OBJECTIVES FOR ROYAL COLLEGE APPROVED MEDICAL ONCOLOGY TRAINING PROGRAMS
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GUIDELINES

Residents in Medical Oncology
ALL training sites

1. In general, it is expected that the resident will spend each morning in the medical oncology clinic and each afternoon seeing, reviewing and rounding on the inpatient consultation service. Every effort should be made to ensure that the resident spends one morning per week with each staff, to provide a broad exposure to outpatient medical oncology. It is preferable that the resident try to spend the same morning with the same attending each week. The resident should be excused from the clinic at noon (approximately), to allow him/her to attend noon rounds, etc.

2. There are also numerous tumour boards held throughout the week. The resident will also be excused from their clinic duties to attend tumour boards, with appropriate notification of the pertinent attending staff.

3. There is an excellent series of talks given by visiting professors through the Visiting Professors in Oncology Program that is of great educational value to residents and attending staff alike. Allowance can be made for the resident to be excused from their usual duties to attend these lectures (even off-site) with appropriate discussion with the pertinent attending.

4. There are frequent unexpected patient visits to the medical oncology clinic (“emergencies”). It is expected that the resident be available to help out with these patients, especially in the mornings. For “emergencies” arising in the afternoon, the resident should also be contacted. However, if the resident is already occupied with the consult service (e.g., seeing patients, rounding with the staff) or with teaching activities (e.g., attending rounds
with a visiting professor) the resident may ask the nurse to contact
the attending staff covering for emergencies that afternoon.

5. The usual “on-call” schedule for residents in medical oncology is 2
nights per week (from home) and 1 weekend per 4-week rotation.

6. A series of medical oncology lectures for the medical oncology
residents and will be given weekly by one of the staff physicians.
ROTATION SPECIFIC OBJECTIVES

Medical Oncology Rotations

Each trainee completes 12 rotations in medical oncology, 3-5 rotations in each of 3 sites. During each of these rotations, the trainee spends each morning in the medical oncology clinic. The trainees will see new outpatient consultations in the clinic. They will also see and write chemotherapy orders for patients receiving adjuvant chemotherapy or chemotherapy for metastatic disease. The trainees also see a number of patients who have successfully completed adjuvant therapy of their cancer at the time of their routine follow-up visits. In each hospital, the medical oncology clinic also has facilities for performing therapeutic and diagnostic procedures such as paracentesis, bone marrow biopsy, and lumbar puncture. The trainees are expected to perform these procedures (under appropriate supervision) as required for the patients who they are assessing and following. During these 12 rotations of medical oncology, the trainees work on the inpatient consultation service in the afternoon. They will assess new inpatient consultations on the internal medicine wards and various surgical wards, as well as in the emergency room. They will direct the appropriate workup and management of these patients’ oncology problems, and will follow them throughout their hospital stay, working in close association with the attending staff physician assigned to the inpatient consultation service for that rotation. An effort is made to schedule all medical oncology rotations in a given hospital consecutively, thereby providing maximum opportunity for continuous follow-up of outpatients encountered in the medical oncology clinic. Each trainee starts the first year of the program with 4 consecutive rotations in one of the sites, which is considered his/her base site. During these first 4 rotations, a 2-year continuity clinic will be set up for that trainee, working under supervision of one attending staff physician. Throughout the 2 years of the program, the trainee will return to the base hospital continuity clinic for one half-day per
Radiation Oncology Rotations

Radiation oncology rotations are spent at the Montreal General Hospital. To ensure a broad clinical experience, the trainee is encouraged to work with each of the attending staff in radiation oncology, as each of the attending staff has particular clinical interests. Most particularly, the trainee is expected to attend the multidisciplinary tumour clinics, most of which are held within the radiation oncology clinic space, and all of which have representation from radiation oncology. The trainee is expected to see patients in consultation in these clinics, to monitor patients “in treatment” for possible radiotherapy toxicities and to see patients in follow-up, who have successfully completed radiation therapy. The trainee is expected to take advantage of the radiation oncology rotations to gain experience in those areas of oncology treated mainly by radiation oncologists, namely prostate cancer, early stage lymphomas (Hodgkins and non-Hodgkins), cutaneous lymphomas, head and neck cancers and brain tumours. At the time of the completion of radiation oncology rotations, the trainee is expected to have a detailed understanding of the indications for radiotherapy (both radical and palliative treatments), the clinical contraindications to radiotherapy, the acute and chronic toxicities of radiotherapy, the appropriate timing of chemotherapy relative to radiotherapy (e.g., concurrent versus sequential), and the impact of timing, fractionation, and total dose of radiation on the toxicity and efficacy of radiotherapy.

(ALSO SEE: Radiation Oncology – specific objectives)

Hematology Rotations

The hematology rotations take place at either the Royal Victoria Hospital or the Montreal General Hospital. All trainees are expected to do rotations in ward hematology and on the hematology consult service.

Hematology Consult Service
The resident functions as a consultant, with a supervising attending physician, for hematological problems on the inpatient services and in the emergency room. The resident will be exposed to a broad variety of general hematology problems, both malignant and benign. Examples of problems encountered include anemias, coagulopathies, cytopenias, thrombosis, transfusion support and hematologic complications of medical, surgical, gynecologic/obstetrical patients. The resident is expected to function effectively in a consultant role, and is required to assimilate knowledge of the basic science, laboratory and clinical aspects of their cases. The resident should develop effective communication skills, to convey information to the medical team requesting the consult, to teach the more junior housestaff on the service, and to explain investigations and treatment to the patient and family. The trainee is expected to acquire an understanding of biomedical ethics, principles of quality assurance in clinical care and a critical appraisal of the medical literature.

