Unit 2

Systemic Therapy as a Cancer Treatment Modality
Systemic therapy as a cancer treatment modality is the use of drugs for the treatment or support of cancer patients. Systemic therapy includes cancer chemotherapy (often referred to as antineoplastic drugs), biotherapy and targeted therapy, hormone therapy and supportive care drugs irrespective of the route of administration. These drugs may be used alone or in combination with each other.

Systemic therapy plays an important role in combination with other cancer treatment modalities, surgery, and radiation therapy.

This module focuses on the use of cancer systemic therapy, biotherapy and targeted therapy, and hormone therapy. A detailed listing of all drugs used in systemic therapy is available in the Systemic Therapy Manual for Cancer Treatment. The Systemic Therapy Manual is published and updated by the Systemic Therapy Program of Cancer Care Nova Scotia. It can be found at: http://www.cancercare.ns.ca/en/home/healthprofessionals/stp/default.aspx

In Nova Scotia, systemic therapy for cancer treatment may be ordered by oncologists or nurse practitioners (NP’s) for administration – either within a Cancer Care Program site, an outreach clinic staffed by an attending oncologist, or as recommended by an oncologist for administration at a regional centre, following an initial consult visit at the Queen Elizabeth II Health Sciences Centre (QEII HSC), Izaak Walton Killam Health Centre (IWK) or the Cape Breton Cancer Centre (CBCC). Appropriate choices for systemic therapy must include the option for care close to home, but not all treatments may be available at the local hospital. Assignment of regimens to a Level of Care model is noted in the ‘Systemic Therapy Manual for Cancer Treatment’ for each regimen. The Level of Care criteria for each level of hospital is also completed. Policies and procedures for transfer of care between locations and proper communication of orders and treatment plans is also under development in collaboration with all District Health Authorities, IWK and Cancer Care Nova Scotia. Of course, the judgment of the clinician is crucial for decisions on the best location for patient treatment with safety as the most important factor. The Level of Care model and criteria is located on the CCNS website: http://www.cancercare.ns.ca

Verification of systemic therapy orders should be done by a pharmacist trained in oncology pharmacy. For districts that do not have a designated oncology pharmacist, the provincial policies and procedures for chemotherapy ordering should be closely followed by verifying pharmacists.
These drugs should be administered in a dedicated treatment area. Administration of parenteral systemic therapy is a post entry level competency and requires that a Registered Nurse complete a specified education program.

**LEARNING OBJECTIVES**

At the completion of this unit the learner will be able to:

- Explain the role of systemic therapy in cancer treatment
- Discuss the classifications of systemic therapy agents and their mechanism of action
- Explain the rationale for and the benefits of combination systemic therapy
- Use the “Systemic Therapy Manual for Cancer Treatment” as a resource for systemic therapy protocols/agents
- Discuss the relationship between cellular response to cancer systemic therapy and drug dose and scheduling
- Discuss the relationship between combined modality treatment and side effects/toxicities and scheduling
- Discuss factors influencing the selection of agents used as systemic therapy treatment
- Identify responses to treatment, influencing factors and tools used to measure responses
- Identify the relationship between systemic therapy protocols and clinical trials

**UNIT OVERVIEW**

To complete this unit you must complete the following:

1) Read the Unit 2 curriculum document in handouts on the side bar, or right click the “Push Pin” icon to the right. You will find this document to be valuable when completing your course work for this unit.

2) Complete Learning Activities.

**LEARNING ACTIVITY 1**

Complete the matching quiz for this unit. To go to the quiz, click the following link:

[http://access.nscc.ca/CCNS/ChemoAdmin_2010_Unit_2/quiz.html](http://access.nscc.ca/CCNS/ChemoAdmin_2010_Unit_2/quiz.html)
Mrs. Fraser, a 42 year old premenopausal woman, was diagnosed with Stage 111 Breast Cancer. She has had a mastectomy to remove the tumour and surrounding breast tissue. Local lymph nodes are also removed in order to check for cancer spread.

Some of the nodes are found to contain metastasis, and the patient is estimated to be at high risk for tumour recurrence of this disease due to this finding. Mrs. Fraser is to receive adjuvant systemic therapy and will be receiving four cycles of AC (Adriamycin and Cyclophosphamide).

Questions:

Mrs. Fraser has arrived for her teaching class and asks why her chemotherapy consists of more than 1 drug.

1) Describe how you would respond to her question. Please post your answers to D2L.

The link for D2L is: https://nscconline.desire2learn.com

2) Search the Systemic Therapy Manual for Cancer Treatment

The Manual is intended to provide information support to all health care professionals involved with cancer patients. The Systemic Therapy Manual is available in all pharmacies and chemotherapy units in Nova Scotia hospitals and posted on the Cancer Care Nova Scotia website at:


In the Manual, you will find:

- Detailed monographs of the drugs and regimens used for the systemic therapy of cancer

Using the Systemic Therapy Manual for Cancer Treatment
Check the box as you locate and read each search topic listed below.

Searching the regimen AC (Doxorubicin, Cyclophosphamide) for the following:

1. Indication
2. Level of Regimen
3. Schedule of administration
4. Pre and post chemo medication
5. Dose modification
6. Monitoring parameters

Search the Drug Monograph:

1. Classification
2. Compatibility
3. Administration routes
4. Administration
5. Side Effects
6. Dosing
7. Extravasation hazard

Please open a new webpage browser and insert the address below so you may see both your unit and the manual.


3) Mrs. Fraser will be receiving four cycles of AC (Adriamycin and Cyclophosphamide)
Using the Systemic Therapy Manual, identify the classification for each of these drugs.

<table>
<thead>
<tr>
<th>Systemic Therapy Agent</th>
<th>Classification according to pharmacological action</th>
<th>Classification according to Cell Cycle Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adriamycin</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please complete this question. To view the answer key right click the “Push Pin” icon to the right.

Please refer to the areas of Systemic Therapy Manual for Cancer Treatment entitled, “Selection of Systemic Therapy Drugs” and “Chemotherapy as a Treatment Modality” to help you further with Points to Ponder 1, 2, and 3. You may also refer to your curriculum document for Unit 2 in the handouts section of your course map, or right click the “Push Pin” icon to the right.

Points to Ponder...

1) Mrs. Fraser, who is receiving treatment for breast cancer, asks why she is on different drugs than the person next to her. She says she has breast cancer too. How would you respond?

2) At approximately two weeks into her first cycle, