UNIVERSITY OF LOUISVILLE HEMATOLOGY/ONCOLOGY ROTATION

INTERNAL MEDICINE RESIDENT CURRICULUM

For PGY 1, 2, and 3 Inpatient/Outpatient elective at U of L Hospital

Developed August, 2013 by Geetika Bhatt, MD

Welcome to the exciting rotation of Medical Oncology and Hematology. The following curriculum is designed to give PGY 1-3 residents an overview of this rotation and its goals. We hope to make your time on this rotation truly educational by creating a stimulating working and learning atmosphere.

Introduction:
Oncology (from the Ancient Greek ‘onkos’, meaning bulk, mass, or tumor, and the suffix -logy, meaning "study of") is a branch of medicine that deals with not just malignant but also benign tumors. Medical Oncology as a specialty was founded when American Society of Clinical Oncology (ASCO) was created in 1965. Cancer is the 2nd leading cause of deaths after cardiovascular diseases and is projected to become the leading cause in the near future. Tremendous improvements in cancer care have led to patients living longer and more being cured than in the past.

The field is ever evolving from initial use of single agent to identification of benefit to multi-agent chemotherapy. Recently the field has greatly benefited from the discovery of biologics and molecular targeted therapies aimed at antigens specific to cancer cells and inhibiting specific cell cycle pathways (For eg, Crizotinib for ALK+ (Anaplastic Lymphoma Kinase) advanced Non-Small Cell Lung Cancer). These biologics are evolving from 2nd line therapies to being incorporated into 1st line regimens with significant improvement in survival rates.

Despite major advances, the magic bullet for several cancer types still remains elusive and the search continues. The standard of care management changes as and when a new therapy or combination of therapies proves to be superior to the established standard. Medical oncology is a classic example of medicine being a field of lifelong learning.

Goals of Rotation:
Our goal is to ensure that trainees have a rich and varied opportunity to witness and become involved in practicing patient-centered care. This rotation is designed to expose residents to modern oncology principles covering diagnosis, treatment/screening measures, prevention, promising research avenues and controversies of cancer.

Major goals include –
- To gain an understanding of the multiple manifestations of tumors and the implications of a given diagnosis for treatment.
- To gain an understanding of the early detection and screening of the major cancers.
- To understand the approaches in managing solid versus hematologic malignancies.
- To gain an understanding of issues that influence access and quality of care.
- To gain an understanding of the needs and care of the individual patient.
- To gain an understanding of the role clinical trials play in cancer therapy, both in the primary and in the refractory settings.
- To become familiar with current controversies in cancer care.
There are 2 components to your rotation –

a) **Inpatient:**
   - Provide exposure to initial workup, initiation of therapy, management of complications of chemotherapy and also the disease itself.
   - To understand the management of medical and oncologic emergencies that can arise from cancer treatment or from its progression.

b) **Outpatient:**
   - Provide exposure to outpatient evaluation and symptom care.
   - Provide exposure to multi-modal management of different cancers treated with varying combinations of surgery, radiation therapy, and systemic therapy with chemotherapy and immunotherapy (biologics & targeted agents).
   - To understand the role of various diagnostic tests used in initial evaluation and staging.
   - To assess the response to treatments and to detect changes requiring inpatient admission or therapy modification.
   - Post-therapy follow up and surveillance of various cancers.

**Multi-disciplinary Care Model:**
Oncology serves as an integration of several medical specialties and sub-specialties working in tandem to achieve best possible outcomes. Broadly the core specialties involved in treatment administration are Medical Oncology/Hematology, Surgical Oncology and Radiation Oncology. Other integrated specialties include Pathology, Diagnostic Radiology, Nuclear Medicine, Palliative Medicine and Hospice Care, and several others depending on the type of primary cancer.

At the James Graham Brown Cancer Center (BCC), several multi-disciplinary cancer care clinics have been established to provide comprehensive one-stop care of tumors including those of Head and Neck, Lung, Gastroenterology, Gynecology, Genitourinary, Melanoma, Brain, Leukemia and Lymphoma. Pediatric tumors are treated at Kosair Children’s Hospital.

Each multi-disciplinary team has a patient care coordinator who is typically an Oncology Certified Nurse (OCN). The care coordinator quarterbacks the team and serves as the channel for patient communication and scheduling. Clinics are held on assigned days of the week with all involved specialties participating and consulting together to provide the best treatment recommendation. The patient usually walks out of the clinic with clear delineated management recommendations and treatment schedule.

