CURRICULUM: HEMATOLOGY/ONCOLOGY

I. GOALS
A. To provide basic knowledge and skills appropriate to the general internist regarding hematologic and oncologic diseases:

- Understand basic science and direction of research pertinent to these diseases
- Awareness of common presentations of common malignancies
- Knowledge and practice of appropriate cancer screening strategies
- Knowledge and skill in delivering “bad news”
- Knowledge of when to get, and skill in obtaining, consultation
- Knowledge of and skill in providing primary care (especially providing palliative care) to patients with malignancies whether on active therapy or not

B. To provide clinical experiences for the care of patients with hematologic and oncologic problems

C. To role model and develop professional attitudes helpful in dealing with H/O patients, especially those suffering from malignancies (including issues of end-of-life care, hospice, pain management and dealing with families of patients).

II. CONTENT
A. Oncology Introduction
   1. Emergencies
   2. Palliative & Supportive Care
   3. Statistics
   4. Principles of Staging
   5. Prevention and screening

B. Hematology Introduction
   1. Transfusions
   2. Emergencies
   3. Review of peripheral blood and bone marrow smears

C. Hematology
   1. Clotting Disorders, including:
      - Platelet and vessel wall disorders
      - Qualitative & quantitative disorders
      - Coagulation and thrombosis disorders
      - Congenital & acquired bleeding disorders
      - Hypercoagulability
      - Anticoagulant and fibrinolytic therapy

   2. Disorders of Hematopoiesis, including:
      - Anemia and Nutritional deficiencies; iron, B 12, folate
      - Anemia of chronic disease
      - Hemolytic anemia
      - Hemoglobinopathies and thalassemia
      - Polycythemia vera
      - Myelofibrosis
      - Essential thrombocytosis
3. Primary Bone Marrow Disorders
   - Multiple Myeloma
   - Aplastic anemia
   - Myelodyplastic Syndrome
   - Bone marrow transplantation

4. Miscellaneous
   - Bloodless Medicine and Surgery
   - Updates in hematology

D. Oncology
1. Cancer Cell Biology
   - Oncogenes
   - Heredity Cancer Syndromes
   - Carcinogenesis

2. Cancer Chemotherapy/radiation therapy
   - Principles
   - Drug Resistance
   - Chemotherapeutic Agents; Action, Toxicity
   - Specific tumor and treatment protocols

3. Lymphomas
   - Classification
   - Histology and grade
   - Staging

4. Breast Cancer
   - Screening
   - Histology
   - Adjuvant therapy

5. Gynecologic Cancers
   - Ovary
   - Uterus
   - Cervix

6. Lung Cancer
   - Staging
   - Therapy

7. Head & Neck Cancer/Thyroid Cancer
   - Classification
   - Therapy

8. Gastrointestinal Malignancies
   - Screening
   - Hereditary
   - Adjuvant therapy
9. Genito-Urinary Cancer
   - Renal Cell and bladder
   - Prostate Cancer - Screening and Management
   - Testicular Cancer & Trophoblastic Disease - Classification, staging and Mgt

10. Melanoma & Skin Cancer
    - Etiology
    - Staging

11. HIV related malignancies
    - Prevention and screening
    - Radiotherapy principles

12. Miscellaneous
    - End-of-life care/Hospice
    - Pain management

III. TEACHING METHOD
A. Conferences (see appendix I) include lectures, grand rounds, journal club, combined modality tumor conferences. In cooperation with the departments of Diagnostic and Therapeutic Radiology and Pathology (two conferences each month). Patients chosen for presentation at this conference represent current problems and controversies in the diagnosis and treatment of patients with neoplastic disease. The Communication Skills seminar deals with “braking bad news and other end of life issues.”

B. Clinical rotations:
   1. A month long elective rotation in the subspecialty is provided at University Hospitals. This rotation involves the care of patients in the Ambulatory Oncology Unit and responding to consultations from the patient population of the hospital. This activity is under the direct supervision of an oncologist. The house officer gains experience in the diagnosis and management of patients with acute and chronic hematologic and neoplastic disease, cancer chemotherapy, and sees the importance of psychosocial interventions.
   2. ICU/Ward rotations: Basic precepts of caring for patient with anemia, coagulopathies, malignancies, etc.
   3. Ambulatory primary care in their continuity practices and private office rotations: emphasis on who to screen, what to screen for, how to screen, etc.
   4. Other subspecialty rotations where they will see malignancies related to the organ system being focused upon in that rotation (cancer of lung on pulmonary, et cetera)

Residents rotating through the specialty will be required to provide a current literature summary for each of the cases selected for presentation at the weekly multi-specialty tumor conference.

Patients are from a wide spectrum of socioeconomic classes and ethnic backgrounds.

IV. EVALUATIONS: See introduction

HEMATOLOGY / ONCOLOGY REFERENCES

TEXTBOOKS:

TEXTBOOK OF HEMATOLOGY BY HOFFMAN (NOT AVAILABLE IN OUR LIBRARY).
WILLIAMS’ HEMATOLOGY.
WINTROBE’S CLINICAL HEMATOLOGY.
CANCER PRINCIPLES & PRACTICE OF ONCOLOGY (DE VITA).
HARRISON’S INTERNAL MEDICINE TEXTBOOK, 14TH EDITION PAGES 493-744
AJCC CANCER STAGING MANUAL.

