

## **TORONTO GENERAL HOSPITAL HIV AMBULATORY CARE ROTATION**

### **SITE:**

Immunodeficiency Clinic, Toronto General Hospital, University Health Network

Location: 13<sup>th</sup> floor, Norman Urquart Building, room 1300

- the clinic serves over 1000 patients a year, making it one of the largest outpatient clinics in Canada
- medical staff comprised of HIV/infectious disease specialists and internists with expertise in HIV
- a comprehensive interdisciplinary approach (includes medicine, nursing, pharmacy, social work, nutrition, and psychiatry) is utilized to provide patient care
- also a leading centre for HIV research; clinic is involved with over 35 ongoing trials, including phase II/III, pharmacokinetics, open-label/expanded access, and epidemiologic studies
- [www.hivclinic.ca](http://www.hivclinic.ca)

### **DURATION OF ROTATION:**

8 weeks

### **PRECEPTOR:**

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### **GOALS:**

1. To acquire an appropriate degree of knowledge of various HIV-related topics in order to adequately and efficiently identify, resolve, and prevent drug-related problems in the HIV-infected ambulatory population.
2. To allow the resident to develop critical thinking skills, in order to analyze and integrate pertinent disease, drug and patient data and concepts for the purposes of being able to provide effective pharmaceutical care.
3. To develop an understanding and appreciation of the clinical role of the pharmacist in a specialty outpatient care setting.

**OBJECTIVES:**

1. The resident will acquire knowledge of the principles, strategies, and protocols for treating HIV infection, associated comorbidities and opportunistic infections (see appendix 1).
2. The resident will acquire an understanding and appreciation of drug-related issues commonly encountered in the management of patients infected with HIV.
3. The resident will be able to develop strategies to manage patients with evolving medical conditions and complex drug-related issues on an ongoing basis.
4. The resident will be able to provide verbal and written therapeutic assessments, plans and recommendations.

**Terminal Competencies**

At the end of this rotation, the resident will be able to:

1. Discuss principles and current recommendations for both the management of HIV infection as well as treatment and prevention of various opportunistic infections:
  - a) basic pathophysiology of the disease state affecting the patient with respect to pathogenesis, epidemiology, risk factors, clinical presentation, laboratory indices affected, diagnostic criteria;
  - b) approach to therapeutic management, pharmacologic and non-pharmacologic;
  - c) available pharmacologic agents and factors affecting the selection of an optimal treatment regimen;
  - d) pertinent monitoring parameters, including frequency, acceptable endpoints and duration of monitoring, for both efficacy and toxicity;
  - e) pharmacological issues pertinent or of interest to pharmacists
2. Discuss the advantages and disadvantages, indications and contraindications of the various antiretroviral agents (Appendix 2) with respect to:
  - a) efficacy;
  - b) resistance patterns;
  - c) dosage regimen;
  - d) bioavailability of oral dosage forms;
  - e) toxicity;
  - f) convenience;
  - g) availability, including Formulary status;
  - h) drug interactions;
  - i) cost
3. To be able to anticipate and prevent, and/or identify and resolve individual patient's drug-related problems:
  - a) To be able to collect relevant drug, disease, and patient information in an effective and concise manner. This may be done via: chart review, patient interview, utilizing resources (including standard textbooks, published medical literature, conference abstracts, unpublished data from manufacturers and investigators, and reliable Internet sites), and communication with other health professionals (including community/hospital pharmacists, family physicians, nurses, etc.).