**Special Considerations for Oncology Patients:**
- Recognizing the rationale behind treatment in both curative and palliative situations.
- Understand patient and family expectations, taking utmost care to provide patient-specific care.
- Cancer care in different age-groups like young and adolescents (fertility preservation) or in the elderly (medical co-morbidities).
- Understand short and long-term complications of cancer (eg, cancer pain, cachexia, etc) and also of its therapy, including the common side effects of chemotherapy agents (eg, chemotherapy induced nausea and vomiting, sterility, etc).

**Patient Evaluation:**
A thorough and complete **history and physical exam** is always the first and most informative step. **Definitive diagnosis** of cancer is by **cytology or biopsy**, usually of lymph nodes or the tumor mass itself. A variety of tests including serum tumor markers, DNA markers and cell membrane markers (genetic testing) are also useful depending on cancer type. **Staging** is the next step after diagnosis, is done using the above findings along with pertinent imaging studies like CT, MRI, PET and bone scans. **Tumor, Node**
Fundamentals of Therapy: Chemo/Targeted therapies broadly include one or more of the following phases – induction, maintenance and consolidation depending on cancer type. Chemo intent can be either *Adjuvant therapy*- given after surgery or radiation (RT) (eg, curative in breast cancer), *Neo-adjuvant therapy*- given before surgery or RT to reduce tumor burden, *Concurrent*- given along with RT or purely *Palliative*. In cases of relapsed or progressive disease, patients may be treated with third and fourth line chemotherapy agent or enrolled in a clinical trial after failure of first and second line therapies. Dosing of chemotherapies is usually based on body-mass index (BMI) and adjustments may be necessary depending on renal function. Some agents are dosed based on pharmacodynamics- *Area Under Curve* (AUC).

While chemo/targeted therapies are *systemic agents* and are excellent at eradicating micro-metastases, they may not have an adequate response on bulky tumors and hence a combination of an effective *local therapy like surgery or RT* is essential to achieve a cure. The best timing and sequencing of the 3 modalities has been the subject of several randomized trials and is continuously evolving.

*Surgery* is performed by site-specific surgeons having specialized training in *Surgical Oncology*. Patient survival outcomes can vary based on a gross total resection (GTR) vs. Sub-total resection (STR) vs. Biopsy only. This also has effect on choice of other subsequent therapies. Evaluation of lymph nodes and margin status apart from several other adverse prognostic factors (eg, margins status, lymph-vascular space invasion (LVSI), peri-neural invasion (PNI), etc) is performed by specialized pathologists.

*Radiation Therapy* is delivered by the *Radiation Oncologists*. RT is dosed by the total Gray (Gy) received. Radiation is delivered in fractions per week (usually Mon-Fri; 5/week) by various methods- Intensity modulated radiotherapy (IMRT), Brachytherapy (radiotherapy beads inserted into the body), Stereotactic radiosurgery (SRS). Usual dose is at 2 Gy per fraction to total about 20-30 Gy for palliation and 60-70 Gy for definitive intents.

End-of-life care: This provides physical, mental, and emotional comfort, as well as social support, to people who are living with and dying of advanced illness. Emphasis is on providing good quality of life and controlling symptoms of nausea, constipation and pain. Research has shown that early talk of end-of-life care with patients helps in increasing coping with the illness and reduces stress. Some patients and their family may still want to be treated by toxic chemotherapy even in advanced progressive cancer despite of futility of treatment. It is the moral responsibility of the treating oncologists to give them a fair understanding of the expected response prior to embarking on such paths so that a well-informed decision is made.
Learning Objectives:
Residents will be expected to observe, learn and demonstrate the 6 core competencies below established by the ACGME. These will be accomplished via inpatient rounds, outpatient experience, consultations, conferences, and Grand Rounds.

1. **Patient care:**
   - Competence in hematology/oncology-targeted history and exam.
   - Ability to begin initial workup of common hematological problems
   - Understanding of:
     - Indications for heme/onc referral
     - Indications, contraindications, and after care of commonly utilized diagnostic evaluations (bone scans, CT, PET scans, biopsies)
     - Acquire a history in a precise, logical and efficient manner
     - Detect subtle physical findings

2. **Medical Knowledge:**
   - Terms used in Oncology- adjuvant, neo-adjuvant chemotherapy, relapse, remission, etc.
   - Approach to the patient with –
     a. Acute anemia –
     b. Pancytopenia-
c. Disorders of hemostasis -

d. Thrombocytopenia –

e. Thrombotic disorders -

- Hemoglobin disorders especially

- Multiple myeloma and related disorders

- Presentation, complications and post therapy surveillance of lymphoma

- Common presentation, initial workup and tests, and common complications of cancers like
  a. Lung cancer –


b. Gastric cancer –

c. Esophagus –

d. Breast cancer –


- Prevention and management of common complications of chemotherapy, particularly
  a. Febrile neutropenia –


- Recognition and treatment of common paraneoplastic syndromes.