Ward Hematology

The resident will join the housestaff and attending physician at either 17 East at the Montreal General Hospital or 6 Medical at the Royal Victoria Hospital. The resident is expected to teach and supervise the more junior housestaff and students on the ward. This rotation focuses on the investigation and treatment of patients with hematologic and solid tumour malignancies. The resident is expected to become familiar with the use of chemotherapy, radiotherapy, biological response modifiers, stem cell collection, bone marrow transplantation, transfusion practices, as well as supportive care of the patient (nutrition, pain control) and treatment of complications (including infections, cytopenias, graft versus host disease). The resident should acquire knowledge of the molecular, genetic and cytogenetic alterations in hematologic and solid tumour malignancies, the role of oncogenes and pharmacologic principles of chemotherapy and other therapeutic modalities. The resident is expected to review and learn the laboratory diagnosis of hematologic malignancies encountered on the ward, become familiar with clinical staging, and assist in procedures. The resident is expected to communicate effectively with other health professionals as well as with patients and their families. The resident should have an understanding of biomedical ethics, principles of quality assurance in clinical care, and critical appraisal of the medical literature. The resident should function as an integral and effective member of a multidisciplinary team.
SITE-SPECIFIC OBJECTIVES

Medical Oncology Rotations

In addition to the aforementioned objectives and guidelines, please note that each training site for medical oncology has a particular area of expertise. Trainees are encouraged and expected to take advantage of these site-specific activities, and gain experience in the areas listed below while training in each site.

Montreal General Hospital

To gain expertise in the multidisciplinary approach to the treatment of cancer, through participation in the following multidisciplinary clinics:

- Neuro-oncology Clinic
- Genitourinary Tumour Clinic
- Lung Oncology Clinic
- Multidisciplinary Breast Cancer Clinic
- Gynecology Oncology Clinic
- Gastrointestinal Tumour Clinic
- Sarcoma Clinic
- Late Effects Clinic

Royal Victoria Hospital

To gain expertise in the following areas:

- Administration of high dose chemotherapy with stem cell support for selected tumours.
- Assessment, management and follow-up of patients with melanoma.
- Assessment, management and follow-up of patients with primary central nervous system tumours.
- Neuro-oncology Clinic
Jewish General Hospital

To gain expertise in the following areas:

- Assessment, enrollment and treatment of patients in phase I clinical trials.
- Assessment and treatment of patients with immunotherapy (melanoma/renal cancer patients)
- Translational research in oncology patients.
- Multidisciplinary Breast Cancer Clinic
- Lung Oncology Clinic
GENERAL OBJECTIVES OF TRAINING

The specific learning objectives of the two-year program in medical oncology are:

1. The epidemiology and natural history of cancer including causation, risk factors, biology and patterns of growth and spread, and prognostic variables.

2. Basic scientific knowledge including molecular biology, biochemistry, pathophysiology, pharmacology, growth kinetics, genetics, endocrinology and immunology as they related to the understanding of cancer and its diagnosis and treatment.

3. Assessment and investigation of patients with cancer, including the history, physical examination, laboratory and imaging techniques.

4. Principles of cancer therapy and the indications for and complications of the various treatment modalities alone or in combination, together with an appreciation of their curative or palliative potential.

5. Management of medical emergencies and complications which may arise as a result of cancer or its treatment.

6. The principles and practices of palliative symptomatic treatment of patients with cancer, including management of pain, nausea, dyspnea and neuropathy.

7. Nutritional and hydration needs in cancer patients and the methods of management, including hyperalimentation and hypodermoclysis.
8. Psychological and ethical aspects of treating patients with cancer and communicating with patients and their families and other members of the health care team.

9. Epidemiology and biostatistics including the conduct and evaluation of clinical trials.

10. Specific technical skills including aspiration of effusions, lumbar puncture, bone marrow aspiration and biopsy, maintenance of vascular access, examination techniques for specific systems (example pharyngolaryngeal area) and their interpretation.

11. Comprehensive knowledge of the full spectrum of anti-neoplastic agents, including mechanism of action, dosing, scheduling, routes of administration, toxicities, efficacy in treating site-specific tumours and contraindications for use.

12. Comprehensive knowledge of the critical roles of other disciplines (surgery, radiation oncology, pharmacy, nursing, physical and occupational therapy) in the global management of the cancer patient, together with an appreciation of their limitations.

13. Comprehensive knowledge of tumours specific to certain sites, encompassing all the aspects enumerated above.
BREAST

Terminal Objectives

1. Form an appropriate plan of management of a patient with suspected or proven breast cancer.

2. Choose and execute the appropriate treatment modality.

Enabling Objectives

A. Cognitive

1. Be able to list and describe the histological subtypes of breast cancer and the different tumor markers.

2. Recognize the significance of the different prognostic factors.

3. Understand the principles of different diagnostic procedures especially mammography and breast ultrasonography and feel comfortable in their interpretations.

4. Be informed about the different types of biopsies for palpable and non-palpable breast lesions.

5. Be familiar with the staging classification of ductal, lobular carcinomas and other breast malignancies such as phylloides tumors.

6. Be knowledgeable about the different screening methods for breast cancer, their benefits and their limitations.

7. Be knowledgeable about the different prevention strategies for breast cancer, their benefits and their limitations.
8. Appreciate the role of chemotherapy hormonotherapy and biological therapies in each type and stage of breast cancer.

9. Appreciate the role of existing palliative care and other support systems.

10. Know about the different types of surgical procedures including reconstructive surgery.

11. Read and know about the clinical practice guidelines.

12. Be familiar and if possible participate in prospective clinical trials of patients with or at risk for breast cancer.

13. Have knowledge and compassion for the particular problem breast cancer patients and their families face.

14. Be informed about the newer education tools.

B. Technical

1. Perform a history and physical examination of a patient with a breast related complaint.

2. Request and interpret appropriate imaging studies.

3. Perform diagnostic modalities such as thoracenthesis or paracenthesis in advanced stage breast cancer.

4. Correlate result of imaging studies with clinical and pathological findings.

5. Interpret the final pathology report and recommend further therapy as appropriate.

6. Formulate and defend a personal practice plan for following patient after breast surgery.

7. Recognize and manage patients with recurrent breast cancer.

8. Refer to and interact with palliative care team members.

9. Establish a therapeutic relationship with patients and communicates well with families (i.e. provides clear and thorough explanations of diagnosis, investigations and management).
10. Establish an effective interaction with other health professionals.

11. Be able to use new technologies.

**Teaching Methods:**

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
CHEMOTHERAPY

Terminal Objectives

The fellow should understand the pharmacology of major drugs used in human tumor chemotherapy and be able to use them in a rational manner.

Enabling Objectives

A. The fellow should be able to understand and describe:

1. tumor biology, including the:
   - Kinetics of cancer cell growth, the cell cycle and growth faction.
   - General principals of action such as:
     a. the log kill hypothesis,
     b. cycle specificity
     c. phase specificity
     d. dose intensity, and
     e. resistance mechanisms

2. classes of chemotherapeutic agents, including
   - alkylating agents
   - platinum derivatives
   - antimetabolites & nucleoside analogs
   - natural products, including plant alkaloids, antibiotics and enzymes
   - hormones
   - tyrosine kinase receptor antibodies

3. the mechanisms of action of specific agents, including
   - specific mode of action
   - relationship of action to cell cycle, insofar as this is known
4. the pharmacology of specific agents and should know the
   • Routes of administration and absorption (oral, intravenous, intra-arterial, intramuscular, intrathecal, intraperitoneal, etc.
   • distribution
   • biotransformation
   • excretion
   • interactions with other drugs
   • interaction with radiotherapy and hyperthermia
   • mechanisms of drug resistance and approaches to reducing tumor resistance to anticancer drugs.

5. combination chemotherapy, including:
   • the principles of combination chemotherapy
   • drug combinations in current use for gynecologic malignancy
   • the pharmacology of single agents, and the principles for the design of combination chemotherapeutic regimens, as well as the ability to construct logical drug combinations
   • the principles of specialized therapies such as high-dose chemotherapy with bone marrow transplant and intraperitoneal chemotherapy

6. the general guidelines for clinical evaluation, including
   • the criteria for complete response, partial response, progressive disease relapse
   • the concept of Phase I, II and III drug trials
   • current evidence for favourable adjunctive use of chemotherapy with surgery and/or radiation therapy
   • the rational for dose schedule (timing), cycle length (cystic versus maintenance) and dose intensity

1. problems with toxicity/complications, including
   • general effects of rapidly proliferating epithelium, such as bone marrow, G.I. tract and hair follicles
   • specific major toxic effects of individual and combinations of drugs
   • the management of toxicity using:
     a. supportive (nutritional, hematinic, prophylactic antibiotics) methods, and
     b. specific (blood component therapy, specific antagonists) methods.
   • The management of extravasation of chemotherapeutic agents

2. Treatment by organ site, histology and stage of agents of established value within established guidelines for specific tumors.
3. The role of growth factors in prevention of chemotherapy toxicity and in the treatment of malignancies.

**Teaching Methods**

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
GENETICS

Terminal Objectives

The fellow should demonstrate an understanding of oncogenes, tumor suppressor genes, DNA repair genes, and oncogenesis and be familiar with the influence of genetics on the clinical practice of oncology.

Enabling Objectives

A. The fellow should understand and be able to understand and describe:

1. the molecular genetics of neoplasia, including:
   - proto-oncogenes
   - anti-oncogenes

2. the mechanisms of action of oncogenes, such as:
   - transduction
   - point mutation
   - insertion mutation
   - amplification
   - translocation

3. tumor suppressor genes, such as:
   - the retinoblastoma gene
   - the p53 gene

4. the nature and extent of chromosome changes in cancer, including:
   - numerical vs. structural changes
   - specific vs. nonspecific changes
   - inherited vs. acquired changes

5. the role of oncogenes, including the:
   - properties of oncogenes
   - mechanisms of action of oncogenes
- specific families of oncogenes
- relationship between growth factors and oncogenes

6. the basic principles of clinical cancer genetics and be able to relate the information to the practice of gynecologic oncology.

7. the cardinal principles of cancer genetics with respect to:
   - Age
   - Bilaterality
   - Multiple primary cancers

8. cancer family syndromes, including:
   - site-specific ovarian cancers
   - breast/ovarian family syndromes
   - the lynch II syndrome

**Teaching Methods**

1. Throughout rotations
2. Special lectures (Dr. W. Foulkes)
3. Reference books
HEAD AND NECK MALIGNANCY

Performance Objective

Candidate will be able to diagnose, stage, treat and follow a patient with head and neck malignancy.

Enabling Objectives

With regards to Head and Neck malignancy the candidate will:

A. Cognitive

1. Describe the anatomy and physiology of the vital structures of the head and neck.
2. List the common malignancies that arise from mucosal surfaces of the aerodigestive tract, their presentation and natural history including squamous cell carcinoma and minor salivary gland on tumors.
3. List the differential diagnosis of a salivary gland mass with understanding of the natural history of each.
4. Describe the approach to the "unknown primary".
5. Describe the use of chemotherapy concurrent or sequential to radiotherapy/surgery.

B. Psychomotor

1. Perform a skilled history examination of head and neck patients including examination of the aerodigestive tract mucosal surfaces in the clinic setting.
2. Participate in endoscopy of the nasopharynx, larynx, esophagus, and bronchial tube.

C. Attitudinal
1. Participate in a tumor board conference and outline a multidisciplinary plan of treatment for head and neck cancer.

2. Counsel a pre-operative patient regarding psychological effects of disfigurement associated with head and neck surgery.

**Teaching Methods**

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
HEPATOBILLARY

Basic Science and Anatomy

Terminal Objectives

Demonstrate knowledge of the anatomy, physiology and pathophysiology of the liver, biliary tract and pancreas.

Enabling Objectives:

1. Describe the anatomy of the liver, biliary system and pancreas including commonly-found variations.

2. Describe the physiology and function of liver, biliary system, and pancreas to include:
   - glucose metabolism
   - protein synthesis
   - coagulation
   - drug metabolism
   - reticuloendothelial system
   - function of bile in fat metabolism

3. Explain the formation of bile, its composition, its function in digestion and its metabolism.

4. Describe the pathophysiology of gallstone formation.

5. Discuss the physiology of the pancreas, including endocrine and exocrine function and hormonal regulation:
   - Endocrine-islet cells
   - Alpha (Glucagon)
   - Beta (Insulin)
   - Delta (Somatostatin)
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- Non-Beta (pancreatic polypeptide)
- Exocrine-acinar cells
- Lipase
- Amylase
- Hormonal regulation
- Secretin-bicarbonate secretion
- Cholecystokinin-enzyme secretion

Knowledge: General Clinical

Terminal Objectives

Demonstrate the ability to manage cancer of the liver, biliary tract and pancreas vis-à-vis chemotherapy/radiotherapy.

Enabling Objectives

Perform history and physical examination specifically focused on liver and biliary system. Select and interpret appropriate laboratory and radiologic evaluations in the work up of the jaundiced patient.

Perform history and physical examination focused on the pancreas. Select and interpret appropriate laboratory and radiologic examinations in evaluation of pancreatic cancer and plan appropriate medical management.

Coordinate overall care of patients with hepatobiliary disease including:
  - initial evaluation
  - appropriate diagnostic studies
  - indicated consultations

Knowledge: Specific Clinical Problems

Outline the work-up and differential diagnosis of the jaundiced patient.

Discuss the pathophysiology and treatment of the following:
  - mass lesions of the liver (benign and malignant tumors of the liver; metastatic lesions of the liver).

Pancreatic Neoplasms

Explain the pathophysiology of carcinoma of the pancreas to include:
  - Typical history and presentation
- Diagnostic evaluation using:
  a. Computed axial tomography
  b. Ultrasound and endoscopic ultrasound
  c. ERCP
  d. Percutaneous transhepatic cholangiography (PTC)
  e. Arteriography
  f. MRI
  g. Laparoscopy/laparotomy

Pancreas

Describe the diagnosis, evaluation and medical management of the following islet cell tumors of the pancreas:
- gastrinoma (Zollinger-Ellison Syndrome)
- Blucagonoma
- Somatostatinoma
- Insulinoma
- VIPoma (Verner-Morrison Syndrome, WDHA Syndrome)

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
MEDICAL EXPERT

Carcinogenesis, Invasion and Metastasis

Terminal Objectives

The fellow should understand the current theories of carcinogenesis, including the effects of environment, family history and viral factors.

The fellow should understand the basic principles of invasion and metastasis.

Enabling Objectives

A. The fellow should understand and be able to describe hormones, including the effect of:
   • antenatal estrogens on vaginal and cervical malignancies
   • exogenous estrogen administration, and
   • tamoxifen therapy
   • aromatase inhibitors

B. Radiation, including the:
   • increased risk of sarcomas and other malignancies in previously radiated tissues, and
   • risks of diagnostic radiation procedures.

C. Chemotherapeutic agents, including the:
   • risk of myelodysplastic disorders, including leukemia after exposure to alkylating agents and other chemotherapies, and
   • risks of the fetus of maternal chemotherapy.
   • All major side-effects associated with different classes of chemotherapy agents.
D. The relationship of herpes, papillomavirus infections and other viruses.

E. Environmental contaminants such as the relationship of talc and asbestos to ovarian and other malignancies, and smoking to lower genital tract cancer.

F. Genetic mutations (e.g., BRCA1, etc.) and their relationship to various cancers.

1. Known familial patterns in breast, endometrial, ovarian and colon cancer.

2. The basic biology of neoplastic cells, including:
   - Structure (nuclei, cytoplasm and membranes).
   - Enzymology and metabolism.

3. The cell cycle, including the following phases:
   - G1
   - S
   - G2
   - M
   - G0

4. The patterns of spread of solid cancers.

5. The principles of tumor invasion and metastasis, including:
   - Tumor initiation
   - Uncontrolled proliferation
   - Angiogenesis
   - Invasion of local tissues, lymphatics and blood vessels
   - Colony formation of distant sites
   - Tumor cell migration

**Teaching Methods**

1. Through the respective rotations

2. Special basic science lectures

3. Books
MELANOMA

Terminal Objective

The candidate will be able to diagnose, stage, treat and follow a patient with Melanoma.

Enabling Objectives

With regards to melanoma the candidate will:

1. Explain the gross and histological appearance.
2. List the pathological sub-types and their characteristics.
3. Report the routes of spread.
4. Report Clarks, Breslows and the TMN staging systems. What is the prognostic significance of each?
5. Describe the current role of chemotherapy, radiation therapy, immunotherapy and limb perfusion.
6. Outline a follow-up plan.
7. Specify the pattern for metastasis and develop the appropriate management.

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
NEURO-ENDOCRINE

Carcinoid

A. Cognitive

1. Able to describe the location of all potential carcinoid tumors, including, foregut, hindgut and midgut.

2. Able to give the natural history of a bronchial carcinoid.

3. Able to describe the three types of gastric carcinoids and their prognosis and different presentations.

4. Able to describe the duodenal and pancreatic carcinoids and their clinical manifestations.

5. Able to describe the clinical manifestations of small bowel carcinoids and their natural history and long term prognosis with lymph node metastases and liver metastases.

6. Able to describe the natural history of appendiceal carcinoid

7. Understands the natural history of colonic and rectal carcinoids.

8. The diagnosis and management of carcinoids syndrome, including carcinoid cardiovascular disease as well as the manifestations, the peripheral cutaneous manifestations.

9. Understands the pathophysiology of carcinoid syndrome and the most likely tumors to create such a syndrome.

10. Understands the mechanism of action of octreotide and its effect on carcinoid and carcinoid syndrome.
11. Able to describe the current work-up and investigation for a carcinoid patient, including octreotide, MIBG, MRI, urinary 5-HIAA and chromogranin A.

12. Able to describe the sensitivity and specificity of all the above.

B. Attitudinal

1. Is aware of longterm sequel of carcinoid syndrome and the palliative care required for these patients, including their cardiac, as well cutaneous manifestations.

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
PALLIATIVE CARE

Introduction

Symptom control in the cancer population is still very poor - over 40% of patients dying of cancer have pain that is inadequately controlled. Palliative care settings offer excellent opportunities for the resident to face difficult clinical, communication and ethical issues in ward and outpatient settings.

Description of Program

The Palliative Care rotation involves training in the McGill University Health Centre (MUHC), at Montreal General Hospital (MGH) site. The Palliative Care Service provides care via interdisciplinary teams of nurses, physicians, psychologist, occupational therapist, music therapist, pastoral worker, bereavement counselors, volunteers, and attached anesthetist and psychiatrist consultants.

The resident will work on a specialized inpatient unit. He or she will get the opportunity to be an integral member of the consultation team at the Montreal General site, as well as working in outpatient clinics and in the Day Hospital.

The Palliative Care Service holds regular rounds during which all members of the multidisciplinary team meet. In addition, the Palliative Care McGill network holds monthly rounds in which management topics are reviewed in a more formal manner. There are weekly symptom management rounds and journal club.
General Objectives

The resident will be able to:

1. understand the core concepts, principles, skills and attitudes of palliative care. This involves a holistic, person and family-centered approach.