- b) To analyze and integrate pertinent data in order to identify actual and potential drug-related issues for individual patients, in an accurate and efficient manner.
  - c) To be able to prioritize drug-related issues through discussions with the patient and health care team.
  - d) To be able to develop and provide appropriate recommendations on the management or prevention of each drug-related problem in a timely manner. The resident should be able to provide rationale for his/her pharmacy care plans, and be able to modify recommendations based on individual patient factors.
  - e) To communicate care plans, recommendations, and drug-related information effectively with patients, family members, and members of the health care team. This may be done in person, over the telephone, chart documentation, or through written consult letters.
  - f) To effectively provide follow-up care by determining desired therapeutic outcomes and developing monitoring plans that incorporate efficacy and toxicity endpoints.
  - g) To develop an awareness of how various psycho-social, ethical, cultural, and economic factors are involved in the management of HIV-infected individuals.
4. To be able to provide appropriate, timely and concise drug information to the team upon request. This may be in the form of answering brief queries, researching in-depth issues, and/or making informal or formal presentations.
- a) Identify the issues that need to be researched in order to provide comprehensive, complete drug information.
  - b) Independently utilize the available drug information resources to research the pertinent literature.
  - c) Use critical appraisal skills to assess the quality, clinical significance, and relevance of information in the area of HIV/infectious diseases.
  - d) Is able to synthesize pertinent material and prepare a concise presentation.
  - e) Effectively and efficiently present the information to the team.
  - f) Answer questions with appropriate terminology, conclusions, recommendations and references.
5. To be able to function as a mature, responsible, professional member of the health care team.
- a) To be able to identify and prioritize learning objectives, and to continually expand and modify these objectives as required throughout the rotation.
  - b) Is able to gather and process information in a self-directed manner, by utilizing available resources and identifying when assistance or feedback is required from the preceptor.
  - c) Has the ability to problem-solve in a systematic, logical manner.
  - d) Is able to respond positively to constructive feedback.

## **Appendix 1. Therapeutic Topics**

### HIV (general)

- epidemiology
- pathogenesis
- surrogate markers
- natural history
- spectrum of disease
- principles of therapy

### Opportunistic Infections (OIs) in HIV - Prophylaxis, Treatment

- Pneumocystis carinii pneumonia (PCP)
- Toxoplasmosis
- Cryptococcal meningitis
- Mycobacterium avium complex (MAC)
- cytomegalovirus (CMV)
- tuberculosis
- candidiasis
- intestinal parasites
- other

### Other Comorbidities (AIDS-Associated Conditions and non-AIDS-related comorbidities)

- HIV associated neurocognitive disorders (HAND)
- peripheral neuropathy, pain control
- Hepatitis C coinfection
- Aging
- Non-AIDS-related comorbidities (cardiovascular, metabolic, cancer, etc.)

### Medication-Related Issues in HIV

- drug-disease considerations
- medication adherence
- drug interactions
- adverse drug reactions
- medication costs/acquisition
- therapeutic drug monitoring
- drug resistance
- pharmacogenetics

### HIV in Specific Patient Populations

- women, including pregnancy and breastfeeding issues
- intravenous drug abusers (IVDA)
- health care workers (via occupational exposure)
- HIV prevention: post-exposure prophylaxis (PEP) and pre-exposure prophylaxis (PrEP)

## **Appendix 2: Antiretroviral Therapy**

1. Reverse Transcriptase Inhibitors
  - a) Abacavir (ABC), tenofovir (TDF), lamivudine (3TC), emtricitabine (FTC), zidovudine (AZT), didanosine (ddI), stavudine (d4T)
2. Non-Nucleoside Reverse Transcriptase Inhibitors
  - a) Efavirenz, etravirine, rilpivirine, nevirapine
  - b) Doravirine (investigational)
3. Protease Inhibitors
  - a) atazanavir, darunavir, fosamprenavir, indinavir, lopinavir, nelfinavir, saquinavir, tipranavir
4. Integrase inhibitors
  - a) Raltegravir, elvitegravir, dolutegravir
  - b) Cabotegravir (investigational)
5. CCR5 antagonists
  - a) Maraviroc
  - b) Cenicriviroc (investigational)
6. Entry Inhibitors
  - a) Enfuvirtide
7. Attachment inhibitor
  - a) BMS-663068 (investigational)
8. Boosters
  - a) Cobicistat, ritonavir

## **Appendix 3: Hepatitis C Directly Acting Antiviral Therapy**

1. NS3/4 Protease Inhibitors
  - a) Simeprevir, paritaprevir
  - b) Asunaprevir, grazoprevir (investigational)
2. NS5B Inhibitors
  - a) Sofosbuvir
  - b) dasabuvir
3. NS5A Inhibitors
  - a) Ledipasvir, daclatasvir, ombitasvir
  - b) Elbasvir (investigational)