stay

Student Responsibilities
- Student is responsible for reading on assigned topics

Attending Responsibilities
- Attendings and fellows are expected to provide reading assignments and structured teaching to students that meet specific objectives
- Examine the blood films of the patients being seen in consultation with the student

Objectives and Aims: Learning of Core

Competencies Patient Care
- Use logical and appropriate approach to care
- Describe general indications for subspecialty procedures and interpret results for families

Medical Knowledge
- Acquire, interpret, and apply the knowledge appropriate for the generalist regarding the core content of this subspecialty area.
- Critically evaluate medical information and scientific evidence related to this subspecialty area

Interpersonal Skills and Communication
- Provide effective patients education
- 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
- Maintain accurate medical records

Practice-based Learning and Improvement
- Identify standardized guidelines for diagnosis and treatment of conditions common to this subspecialty area and adapt them to individual patients.
- Identify personal learning needs related to this subspecialty

Professionalism
- Demonstrate personal accountability to the well-being of patients
- Demonstrate a commitment to carrying out professional responsibilities.
- Adhere to ethical and legal principles and be sensitive to the diversity

Systems-based Practice
- Identify key aspects of health care systems as they apply to specialty care.
- Demonstrate sensitivity to the costs of clinical care in this subspecialty setting.
- Recognize and advocate for families who need assistance to deal with system complexities.
- Recognize one's limits and those of the system; take steps to avoid medical errors.

Required Textbook(s)/Readings

Book Title + ISBN	Author/Publisher/Edition	Appx Cost
Hematology of Infancy and Childhood 2009	Nathan and Oski	
Blood Diseases of Infancy and Childhood	Miller	
Malignant Disease of Infancy and Childhood and Adolescence	Altman and Schwartz	
Clinical Pediatric Oncology	Fernbach and Vietti	
Hematologic Problems in the Newborn	Oski and Naiman	
Pediatric Medicine, sections on Hematology and Oncology	Avery and First	
Principles and Practice of Pediatric Oncology 2006	Pizzo and Poplack	
Manual of Pediatric Hematology and Oncology	Philip Lanzkowsky	
Hematologic Problem of the Neonate	Christensen	
Consultative Hemostasis and Thrombosis	Kitchens, Kessler, Konkle	

Additional Resources
Pediatric Hematology-Oncology Syllabus of selected articles: Available in ICS inpatient work/conference room, heme-onc office conference room and outpatient clinic. Double headed microscopes which are available in the clinic area.
www.curesearch.org

Assessment & Grading

Preceptor Evaluations

All Phase 4 Courses employ a common preceptor evaluation form that instructs evaluators to select performance-based behaviors along multiple dimensions that best represent the student's highest sustained performance during the preceptor's period of observation. The preceptor evaluations are must pass elements of the course. The passing student must achieve an overall score of 2.0 for the preceptor evaluations. A student who does not achieve a passing score for the preceptor evaluation component will receive a grade of FAIL for the course.

Mid-Course Formative Feedback

All Phase 4 Courses employ a common mid-course formative feedback form that includes both a student self-assessment and faculty/resident assessment of student section. This self-assessment and feedback is intended to be formative in nature and will not be used in the calculation of preceptor evaluation data for final grade determination. Students will be instructed on the process of self-assessment and formative feedback and will be responsible for timely completion and submission of the data to the Course Director according to individual course specified process for selection of preceptors and occurrence frequency. Students with formative feedback suggesting need for remediation should contact the Course Director to develop a learning plan.

Assessments –

Assessment/Assignment	Due Date	Weight towards Final Grade
Preceptor Evaluations		95%
Observed Clinical Encounter		5%

Grading System

Core Sub-I students are held to the grading expectations detailed in the PED 7030 syllabus. Students taking this as an elective will receive a final letter grade of PASS (P), or FAIL (F) based on the following criteria:

PASS: A final numerical score of greater than or equal to **2.0** and passing each *Must Pass* element of the couse.

FAIL: A final score of less than **2.0** and/or failure of one or more *Must Pass* elements of the course.

Student Feedback

Student feedback is an important aspect of curriculum quality improvement. Thus, students are expected to complete all assigned feedback surveys specific to a course by the due date. For clinical courses in Phases 3-4 the surveys are an end-of-course survey and individual surveys of clinical faculty. Surveys are administered online and student responses are anonymous

Please refer to the resource section of the course canvas page for all Academic Year 2019-2020 student feedback survey due dates.

Standard Practices

Please refer to the Clinical Curriculum Procedures and Practices for the following:

Phase 4 Developmental Benchmarks for Priority EPAs
Phase 4 Formative Feedback Form
Phase 4 Global Rating Form (Preceptor Evaluation)
Phase 4 Attendance Expectations
Medical Student Clinical and Educational Work (formerly Duty Hours)
Medical Student Clinical Documentation
Medical Student Call Rooms
Medical Student Mobile Communication
Students as Interpreters

Standard Policies

Please refer to the Student Handbook (on the Student Affair's website) for these policies:

Accommodations
Addressing Sexual Misconduct
Dress Code
Examination and Grading Policies
Grade or Score Appeal
Professionalism, Roles & Responsibilities
Mistreatment
Infectious, Environmental and Bloodborne Pathogen Exposures Policy

Alternate Name and/or Personal Pronoun

Class rosters are provided to the instructor with the student's legal name as well as 'Preferred' first name (if previously entered by you in the Student Profile section of your CIS account). While CIS refers to this as merely a preference, we will honor you by referring to you with the name and pronoun that feels best for you in class, on papers, exams, group projects, etc. Please advise us of any name or pronoun changes (and please update CIS) so we can help create a learning environment in which you, your name, and your pronoun will be respected.

Center for Disability & Access Services

The School of Medicine seeks to provide equal access to its programs, services and activities for all medical students. The Center for Disability and Access (CDA) provides accommodations and support for the educational development of medical students with disabilities. Medical students with a documented disability and students seeking to establish the existence of a disability and to request accommodation are required to meet with the CDA Director for recommended accommodations. The CDA will work closely with eligible students and the Academic Success Program to make arrangements for approved accommodations. The School of Medicine and CDA maintain a collegial, cooperative, and collaborative relationship to ensure compliance with federal and state regulations for students with disabilities.

Steven Baumann EdD, School of Medicine Senior Director of Academic Success Program, serves as the liaison between the School Of Medicine and the CDA.

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