2. understand the importance of self-reflective skills and ongoing awareness of one’s own personal issues and concerns in the area of death and dying.

3. use evidence-based decision-making in caring for dying patients and their families.

4. understand the MD role when life-prolonging treatment becomes futile.

5. effectively use other team members to optimize the care of dying patients.

6. demonstrate an ongoing commitment to the patient and family from the time of first consultation until the patient dies.

7. understand the various levels of palliative care expertise available, to know one’s limits and to be able to effectively consult if required.

Symptom Control

A. General Symptom Control Objectives

The resident will be able to:

1. understand the general principles of drug treatment in the chronically ill population with compromised metabolic function.

2. understand the role of palliative surgery, radiotherapy, chemotherapy, and hormone therapy.

B. Specific Symptoms

1. pain
   - obtain a pain history and to identify specific pain syndromes, including more complex syndromes, and correlate the presence of pain with specific anatomic and pathophysiologic abnormalities.
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- understand responsiveness or resistance to opioids, and the use of different opioids, co-analgesics, and various routes of delivery
- understand the use of non-drug treatments
- understand the indications for nerve blocks and other anaesthetic interventions

The resident will be able to manage:

- anorexia/cachexia
- nausea and vomiting
- constipation
- bowel obstruction
- mouth care and disorders
- dyspnea and cough
- ascites
- depression and anxiety
- delirium and confusion
- genitourinary problems
- lymphedema
- tumour-related skin lesions

C. Emergencies

The resident will learn to manage emergencies in palliative care, including:

- spinal cord compression
- hypercalcemia
- massive hemorrhage
- superior vena cava syndrome
- acute severe dyspnea
- overwhelming pain/"pain crisis"

D. Psychosocial Aspects of Care

The resident will learn:

1. to assess the patient's and family's expectations and styles of coping.

2. to better communicate with the patient and family, including:
   - active listening
   - dealing with difficult questions and treatment decisions
   - eliciting and dealing with fears
   - breaking bad news

3. dealing with anger, despair, and the conspiracy of silence

4. to give ongoing education to the patient and family
5. to recognize the patient's and family's cultural and religious views regarding death and dying.

6. to recognize emotional stress in oneself and to learn to decrease one's stress by having insight into one's own limitations and by seeking appropriate support from the health care team.

7. to be aware of high-risk situations which may lead to complicated grief in family members, and which should be referred for appropriate care.

8. to demonstrate effective communication skills when dealing with other team members.

E. Ethics

The resident will be able to:

1. understand ethical issues relevant to the care of the terminally ill, and will learn a general framework for ethical decision-making.

2. better manage complex ethical problems in this setting, including:
   - issues of control, autonomy, competency
   - DNR and advance directives
   - requests for terminal sedation and euthanasia
   - cases where a treatment is futile

3. demonstrate integrity, honesty and compassion in the care of patients and families.
4. act as an effective advocate for the rights of the patient and family when ethical issues arise.

F. Organization of Services

The resident will learn:

1. how palliative care services are delivered in various settings including: Consultation Service, inpatient units, outpatient clinics and Day Hospital
2. about the resources required to support patients in their homes in the last months and weeks of life.
PATHOLOGY

For each organ system, other than central nervous system, blood, male and female genitourinary, the resident will:

1. Describe the molecular, cellular and tissue changes which occur in the development and spread (local regional, systemic) of cancer.

2. Describe the criteria for submission of surgical specimens, when cancer is suspected.

3. Describe the role and limitations of cytology and frozen section in the diagnosis and management of cancer.

4. Recognize the histologic features which allow tumor typing and grading at a basic level.

5. Describe the elements of pathologic grading ad staging of cancers.

6. List the pathologic features, other than those used for grading and staging, that influence patient management – surgery, radiotherapy, chemotherapy, hormonal, other.

7. Recognize the level of certainty/uncertainty associated with ‘ambiguous terms’ used by pathologists.

8. List the pathologic ‘diagnoses’ where there is likely to be a lack of diagnostic agreement.

9. Describe the role of electron microscopy in cancer diagnosis.

10. Describe the role of serum, urine, and tissue markers in cancer diagnosis and management.

11. Describe the role of genetic markers in the development and management of cancer.
12. Describe the role of sentinel lymph node biopsy, the process for handling, and the significance of the pathologic findings in sentinel nodes.

13. List the benign and malignant tumors, tumors of uncertain malignant potential, borderline lesions, pseudotumors and infiltrative/non-neoplastic processes, as applicable.


15. Describe the value of tumor banking.

**Teaching Methods**

1. Reference books/articles

2. Courses/lectures
PHARMACOLOGY

Terminal Objectives

The fellow should know the following pharmacologic characteristics of the commonly used agents in each of the subsequent sections.

- Absorption
- Distribution
- Biotransformation
- Excretion
- Time course of drug effect (pharmacokinetics)

Enabling Objectives

A. Nutrition – The fellow should understand the pharmacology of:

1. the use of total parenteral nutrition (TPN), including the:
   - Indications
   - Routes of administration
   - Composition of solutions to be used
   - Vitamin and mineral supplements
   - Complications of TPN and venous access sites associated with:
     a. renal insufficiency, and
     b. hepatic insufficiency

1. gastrointestinal alimentation, including the:
   - indications
   - composition of preparations available
   - complications

B. Pharmacology of Wound Healing – The fellow should have a general knowledge of the role of:
   - Vitamins
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- Trace metals
- Growth factors
- Chemotherapy
- Radiation therapy

C. **Hematinics**: As applied to treatment of tumor-related and treatment-related anemias – The fellow must understand the use, effects and side effects of these agents.

D. **Antimicrobial Agents** – The fellow should know:
- The principals of “prophylactic” antibiotic therapy
- The mechanism of action of major antibiotic agents
- The major toxicity of these agents
- How to select appropriate therapeutic agents or combination of agents

E. **Analgesics and Hypnotics** – The fellow should have general knowledge of the:
- Choice of drugs in the face of significant hepatic or renal disease
- Identification and management of overdoses
- Control over severe pain
- Control of chronic pain (WHO guidelines)
- Use of adjuvants in control of pain
- Conversion from IV to oral medication in pain control

F. **Anesthetic Agents** – The fellow should have general knowledge of the:
- Inhalant agents, including the metabolism, effects of renal and hepatic impairment, toxicities and cardiovascular effects
- Agents used for regional, topical and local analgesia, as well as the toxicities, metabolism, effects of renal and hepatic impairment, hypersensitivities, cardiovascular and neurologic effects

G. **Anticoagulants** – The fellow should know the:
- Mechanism (s) of action of short acting (heparin) and long acting (Coumadin) anticoagulants
- Indications for and complications of heparin and of Coumadin therapy
- Indications for and complications of prophylactic (“minidose”) heparin
- Indications for and complications of low molecular heparin

H. **Cardiovascular Drugs** – The fellow should know the indications and use of:
- Cardiotonic drugs in the management of cardiac decompensation and cardiac arrhythmias
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- Diuretics in the management of cardiac decompensation and hypertensive disorders
- Vasoactive drugs in the management of septic shock and hypertension
- Calcium channel antagonists in the management of cardiovascular disorders

I. Miscellaneous – The fellow should have general knowledge of the indications and uses of:
   - Histamine (H2) receptor antagonists
   - Anti-depressants
   - Anticonvulsants
   - Insulin and oral hypoglycemics
   - Antiemetics
   - Steroids
   - Drugs that modify gastrointestinal function

Teaching Methods

1. Lectures by pharmacist.
2. Elective in oncologic pharmacy work.
RADIATION ONCOLOGY

Terminal objectives

1. To form a management plan for neoplasia that includes the appropriate use of radical, adjuvant and palliative radiotherapy.

2. To appropriately advise patients and colleagues of the role of multidisciplinary assessment and care in the management of neoplasia.

3. To recognise and appropriately advise patients about the acute and late toxicity of radical and adjuvant radiotherapy, and of the interaction between chemotherapy and radiation-related morbidity.

Enabling objectives

A. Cognitive

1. Describe the importance of the role of multidisciplinary assessment and care in the management of head and neck, thyroid, breast, soft-tissue and gastro-intestinal malignancies, and participate in multidisciplinary tumour boards.

2. To describe the role of radiotherapy in the management of head and neck, thyroid, breast, soft-tissue and gastro-intestinal malignancies, through self-learning, attendance at tumor boards, radiation oncology clinics and radiation planning sessions, surgical oncology clinics and didactic sessions.

3. To understand the relative merits of the timing of radiotherapy adjuvant to chemotherapy/surgery for rectal cancer and soft tissue sarcoma, through self-learning, attendance at tumor boards,
radiation oncology clinics and radiation planning sessions, surgical oncology clinics and didactic sessions.

4. To know the differences between radical, adjuvant and palliative radiotherapy through self-learning, attendance at tumor boards, radiation oncology clinics and radiation planning sessions, surgical oncology clinics and didactic sessions.

5. To understand the concept of fractionation for radiotherapy by means of self-learning, and attendance at radiation oncology clinics and radiation planning sessions, and didactic sessions.

6. To know the steps in patient assessment and planning of a course of radical or adjuvant radiotherapy through attendance at radiation oncology clinics and radiation planning sessions.

7. To know the differences between acute and late radiation related toxicity, and the effects of adjuvant radiation on chemotherapy toxicities through self-learning, and attendance at radiation oncology clinics, medical oncology clinics and didactic sessions.

8. To know the role of radiotherapy in the management of cancer related emergencies such as spinal cord compression, SVC obstruction and uncontrolled hemorrhage, through self-learning, attendance at tumor boards, radiation oncology clinics and radiation planning sessions, medical oncology clinics and didactic sessions.

B. Technical

4. To recognize and manage acute and late radiation reactions consequent to radiotherapy to the head and neck, breast, abdomen and pelvis through self-learning, and attendance at radiation oncology clinics and medical oncology clinics.

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
SARCOMA

Desmoid Tumors

Enabling objectives

With regard to Desmoid Tumors, the candidate will demonstrate the following skills:

A. Cognitive

1. Define benign proliferative disorders of the soft tissues, distinguishing between scar keloid, desmoid, and fibrosarcoma.

2. Classify benign disorders of the soft tissue tumors.

3. Describe the pathology of these disorders.

4. Describe the presentations of these lesions discussing their natural history, work-up, and treatment.

5. Describe the adjuvant treatments and their mechanism of action.

6. Discuss the management of recurrent benign tumors.

7. Describe the management of intra-abdominal desmoids including surgery, drugs, and hormones.

8. Discuss the indications for amputation.

B. Psychomotor

1. Do a complete history and physical examination of the patient with desmoid tumour.
2. Detail a complete evaluation plan and treatment for a patient with an extremity, trunk or intra-abdominal desmoid.

3. Detail a plan for follow-up and participate in such a plan.

4. Detail a plan with an interdisciplinary team to manage a recurrence.

C. Attitudinal

1. Appreciate the patient perspective of a cancer-like growth with its attendant morbidity of surgery, radiotherapy, and/or chemotherapy.

2. Understand the psychological struggles with recurrence and body disfigurement associated with these tumours.

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care

Retroperitoneal Sarcoma

Enabling Objectives

With regards to Retroperitoneal Sarcoma, the candidate will demonstrate the following skills:

A. Cognitive

1. Classify the sarcomas that occur in the retroperitoneum.

2. Describe the clinical presentation of the patient with a retroperitoneal sarcoma.

3. Describe a diagnostic approach with a patient with a retroperitoneal mass including clinical exam, radiological exam, and other diagnostic measures.

4. Describe the natural history of retroperitoneal sarcomas with various modalities of treatment including surgery only, surgery plus radiotherapy, radiotherapy only.
5. Describe natural course of recurrence of this disease and strategies for management.

6. Describe the role of adjuvant radiotherapy and chemotherapy.

7. Describe the approaches for palliation of this disease with surgery and other therapeutic modalities.

8. Discuss the management of metastatic disease to the liver.

B. Psychomotor

1. Participate in the history and physical of a patient with retroperitoneal sarcoma.

2. Outline a treatment plan including diagnosis, discussion with patients, getting consent, and participate in a plan which may include radiotherapy, pre- or post-operatively, as well as a surgical resection in collaboration with the surgeons.

3. Examine a number of patients who have had this disease in follow-up clinics.

C. Attitudinal

1. Become aware of the difficulties in long-term local control of this disease.

2. Be able to discuss the potential for recurrence and palliative support for patients with this disease.

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
STATISTICS
AND EXPERIMENTAL DESIGN

Terminal Objective

The fellow should demonstrate sufficient knowledge of epidemiology and statistical methods to design and interpret research.

Enabling Objectives

A. The fellow should be able to describe and interpret principles of epidemiology with regard to:

1. descriptive epidemiology including
   - disease incidence/prevalence
   - adjustment of disease rates

2. causality of disease including
   - criteria for judging causality
   - quantitative assessment (relative risk, odds ratio)

3. disease or risk factor screening including
   - criteria for establishing a screening program
   - quantitative assessments (sensitivity/specificity, receiver-operator characteristics curve)

4. study design including
   - experimental (e.g., randomized clinical trials)
   - observational (e.g., prospective cohort, retrospective cohort, case-control)

5. appropriate conduct of study including
   - calculation of power
   - case selection
   - control selection
• randomization
• human subject rights
• avoidance of bias
• avoidance of confounding variables

B. The fellow should be able to explain:

1. descriptive statistics including
   • measures of central tendency
   • measures of dispersion

2. statistical estimates of variability (confidence interval)

3. inference (hypothesis testing) including
   • confidence intervals
   • non-parametric testing (e.g., rank sign test)
   • multiple sample tests (e.g., analysis of variance), and
   • differences in proportions (e.g., multiple regression and logistic regression)

C. The fellow should know when to seek statistical consultation for research planning.

D. The fellow should know the importance, use and limitations of computers in storage and analysis of data.

Teaching Methods

1. One-to-four week course in Epidemiology/Biostatistics.
2. Discussions at special journal clubs (every 3rd Thursday).
3. Participation in clinical research.
STOMACH

Terminal Objectives

1. Form an appropriate plan of management for a patient with suspected or proven gastric malignancy.

Enabling Objectives

A. Cognitive

1. Be able to list and describe the histological subtypes of gastric malignancy and know the factors predisposing to each.

2. Recognize the prognostic significance of each histological subtype.

3. Be familiar with the staging classification of gastric lymphoma, adenocarcinoma and mesenchymal tumours, in particular GIST.

4. Appreciate the role of chemotherapy and radiation therapy in patients with each histological subtype of tumour.

5. Read and know the results of the Intergroup 0116 trial of adjuvant chemoradiation for completely resected gastric adenocarcinoma.

6. Understand the mechanism of action of STI-571, observe patient response to the drug clinically and radiologically, and follow the literature regarding its evolving role.

7. Recognize the indications for neoadjuvant, adjuvant and palliative chemotherapy/radiotherapy.
Objectives for Royal College Approved Medical Oncology Training Programs

Teaching Methods

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care
TUMOR IMMUNOLOGY

Terminal Objectives

The fellow should know the essential components of the immune system.

Enabling Objectives

A. Definitions – The fellow must be able to define:

4. antigen and antibody

5. and describe the origin and function of “B cells”

6. five (5) classes of antibodies and describe their manufacture and function

7. and describe the origin and function of “T cells”, and the three (3) major subsets of “T cells”

8. and list cytokines which may have medical application (e.g., TNF, interleukins, interferon, etc.) and complement and describe its origin, function and underlying mechanism (s) of action

B. Immune Responses – The fellow must be able to define:

1. The mechanism of antibody production following exposure to antigen.

2. And describe the mechanisms of cytotoxic lymphocytes following exposure to foreign tissue antigens or other antigenic substances.

3. And list the function (s) of the major cytokines as effector mechanisms, alone and in combination.
4. The mechanism(s) of immediate and delayed hypersensitivity.

5. And differentiate between humoral-mediated response and cell-mediated response.

6. And describe mechanisms of cell-mediated cytotoxicity.

7. And give examples of immunosuppression, enhancement and tolerance.

8. And describe the effect of nutritional depletion on the immune system and the methods to monitor this effect.

9. Differences between innate and adapted immune responses.

10. Pathways via dendritic cells that process antigen as part of the immune responses.

C. **Tumor Immunology** – The fellow should know the current data cited as evidence that the immune system is involved with neoplastic processed and must be able to:

1. distinguish between
   - tumor-specific transplantation antigen (TSTA).
   - Tumor-associated antigens (TAA).
   - Human leukocyte antigen (HLA).

2. Describe the theory of immunologic surveillance and loss of rejection.

3. Describe the occurrence of neoplasms in immunodeficient and immunosuppressed individuals.

4. Describe the specific antigenicity found in tumors induced by chemical carcinogens.

5. Describe the convers antigenicity found in tumors induced by viral carcinogens.

6. Describe the immunologic evidence for viral oncogenesis.

7. Explain the significance of carcinoembryonic antigen (CEA), alphafetoprotein (AFP) and human chorionic gonadotropin (hCG) in patients with malignancies.
8. Describe evidence for tumor associated antigens in gynecologic malignancies.

9. Describe the use of serum tumor markers, e.g., CA-125, CA 19-9, CEA and TA-4, in gynecologic cancer.

D. **Immunotherapy** – The fellow must be able to:

1. Define and describe the three methods of cellular immunotherapy (i.e., active specific, active nonspecific and passive) and describe the principle(s) for their use.

2. Define and describe the medical uses of cytokines

3. Describe how monoclonal antibodies are generated and how they are applied to cancer biology for diagnosis and therapy.

**Teaching Methods**

1. Reference books/articles
2. Courses/lectures
3. Participation in clinical care (immunotherapy)
CANMED ROLES

COMMUNICATOR

Terminal Objectives

The candidate will be proficient in obtaining a thorough and relevant history by conducting a successful physician-patient encounter:

- opening the encounter
- gathering information
- eliciting and understanding the patient’s perspective
- sharing information
- reaching agreement on the problem and plans
- closing the encounter
- developing a diagnostic plan and treatment plan (shared decision making with patient)
- educating the patient about the diagnosis and treatment plan
- obtaining informed consent for surgical procedures and treatments
- discussing the results of the tests/procedures
- communicating with patients and family
- communicating with members of the health care team
- communicating with referring physician
- breaking bad news
- obtaining DNR status
- dealing with difficult surgeon-patient/family encounters
- presentations at teaching and patient care rounds
- Do all of the above despite ethno-cultural background different from the physician’s own.
CANMED ROLES

COLLABORATOR

Terminal Objectives

Residents **must** be given opportunities to develop effective collaborative skills:

- to work effectively with all members of the multi-disciplinary patient care team
- to consult with other physicians and health care professionals to provide optimal care of patients
- in conflict resolution.

