**Course Objective**

**Material Covered:** Principles of Medical Oncology including (but not limited) clinical diagnosis, staging, prognosis, treatment planning and delivery, counseling and monitoring for solid tumors as well as hematologic malignancies.

The Oncology Service at Memorial Hermann Hospital TMC will expose medical students to the management of patients with neoplastic diseases. The rotation is designed to provide students with the education necessary to work effectively with cancer patients at both the level of an internist, and subspecialist oncologist.

The student will interact with patients requiring chemotherapy administration, and interact with patient who are having complications from disease progression or side effects from therapy, through attending outpatient clinics. The student will be supervised while they learn to coordinate patient care across the health care continuum, and will be allowed to take the lead for history taking for new patient encounters if desired. Scholarship is important, and the student is expected to learn that an oncologist is a humanistic scientist who cares for patients.

The student will have firsthand experience implementing previous practice-based learning modules performed in medical school core lectures to solidify key medical knowledge as it relates to oncologic patients. Addition benefits will include learning how to implement cancer screening for prevention, understanding cancer survivorship, recognizing oncologic emergencies, and understanding prognosis for corresponding treatments. The resident will interact with different medical teams in a collegial manner and show compassion, integrity, and respect for others.

**Specific learning objectives** for patient care, medical knowledge, practice based learning, interpersonal communication skills, professionalism, and system based practice are as follows:

**Patient Care:**

The goal of the Oncology Service is to train students management of neoplastic diseases with and without complications, initial work-up of patients suspected of having an underlying malignancy, and identifying oncologic emergencies. Students are expected to become competent in the implementation of cancer screening for prevention, understanding cancer survivorship, recognizing oncologic emergencies, recognizing complications of cancer, and understanding corresponding treatment.

a) Identify patients with hematologic malignancies and solid tumors, perform a focused physical exam, do an accurate presentation, develop an initial assessment, and create a plan of care

b) Interpret data and discuss the impact of these findings on patients with hematologic malignancies and solid tumors

c) Employ appropriate treatment modalities to achieve cure and/or palliation of hematologic malignancies and solid tumors

d) Recognize and differentiate specific co-morbidities that commonly occur in the setting of specific hematologic malignancies and solid tumors

e) Identify, discuss, and interpret specific iatrogenic-induced toxicities and side effects of treatments for hematologic malignancies and solid tumors

**Medical Knowledge**

Understand the scope of establishment and evolving biomedical, clinical, epidemiologic, and social behavior knowledge needed; demonstrate the ability to acquire, critically interpret, and apply this knowledge in patient care:

a) Describe and employ the current pathophysiology, clinical, molecular, prognostic classification, and staging of specific hematologic malignancies and solid tumors

b) Order appropriate tests for the diagnosis and staging of suspected hematologic malignancies and common solid tumors

c) Recognize the signs and symptoms of frequent complications associated with hematologic malignancies and solid tumors encountered in the hospital setting

d) Describe the pathophysiology of these complications (e.g., tumor lysis syndrome, hypercalcemia, superior vena cava syndrome) and apply the appropriate preventative measures and/or acute care management

e) Recognize the signs and symptoms associated with specific infectious complications of hematologic malignancies and common solid tumors (e.g., herpes simplex, *C. difficile*, CMV, catheter-associated infections, and others) and employ the appropriate diagnostic methods and treatments utilized
f) Identify the indications, contraindications, and limitations of commonly used diagnostic and treatment-related procedures for patients with hematologic malignancies and common solid tumors, including:
   - PET scanning
   - CT scanning with or without contrast
   - MRI with or without gadolinium
   - Bone scan
   - Skeletal survey
   - Bronchoscopy
   - Colonoscopy
   - Bone marrow aspiration and biopsy
   - Lumbar puncture
   - Ommaya reservoir placement
   - Others

g) Recognize specific complications related to the treatment of hematologic malignancies and solid tumors (e.g., ATRA syndrome, tumor lysis syndrome, pancytopenia, and risk of infections) and understand the management of these

h) Identify, describe, and apply the pharmacology, pharmacokinetics, and mode of clearance, potential for and severity of immediate vs. delayed emesis, major toxicities, clinical utility, and contraindications for specific therapeutic agents commonly used for the treatment of neoplastic diseases

Practice-Based Learning and Improvement
   a) Discuss active case-based direction to resources to enhance learning
   b) Write notes on select number of clinic patients (minimum of 2) discussing the specific oncologic issues of relevance to the diagnosis and management of the patient
   c) Discuss case relevant practice changing clinical trials that is impactful both oncology and internal medicine (ie, improved prognosis, overall survival, cure for cancer)
   d) Discuss active case-based ABIM internal medicine board high yield learning points

Interpersonal and Communication Skills
   a) Demonstrate the ability to interact with other physicians (including consultants), nursing staff, social workers, patients, and their families in a professional, respectful, and effective manner in the cancer treatment inpatient setting
   b) Demonstrate competency in the communication skills necessary for the care of the dying patient and their family, including sensitivity to situational and cultural needs in DNR, pain management, goals of care, and withdrawal of care discussions

Professionalism
   a) Employ consistently responsible, sensitive, and ethical behaviors
   b) Demonstrate punctuality and personal responsibility for attendance at learning opportunities
   c) Interact respectfully with other members of the medical team, including nurses, nurse practitioners, students, and residents
   d) Wear appropriate professional attire

System-Based Practice:
   a) Demonstrate satisfactory knowledge of systems of care available for the care of the dying patient and their family, including the use of advance directives and hospice care
   b) Recognize the importance of and role for an interdisciplinary team approach to care through interactions with nurses, nurse practitioners, physician assistants, interns and residents, ancillary staff, infusion staff, social workers, faculty, and other subspecialty fellows to contribute to efficient and effective clinical care
   c) Relate to other health care professionals, subspecialty physicians, surgeons, radiation therapists, nutritionists, palliative care, and order consults in identifying clear and specific questions for the consultant, providing necessary clinical information, and communicating results to the patient

Skills Acquired: The student will gain competence in the evaluation and management of neoplastic disease.

The exposure of the students to cancer patients promotes the exercise of scientific and clinical inquiry, essential for their education and professional life. The supervised analysis of data, gathering of evidence and summation of findings will teach the process of reaching diagnosis by critical thinking and application of the scientific method.
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Activities Of Elective

Number Of New Patients/Student/Week: 2-3

Responsibilities Of Student For Assigned Patients:

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<tr>
<th>Does history/physical:</th>
<th>Yes</th>
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<tr>
<td>Who critiques:</td>
<td>Faculty in charge of course</td>
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<tr>
<td>Follows patients, with appropriate notes as needed:</td>
<td>Yes</td>
</tr>
<tr>
<td>Who supervises:</td>
<td>Faculty in charge of course</td>
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<tr>
<td>Does student see ambulatory patients:</td>
<td>Yes</td>
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Procedures

<table>
<thead>
<tr>
<th>Procedures</th>
<th>Observe</th>
<th>Perform</th>
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<tbody>
<tr>
<td>None</td>
<td>N/A</td>
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Scheduled Duties of Student:

Frequency of rounds on patients | NA |
Presents patients to preceptor or attending physician | Yes |
Weekly schedule of required teaching sessions | Yes |

Describe Optional Rounds And Activities, If Any:

The student will be offered participation/observation of breast tumor board, GI/GU tumor board, CMOC tumor board. The student will also be invited to all oncology division lectures or seminars. The student will also be invited to fellowship didactic lectures.

Other Required Activities:

| Reading/review of current literature | Yes |
| Writing or presenting a paper       | Yes, to be addressed in breast clinic |
| Attending focus tumor boards 3 times/week | Yes |

How Is Student Evaluated:

The overall evaluation of the student will be based on the demonstrated accomplishment of the objectives. As indicated above, the student’s attainment of the objectives will be assessed through daily patient presentations, performance on rounds, and daily supervised patient care activities. The faculty in charge will complete timely one45 evaluations,

Mid-rotation feedback will be scheduled as a virtual meeting with the faculty in charge. Feedback in writing is required for any student identified as having deficiencies, as soon as the deficiency is identified.

Who Evaluates Students:

Faculty in charge

The faculty in charge will collect feedback from other attendings/preceptors that the student has worked with to give the collective feedback.

Unique Features Of This Elective:

The UTHealth Houston Oncology Medical Student Rotation is that the student will be able to observe and interact with patients at the UT Physician Memorial Hermann TMC Cancer Center location, located conveniently across from the McGovern Medical School. The patient population is very unique and well representative of all ethnicities. Disparate communities and service to bridge disparities is a goal for the UT Physician Memorial Hermann TMC Cancer Center. The student will also be able to see patients being screened and enrolled for clinical trials, with opportunity to see drug trial enrollment, as well as NIH grant funded investigator initiated clinical trials. The preceptors and attendings for the UT Physician Memorial Hermann TMC Cancer Center location are heavily involved in clinical (versus translational) research, fostering patient physician relationships and communication. The staff at UT Physician Memorial Hermann TMC Cancer Center are dedicated to medical school education, and are happy to mentor students for their research interests.