

Inpatient Hematology/Oncology Services Curriculum

- The Medical Oncology and Hematology section at Upstate Medical University is a busy service providing specialized care to patients with cancer and blood disorders in the 13 Upstate New York counties in and around Syracuse, NY. The division has three separate inpatient services at the University Hospital and a consultation service at the Syracuse VA medical center.

University Hospital:

SUH Team 9 is an inpatient service that is managed by an attending physician, a hematology/oncology fellow, a senior resident, two interns, medical students and a nurse practitioner. This service is "capped" at 16 patients (max. of 8 patients assigned to each intern). Patients admitted to this service mostly have an active solid tumor diagnosis but may at times include benign and malignant hematologic diagnoses not warranting admission to Hematology service. Range of acuity include oncologic emergencies, treatment related complications, chemotherapy protocols requiring inpatient admission, end of life care etc.

The Consult service is comprised of an attending physician, a hematology/oncology fellow and can include internal medicine residents as well as medical students. This service provides consultative care for patients admitted to both general medicine hospitalist teams and non-medicine services.

The Hematology service (SUH Team 8) is an inpatient service that is managed by an attending physician, a hematology/oncology fellow, a senior resident (usually), two interns, medical students and a nurse practitioner. This service is "capped" at 16 patients (max. of 8 patients assigned to each intern). Patients admitted to this service include active hematologic malignancy diagnoses, bone marrow transplant and non-malignant hematologic conditions including sickle cell crisis, ITP, TTP/HUS etc.

VA Medical Center:

Patients admitted to the hospital with primary hematology/oncology diseases are distributed to the inpatient medical teams and managed in conjunction with the inpatient hematology/oncology consultation service. This service is comprised of an attending physician and a hematology/oncology fellow but can include internal medicine residents on elective assignments.

- The hematology/oncology division is staffed by 14 full-time clinical faculty at Upstate Medical University and three full-time staff at the Syracuse VA Medical Center and includes the following individuals:

University Hospital Faculty:

Stephen Graziano, MD – Chief, Division of Hematology/Oncology
Diana Gilligan, MD – Program Director, Fellowship Program
Sam Benjamin, M.D. – Associate Program Director, Fellowship Program
Ajeet Gajra, MD – Cancer Center Medical Director, Division of Hematology/Oncology
Dorothy Pan, M.D. – Director of Bone Marrow Transplant
Mijung Lee, MD
Teresa Gentile, MD
Bernard Poiesz, MD
Muhammad Naqvi, MD
Abirami Sivapiragasam, MD

Rahul Seth, D.O.
Amishi Desai, MD
Jonathan Wright, MD (hem/onc hospitalist)
Sheila Lemke, MD (hem/onc hospitalist)

VA Medical Center Faculty:

Frank Paolozzi, MD
Namita Chittoria, MD
Adham Jurdi, MD

Upstate Inpatient Hematology/Oncology Services

The following curriculum pertains to the University Hospital inpatient Hematology/Oncology services.

I. Educational Purpose

A general internist must learn hematology and should be competent in 1) the detection of abnormal physical, laboratory, and radiologic findings relating to the lymphohematopoietic system; 2) recognizing the indications for bone marrow aspirate and biopsy and lymph node biopsy; 3) the initial diagnostic evaluation and management of the hemostatic and clotting systems; 4) indications for transfusion of blood and its separate components; 5) the management of therapeutic and prophylactic anticoagulation; 6) the diagnosis and management of common anemia's; and 7) be familiar with the administration, side effects and drug interactions of therapeutic agents commonly used for the treatment of hematologic disorders.

A general internist should also have a wide range of competencies in the evaluation and management of neoplastic disease. Residents must be able to 1) identify patients at risk for malignancy and counsel them regarding risk reduction and screening; 2) recognize and expedite rapid intervention in hematologic and oncologic emergencies 3) manage neutropenia and immunosuppression; 4) diagnose malignancies promptly, identify neoplasm's with a potential for cure and expedite referral of affected patients to the appropriate centers or providers; and 5) understand the pharmacology, typical complications and uses of common chemotherapies; and 6) understand and participate in the palliative care of patients with common solid and hematologic tumors;