Enabling Objectives

The resident will:

- Demonstrate the ability and willingness to work effectively with other professionals.
- Demonstrate interpersonal skills facilitating communication and cooperation with other health professionals.
- Deal with unprofessional behavior in colleagues in an effective manner to ensure optimum care of patients.
- Resolve conflicts with colleagues over practice or ethical issues in a professional and effective manner.
**CANMED ROLES**

**MANAGER**

**Terminal Objectives**

Residents **must** be given opportunities to develop skills in management and administration as applied to their specialty or subspecialty such as efficient practice and records management and the ethical use of health care resources.

The program **must** provide residents with opportunities to gain an understanding of the principles and practice of quality assurance/improvement. Opportunities **should** be provided for residents to participate actively in such programs in their hospital departments.

**Enabling Objectives**

The resident will:

- Practice evidence based medicine and be capable of analysis of data for outcome measures.
- Acquire skills in critical evaluation of the surgical literature, including an understanding of the design of prospective and retrospective clinical studies.
- Have knowledge and understanding of clinical trials in surgical therapies.
- Maintain a record or participation in morbidity and mortality conferences, clinical research conferences, and programs of continuing self-education.
- Allocate finite health care resources wisely in relation to patient care and cost effectiveness.
CANMED ROLES

HEALTH ADVOCATE

Terminal Objectives

Residents *should* be prepared for their role as a health care advocate in their specialty or subspecialty. They *should* learn to advocate both for their patients and for the community in which they practice.

During their training, residents *should* learn about disease prevention and public health and environmental issues as is appropriate to the specialty or subspecialty. They *should* be prepared to support initiatives in these areas.

Residents *should* be aware of the organizations that support safe standards for the welfare or patients and society.

Residents *should* be encouraged to participate in projects to improve standards of health care for both individuals and the community.

Enabling Objectives

The resident will:

Participate in committee meetings and retreats related to the development and delivery of the cancer program.

Be competent in the areas of epidemiology of disease, and effective health measures that influence health behaviour such as smoking prevention.
Be conversant with the Canada Health Act and be aware of other health systems and their advantages and disadvantages.

Be knowledgeable about the literature on for profit and not for profit care in terms of costs and outcomes.

Be conversant with both medical and non medical bodies that establish and uphold standards of care.

Be knowledgeable and to meet with members of health advocacy groups such as Road to Recovery, Cancersurmount, and the Canadian Cancer Society.
Terminal Objectives

Residents **must** be given opportunities to develop effective teaching skills by teaching junior colleagues and students, as well as through conference presentations, clinical and scientific reports, and patient education.

The academic program **must** provide the opportunity for residents to learn biostatistics and the critical appraisal of research methodology and medical literature.

All programs **must** promote development of skills in self-assessment and self-directed life-long learning.

A satisfactory level of research and scholarly activity **must** be maintained among the faculty identified with the program as evidenced by activities such as:

- research grants to staff and other research expenditures;
- publication by staff in peer-reviewed journals;
- involvement by staff and residents in current research projects.

There **must** be a faculty member with the responsibility to facilitate the involvement of residents in research and other scholarly work. Residents **should** be encouraged to participate in clinical research during the course of the residency program. Clinical research is defined as research involving human subjects or experimental studies of direct clinical relevance. Acceptable clinical research projects may include:
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- analysis of a contemporary clinical problem, using acceptable statistical methods as required, the results of which are reported at local or national meetings and are eligible for publication in scientific journals; or
- supervised participation in an ongoing project in experimental medicine

The program should provide opportunities for residents to attend conferences outside their own university.

Enabling Objectives

The resident will:

- Maintain a personal library and reference system.
- Know how to access resources related to a patient problem from all available sources.
- Present a topic with pertinent review of literature at a conference.
- Utilize continuing professional development for self study and assessment.
- Be honest and show integrity in performing and reporting scientific inquiry.
- Engage in education of colleagues and the public.
Objectives for Royal College Approved Medical Oncology Training Programs

CANMED ROLES

PROFESSIONAL

Terminal Objectives

The program must ensure that each resident develops the knowledge skills and attitudes to:

- deliver the highest quality care with integrity, honesty, and compassion;
- exhibit appropriate professional and interpersonal behaviours;
- practice medicine in an ethically responsible manner.

The program must ensure that the residents gain an understanding of the basic principles and practice of biomedical ethics as it relates to the specific specialty or subspecialty.

The program should provide residents with knowledge of relevant legislation and regulations to guide practice in the specialty or subspecialty.

Residents must be guided to develop an appropriate balance between personal and professional life to promote their own physical and mental health and well being as an essential to effective life long practice.

Enabling Objectives

The resident will:

- Always show concern for the patient’s well being, delivering care with integrity, honesty and compassion
Be emphatic particularly when delivering bad news, obtaining informed consent, performing advance care planning or withdrawing life-sustaining treatment, seeking organ donation, and seeking consent for postmortem examination.

Be aware of the limits of his/her knowledge and skills and seek appropriate assistance.

Understand and apply the concept of graded responsibility of clinical practice, including being able to delegate as well as accept responsibility, and demonstrate leadership by supporting subordinates who act on their behalf.

Be receptive to constructive criticism of performance by supervisors, peers, and paramedical personnel.

Be able to recognize his/her own deficiencies in training and/or education and communication concerns to the Program Director.

Assess appropriate assistance for substance abuse.

Be diligent in meeting obligations (academic, clinical, and personal) and accepting the consequences of one’s actions or lack thereof.

The resident can apply the ethical and legal principles relating to:

- Confidentiality and access to health records
- Record keeping
- Informed consent
- Obtaining permission for autopsy.
- Autonomy
- Paternalism
- Beneficence
- Non-maleficence
- Withholding resuscitative measures
- Organ and tissue donation
- Brain death
- Professional misconduct