JOURNALS:

HEMATOLOGY/ONCOLOGY CLINICS OF NORTH AMERICA.
SEMINARS IN HEMATOLOGY.
SEMINARS IN ONCOLOGY.
JOURNAL OF ONCOLOGY.
CA, CANCER JOURNAL FOR CLINICIANS.
BLOOD/ THE JOURNAL OF AMERICAN SOCIETY OF HEMATOLOGY (BASIC SCIENCE).

WEBSITES

NATIONAL CANCER INSTITUTE www.nci.nih.gov
WEBMD www.webmd.com
PHYSICIANS ON LINE www.pol.net

BIBLIOGRAPHY

Medical Oncology for the General Internal Medicine Trainee

Adopted in May 1995 by the American Society of Clinical Oncology*

I. Overview

The Field of Oncology

Oncology is the discipline of medicine dedicated to the care of the patient which cancer. The field is subdivided into areas of specialization based on training, including Medical, Pediatric, Surgical, Gynecologic, and Radiation Oncology. The treatment of patients with cancer usually requires a multidisciplinary approach, which in the majority of cases requires the expertise and cooperation of medical, surgical, and radiation oncologists.

Special Expertise of Medical Oncologists

Medical Oncology is the branch of Internal Medicine that focuses on the management and treatment of patients with cancer, including the detection, diagnosis, and staging of cancer and treatment of the disease, its complications, and the complications of therapy. Often, the Medical Oncologist directs the multidisciplinary treatment of the patient. The oncologist has, by training and experience, knowledge of: tumor biology, the natural history and epidemiology of the various cancers, and the principles of the therapeutic modalities, as well as all facets of cancer diagnosis.

Medical Oncologists have particular expertise in the medical therapy of cancer. They must understand and be able to administer the conventional therapies for cancer and be able to rapidly integrate new advances in therapy into the treatment of their patients. To accomplish this, they must be trained in the conduct and interpretation of relevant laboratory and clinical research, and be able to participate in the conduct of clinical studies.

Medical Oncologists must often deliver the totality of medical care to the patient with cancer during the period of active treatment, including supportive care for the complications of the disease and its therapy. They must be expert in the management of pain. They must organize and provide psychosocial support for the patient and his or her family.

Medical Oncologists must understand the principles of, and be able to initiate programs in cancer prevention, providing a resource for physicians and patients in their communities.

Finally, because of the nature of cancer, the Medical Oncologist must be well versed in the social and ethical issues surrounding decision making in patients with life-threatening diseases.

II. Oncology Training for the General Internist

Although specializing in Internal Medicine, trainees in Internal Medicine must understand the concept of the multidisciplinary therapy of cancer. Areas of particular importance include the following:

A. The principles and techniques of cancer prevention and screening, including the indications for genetic screening and counseling. They should be able to apply this knowledge to their patient population to reduce the incidence of cancer and increase its early detection.
B. The signs and symptoms of the common cancers, their diagnostic evaluations, and the importance of staging as a basis for determining therapy, understanding natural history, and communicating with other physicians in common terms.

C. The principles of cancer therapy, including chemotherapy, surgery, and radiation therapy. They should understand the importance of the multimodality approach to cancer therapy, particularly the treatment of the curable cancers. They should also be aware of the limits of currently available therapy.

D. The specific principles of cancer chemotherapy, including hormonal and biologic therapy. Although trainees in medicine need now know specific therapeutic regimens, they should know the settings in which chemotherapy is potentially curative in patients with metastatic disease and its adjuvant therapy. They should be trained in the management of the common complications of therapy, including myelosuppression, infection and hemorrhage, nausea and vomiting, and renal and cardiac failure.

E. Trainees in Internal Medicine must be familiar with the treatment of oncologic emergencies. Examples include the following: Metabolic abnormalities (hypercalcemia, hyponatremia, hypomagnesemia and the tumor lysis syndrome), Spinal cord compression, Superior vena cava syndrome, Pericardial tamponade, Brain metastasis.

F. Trainees in Internal Medicine must understand the principles of management of chronic pain and the use of narcotic analgesics and adjunctive medications. They should be familiar with the management of the toxicities from these medications and other forms of symptom control.

G. Trainees should understand the principles of terminal care of patients, including hospice programs and the medical and ethical issues associated with fatal diseases.

H. Trainees should be familiar with the long-term complications of cancer and its therapy and be able to participate in follow-up programs.

I. Trainees should be familiar with the basic principles of tumor biology.

J. Trainees should understand the rationale for clinical trials in cancer and appreciate how new therapies are developed.

III. Training Sites

A. Trainees should be exposed to patients with a variety of cancers, including the most common cancers (breast, lung, colorectal, and prostate). They must also have exposure to patients with hematologic malignancies.

B. Training should include patients in all phases of their disease, including newly diagnosed patients, as well as patients undergoing treatment and those cured of their disease. To accomplish this, training should include both the outpatient and inpatient settings.

C. Trainees should be able to attend multidisciplinary planning clinics or tumor boards, where cases are discussed by experts from all areas of specialization.

D. Trainees should be exposed to hospices physicians and programs to better understand the symptomatic care of patients with cancer and the ethical issues surrounding terminal diseases.

E. Trainees should participate in a primary care Internal Medicine clinic with staff who are knowledgeable in the principles of cancer screening and prevention.
IV. **Suggestions for incorporating material into the curriculum**

A. Specific lectures by Medical Oncologists in the core Medicine lecture series.

B. Provide on-site experience in both inpatient and outpatient oncology units for general medical trainees.

C. Ensure that all residents are involved in the care of patients with cancer, the common complications of cancer, and the therapeutic modalities used in the treatment of these patients.

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