The diagnosis and management of malignancies and hematological conditions is often a complex process. The broad educational goals of this rotation are to refine the understanding of the basic mechanisms of carcinogenesis, epidemiology, and natural history of malignancies, and to become familiar with the key aspects of the treatment of malignancies. Similarly, the service will contribute to the resident's understanding of the pathogenesis, diagnosis, and treatment of a broad range of hematological conditions. The purpose of the activity is to expose the medical resident to a full range of common hematological and malignant conditions that are treated in the inpatient setting. The rotation offers ideal settings for the residents to improve their history and physical examination skills since the patients are typically sick, with complex medical histories and significant pathologic physical examination findings. Because medical oncology changes so rapidly, an emphasis is placed on practice based learning during this rotation. Many patients participate in clinical trials, and residents will be exposed to both the ethical and pragmatic dimensions that medical research adds to patient care. The residents will have the opportunity to observe the hematologist/oncologist's approach to patient care that is both therapeutic

and humanistic. The need for compassion, respect for the patient and family, a "listening spirit", and end of life care are exceptionally modeled in this rotation.

II. Learning Venue

A. Rotation Description – The inpatient Hematology/Oncology rotations are busy resident rotations that focus on the care of complex patients with malignancies, hematologic disorders, and complications of treating these diseases. Residents will care for patients age 18 or older of both genders and of varying ethnicities and cultures. The teams (SUH Teams 8 and 9) which are capped at 16 patients has a teaching attending, a heme/onc fellow, senior resident, two interns, medical students and a nurse practitioner. During these rotations, the trainees participate fully in the assessment of patients by performing detailed medical histories and physical examinations. In addition to standard labs evaluations, residents will participate in diagnostic assessments such as tumor measurements, bone marrow aspiration and biopsy and LP. The resident will also participate in the educational, patient management, multidisciplinary conferences.

Expectations of PGY-1 – PGY-1's play an important role in the day to day management of each patient on their team and assigned to a max. of 8 patients/day. As part of the daily tasks of patient care interns are expected to 1) input all orders, 2) document notes daily on their patients, 3) be the first one called for patient care issues while on duty, 4) prepare a daily sign-out at the end of the day, 5) participate in patient care decisions (diagnostics and management), 6) safe and efficient discharge planning 7) pre-round on patients when it doesn't violate 80hrs/week. Early in the year PGY-1's are encouraged to become efficient in their work and actively participate in patient care decision-making. It is expected that interns will also do 3-4 admissions/week at a minimum under the supervision of their senior resident and to increase that volume of admissions as the year progresses. Interns should continuously improve their presenting skills and should practice this daily by taking responsibility for being completely knowledgeable about their patients.

Educational Goals for R1's

1. To perfect data acquisition skills including history taking with the patient and the family and review of the past medical records and demonstrating the understanding of the importance of primary information, physical examination, pertinent cost effective laboratory and ancillary studies.
2. To develop the knowledge base required to systematically approach the management of patients hospitalized for acute and chronic medical conditions. R1's should demonstrate competence in the immediate care of the unstable patient, diagnosis and problem definition, selection and prioritizing of appropriate diagnostic studies, discharge planning including education of the patient's family and/or preparation for rehabilitative care or other long-term care placement.
3. To assume the role of critical central caregiver under careful supervision of supervising residents and faculty, and as such, R1s will be expected to maintain excellent communication with patient's families members and other members of the healthcare team including students in order to optimize the care that is provided.
4. To be able to explain and employ the use of common interventions in hospitalized patients including but not limited to the use of intravenous fluids, antibiotics, and other pharmacologic and therapeutic agents in patient care.

Expectations of R2's and R3's – senior residents have the opportunity to help train and act as mentors for their junior peers. It's expected that they will 1) supervise and direct all patient care including admissions, daily patient care decisions and d/c planning, 2) involve all members of the health care team including medical students, 3) develop a practice style that is inquisitive and evidence based 4) actively participate in self directed learning and teaching medical students and R1's and 5) appropriately consult

and work with the attending of record. The above described intern expectations are meant to act as a general framework for learning expectations and work. Senior residents should be cognizant of burnout in their peers and should always share in the work of patient care. Also senior residents must allow R1's to have progressively increasing responsibility as the year progresses.

R2-R3 Educational goals

1. To provide leadership in creating a working environment that emphasizes quality patient care of inpatient issues, and understanding the continuity of care for chronic diseases managed in the outpatient setting with a patient's PCP.
2. To recognize the importance of nutrition in serious illnesses, human values and ethics, death and dying, and the differences of geriatric medicine in the hospital.
3. To refine the knowledge of diseases requiring hospital management and to share this knowledge base with interns and medical students.
4. To comprehend and apply medical economics, i.e., charges, fees, and cost containment in patient care.
5. To explain and demonstrate the prevention of nosocomial infections and other iatrogenic complications in the acute care setting.
6. To collaborate care with nurse practitioners, physician extenders, and case managers; to use consultants appropriately during hospitalization; and to coordinate care with consultants.
7. To directly supervise and educate interns and medical students in the delivery of high quality medical care

B. Teaching Methods

1. Daily Attending Rounds: Residents are assigned to the inpatient hematology/oncology team at SUH for four weeks. Teaching on this service includes: Daily morning ward rounds with the attending physician when patients are examined, active issues identified and a plan chalked out for the day.

Late afternoon "sit-down" rounds with the attending physician provide an opportunity to formally present new admissions, chart progress of patients, address new issues, prepare for sign-out and lay out a plan for the following day. The patients admitted during the day are interviewed and examined. These rounds also provide an opportunity for didactic teaching by the attending physician or the hematology/oncology fellow as well as for residents and medical students to make researched presentations, usually on management issues in hematology/oncology.

2. Attending rounds for the VA consult service are held daily. Residents follow 2-8 patients and round on them, present updates to the attending and write daily notes. The primary teaching method is bedside teaching on all patients. Didactic Heme/Onc morning conferences happen every other week at the VA.

3. Recommended Reading:

The residents are referred to the primary texts in these areas:

- Harrison's Textbook of Medicine, 19th Edition, sections on cancer and blood disorders
- DeVita, Hellman, and Rosenberg's: Cancer Principles and Practices of Oncology. Ninth Edition. Philadelphia, Lippincott, Williams & Wilkins 2011.
- Abeloff: Clinical Oncology. Fourth Edition. Churchill Livingstone, 2008
- Williams Hematology, Ninth Edition. McGraw-Hill, Inc. 2016.
- Hoffman: Hematology: Basic Principles and Practice. Churchill Livingstone, 2013

-Additionally residents are expected to review the MKSAP for Hematology and Oncology

-Access electronic databases for the latest therapeutic recommendations:

<http://www.cancer.gov>

-<http://www.uptodate.com>

The residents are directed to specific articles of recent interest as the need arises. They also have access to the many hematologic and oncologic clinical research protocols currently under investigation in the division. Residents are introduced to the Hematology/Oncology division's research trial website where they can review available protocols at www.upstate.edu/medicine/cancertrial

4. Unique Learning Opportunities:

- Tumor Board: An hour-long monthly institutional conference that addresses a specific disease questions and involves medical oncologists, radiation oncologists, pathologists, radiologist and the pertinent surgical specialists. They include GU, Head and Neck, Melanoma, GI, Breast and Thoracic Oncology Program (TOP).
- Hematology/Oncology Lecture Series: Didactic conference held twice a week at 4 pm each Tuesday and Wednesday, attended by hematology/oncology attendings, hematology/oncology fellows, radiation oncology attendings, radiation oncology residents, internal medicine residents and medical students.
- Hematopathology Conference: An hour long conference, held at 4 pm every Monday, provides an interface between medical oncologists and hematopathologists. Bone marrow aspirates, biopsies and flow cytometry findings in various hematologic malignancies are discussed. Patients with complex coagulopathies and benign hematologic diseases are discussed as well.
- Oncology-Pathology Conference: A monthly conference held every last Wednesday of each month at 4 pm. Attended by medical oncologists and pathologists. Tissues obtained as a result of biopsies, surgical resection specimen, fine needle aspirates etc. are discussed. When pertinent results of immunostaining, FISH testing, molecular profiling and gene testing are also shown and briefly discussed.
- Bimonthly Research Meeting: This meeting is held every two months in which clinical trials (including intergroup trials), and research protocols are discussed.
- Clinical research and national randomized trials: As described above.

C. Mix of Diseases and Patient Characteristics

1. Common Clinical presentations and diseases

Hematology presenting complaints

Abnormalities of peripheral blood counts or morphology
Bleeding, bruising, or petechiae
Family history of anemia or bleeding disorder
Lymphadenopathy
Pallor or fatigue
Recurrent infections or fever/neutropenia
Splenomegaly
Venous or arterial thrombosis

Oncology presenting complaints

Anemia
Ascites
Bleeding
Bowel obstruction
Cough, hoarseness, hemoptysis
Neutropenic fever
Spinal cord compression

- Soft tissue mass
- Organomegally
- Pericardial tamponade
- Pleural effusion
- Sensory polyneuropathy
- Superior vena cava syndrome
- Weight loss
- 2. Procedures
 - Therapeutic phlebotomy
 - Bone marrow aspiration and core biopsy (optional)
 - Interpretation of peripheral smear
 - Interpretation of bone marrow aspiration (optional)
 - Fine needle aspiration of thyroid and breast (optional)
 - Intrathecal chemotherapy (optional)