Understand concept of multidisciplinary care, particularly regarding contributions of medical, radiation, and surgical oncology in therapy.


3. **Practice Based Learning and Improvement:**
- Utilize available resources to make timely and appropriate diagnostic decisions with the help of the fellows.
- Seek formative feedback, and use it to improve performance.
- Demonstrate self-motivation to acquire knowledge.
- Demonstrate knowledge of impact of study design on validity or applicability to individual patient situations
- Identify knowledge deficits and work to remedy them.

4. **Interpersonal and Communication Skills:**
- Demonstrate ability to interact with other physicians, nursing, and clinic staff, the patients and their families in a professional, respectful and effective manner.
- Keep legible, complete and timely medical records and dictations.
- Identify the questions and wishes of the consulting physician.
- Demonstrate competence in oral presentation.
- PGY-2 & 3 residents will also
- Facilitate education of other health care professionals.
- Demonstrate the ability to initiate goals of care discussion and communicate bad news in a caring and appropriate manner.

- **Professionalism:**
- Demonstrate respect and compassion in interactions with colleagues, patients, and their families, including sensitivity and responsiveness to their race, gender, age, and other defining characteristics.
- Uphold patient confidentiality and informed consent.
- Recognize and admit mistakes and notify the attending, and (when appropriate, with guidance from the attending) the patient when mistakes are found.

5. **Systems Based Practice:**
- Become familiar with the practice of inpatient hematology/oncology and recognize individualized patient care in the outpatient setting.
- Effectively coordinate care with other health care professionals in the multimodality setting of cancer treatment.
- Recognizing the balance of cancer treatment and quality of life of cancer patients.

**Educational Resources:**
- Harrison's Textbook of Internal Medicine - Oncology section
- MKSAP - Hematology/Oncology section


- Teaching cases and image slides available at [www.hematology.org](http://www.hematology.org). Click on education and careers, then on either teaching cases or images.
- NCCN app for smart phones and tablets is extremely helpful and handy
- [www.uptodate.com](http://www.uptodate.com)

**Major Journals**: Suggested journals for references include –
- Journal of Clinical Oncology (JCO - Official journal of ASCO)
- New England Journal of Medicine (NEJM)
- The Lancet
- Lancet Oncology
- Journal of the American Medical Association (JAMA)
- Cancer
- American Journal of Clinical Oncology (AJCO)

**Additional Reading and Useful Resources**:
- [Research at Brown Cancer Center - http://www.browncancercenter.org/research/](http://www.browncancercenter.org/research/)
- Comprehensive cancer information is available at the website of the National Cancer Institute (NCI) - [http://www.cancer.gov](http://www.cancer.gov/)
  - Some examples are listed here –
  - HPV vaccination for males
  - Vaccines for solid tumors
  - Aspirin intake and survival in breast cancer patients
  - PSA screening for Prostate cancer

**Resident Expectations**:
- Punctual attendance for all patient care activities, lectures, and regularly scheduled medicine conferences.
- If a personal or family emergency occurs that requires absence or tardiness, call CMR ASAP to arrange any necessary coverage, including continuity clinic, as well as the attending and fellow.
- Attending Heme/Onc conferences and 1 half day of Oncology clinic per week. Please see the conference/clinic schedule below.

**Resident Work Routine**:

*Inpatient:*
• Typical day in the inpatient setting begins with pre-rounding on patients, discussing management plan with the fellows, attending rounds, afternoon conference and seeing consults/take admissions until 5:00pm with the fellows. Fellow sees and admits patients till 6:00pm.
• Residents pre-round on up to 5 patients and see up to 3 consults/admissions in a day.
• Internal medicine admits patients for Heme/Onc from 6:00pm to 7:00am every day after discussion with the on-call fellow.
• Residents attend all Heme/Onc conferences and 1 half day of clinic per week. Please see the conference/clinic schedule below.
• Residents are required to read about their patients using the available resources.

**Outpatient:**
• Typical day in the outpatient setting begins at 8.
• Residents see and discuss patients with the attending.
• Residents understand the concept of multimodality clinic where medical oncology, surgical oncology and radiation oncology see and discuss patients together.
• Residents attend all Heme/Onc conferences during this rotation.