III. Educational Content

Advance planning and management of end-of-life issues
Breast cancer (pre- and postmenopausal)
<i>Dermatologic</i>
Actinic keratosis (see also Dermatology)
Basal cell carcinoma (see also Dermatology)
Melanoma (see also Dermatology)
Squamous cell carcinoma (see also Dermatology)
<i>Gastrointestinal</i>
Cancer of the anus
Cancer of the colon, rectum
Cancer of the esophagus
Cancer of the gallbladder, bile ducts
Cancer of the pancreas
Cancer of the stomach
Hepatoma
Metastatic disease to various sites
<i>Genitourinary</i>
Cervical dysplasia and cancer
Endometrial cancer
Kidney cancer
Ovarian cancer
Prostate cancer
Testicular cancer
Ureter, bladder cancer
<i>Head and neck</i>
Cancer of the head, neck
Cancer of the parathyroid
Cancer of the thyroid
<i>Hematologic malignancies and lymphoma</i>
Chronic lymphocytic leukemia

Hodgkin's and non-Hodgkin's lymphomas
Leukemia, acute
Multiple myeloma
Myelodysplastic syndrome
Management of pain, emesis, and nutrition
<i>Neurologic</i>
CNS lymphoma
Metastatic disease to the CNS
Primary brain tumors
Nutrition in malignancy
<i>Oncologic emergencies</i>
Depressed CNS function due to brain malignancy
Hypercalcemia
Pericardial tamponade
Renal failure due to uteral obstruction
Spinal cord compression
Tumor lysis syndrome
<i>Pulmonary</i>
Bronchial carcinoid
Cancer of the lung
Mediastinal tumors
Pleural malignancy
Superior vena cava syndrome
Hemochromatosis
Hemostasis and thrombosis
Abnormal coagulation (abnormal prothrombin and partial thromboplastin times)
Anticardiolipin antibody syndrome
Anticoagulation, fibrinolysis (therapeutic)
Disseminated intravascular coagulation
Hypercoagulable state
Hyperviscosity syndrome
Platelet disorders
Platelet dysfunction
Thrombocytopenia
Thrombocytosis
Leukocyte disorders
Leukemoid reaction
Immunosuppression
Neutropenia
Myeloproliferative disorders
Chronic myelogenous leukemia
Polycythemia vera
Primary Thrombocytosis
Neoplasia (see also Oncology)

Hodgkin's and non-Hodgkin's lymphomas
Leukemia, acute
Myelodysplastic syndrome
Myeloid metaplasia
Polycythemia, secondary
Red Cell Disorders
Anemia
Hemoglobinopathy (e.g. sickle cell)
Transfusion therapy

IV. Method of Evaluation – Evaluations are based on the six core competencies. All team members are expected to complete formal evaluations at the end of each rotation using our web based E-value evaluation software. Residents are evaluated by students, peers and attendings. Residents should also seek mid-rotation verbal feedback.

V. Rotation Specific Competency Objectives

Patient care - A unique opportunity to provide specialized care to often seriously ill patients. Subtle clues in history and physical examination can point to very serious underlying condition e.g. metastatic cancer. This rotation offers the opportunity to make diagnostic and therapeutic decisions based on available evidence and patient preferences.

Medical Knowledge - A valuable opportunity to review classic literature in management of common hematologic and malignant conditions.

Professionalism - Underscores the values of humanism in medicine and need for respect and compassion towards patients and families.

Interpersonal and communication skills - A great opportunity to establish effective therapeutic relationships with patients and families in an environment where concern and involvement are typically high. An opportunity to build on listening and non-verbal skills. Opportunity to gain experience with the "bad news discussion" thru role modeling by faculty

Practice-based learning – Heme/onc is one of the fastest changing specialties and challenges residents to be proficient in literature searches and evidence based medicine. In addition residents will participate in the care of patients on research trials. The resident has the opportunity to familiarize themselves with the use of web-based resources to obtain the latest information regarding the treatment and available clinical trials since the field is constantly evolving.

System based practice – Residents are expected to work for safe d/c planning and appropriate f/u in this patient population that often has multiple different medical/surgical disciplines involved in their care. There is also increased collaboration with nursing staff especially in the areas of chronic pain management, coordination of care and close observation of treatment side effects.

Reviewed and Revised by: Dr. Sam Benjamin
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