**Resident Evaluations:** As much as we focus on teaching you about Medical Oncology, you too will be teaching us valuable lessons and new insights.
• Residents, fellows and attendings will evaluate each other by using the www.new-innov.com evaluation form.
• Supervising attendings are expected to meet mid-month with rotating residents to discuss their performance to date and give useful suggestions for improvement (i.e. formative feedback).
• House staff log procedures performed via www.new-innov.com

**Oncology Faculty and Sub-specialties:**
• Dr. Goetz Kloecker: Lung cancer
• Dr. Jason Chesney: Melanoma, Refractory solid tumors
• Dr. Fred Hendler: Hematology, Oncology
• Dr. Dharamvir Jain: Hematology, Breast cancer
• Dr. Donald Miller: Head and Neck cancer, Skin cancer, Melanoma
• Dr. Padmini Moffett: Hematology, Brain tumors, Genitourinary cancer
• Dr. Rebecca Redman: Medical Oncology, Hematology, Gastrointestinal cancer
• Dr. Beth Riley: Hematology, Breast cancer
• Dr. Vivek Sharma: Gastrointestinal cancer
• Dr. Cesar Perez: Head and neck
• Dr. Jorge Rios: Lung cancer
• Dr. Roger Herzig: Hematologic malignancies, Bone Marrow Transplant
• Dr. Geoffrey Herzig: Hematologic malignancies, Bone Marrow Transplant
• Dr. Cesar Rodriguez: Hematologic malignancies, Bone Marrow Transplant

**Resident Research:**
We realize that each trainee comes with an inquisitive mind full of questions, new ideas and perspectives. Being a very dynamic and evidence based specialty, numerous interesting research opportunities are available. Residents are strongly encouraged to consider and pursue projects of their interest. They could also avail of opportunities to participate in on-going projects with respective attending’s and fellows.
**Important Contacts:**

**Dr. Goetz Kloecker** – is the Medical/Hematology Oncology Fellowship director and can be reached by email: ghkloe01@louisville.edu or office # 502-562-4246

**Erin Parker** – Program coordinator Hematology/Oncology, email: elpark03@louisville.edu or office # 502 852-4121

**Saira Malik** (Program Manager) – can be reached at 502-562-4359 (from 8-5 Monday through Friday). Please call prior to the 1st day of rotation for the specifics of when and where to report.

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### Oncology Conferences and Clinic Schedule:

<table>
<thead>
<tr>
<th>AM clinic (8:00 am-12:00 pm)</th>
<th>University of Louisville – James Graham Brown Cancer Center (BCC)</th>
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<tbody>
<tr>
<td>Lunch (12:00-1:00pm)</td>
<td>Multidisciplinary GI Tumor Board – BCC 4th floor (Dr. Vivek Sharma)</td>
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<tr>
<td>(Usually provided at conferences)</td>
<td>Multidisciplinary Lung Tumor Board – BCC 4th floor (Dr. Goetz Kloecker)</td>
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<td></td>
<td>Multidisciplinary Breast Tumor Board – BCC 4th floor (Dr. Beth Riley) (8:00 – 9:00am)</td>
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<td></td>
<td>Multidisciplinary Head and Neck Tumor Board – BCC 4th floor (Dr. Rebecca Redman) (8:30-9:30am)</td>
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<td></td>
<td>Dr. Rebecca Redman – Dr. Jason Chesney – BCC 3rd floor (1st Monday of each month)</td>
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<td></td>
<td>Dr. Dharamvir Jain – BCC 2nd floor</td>
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<td></td>
<td>Dr. Roger Herzig – BCC 2nd floor</td>
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<thead>
<tr>
<th>PM clinic (1:00 pm – 5:00 pm)</th>
<th>Med/Onc Conference Core Curriculum VA Tumor Board</th>
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<tbody>
<tr>
<td>4:00-5:00pm</td>
<td>Multidisciplinary GU Tumor Board – BCC 4th floor (Dr. Padmini Moffett)</td>
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<td></td>
<td>Med/Onc, Hematology Grand Rounds – Glassroom ACB basement, topic and speaker announced weekly</td>
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<tr>
<td></td>
<td>Dr. Goetz Kloecker – BCC 2nd floor</td>
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**VA Medical Center**

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<th>AM clinic (8:00am - 12:00 pm)</th>
<th>Dr. Dharamvir Jain</th>
<th>Dr. Padmini Moffett</th>
<th>Dr. Vivek Sharma</th>
<th>Dr. Fred Hendler</th>
<th>VA Tumor Board (4:00-5:00pm)</th>
<th>No clinic</th>
<th>No clinic</th>
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**Med/Onc Conference** - This is a different type of meeting every week - New patient conference, Translational rounds, Writing club, etc.

*Coordinator:* Dr. Goetz Kloecker; *Location:* GYN conference room

**Core Curriculum** - This meeting is the basics of the Heme/Onc curriculum for fellows.

*Coordinator:* Dr. Padmini Moffett; *Location:* ENT conference room

**Multidisciplinary Tumor Board Meetings:** These meetings are attended by specialists in medical, surgical and radiation oncology amongst others. The patients seen in clinic are discussed along with their staging, imaging and treatment goals and a treatment plan is drafted during these meetings.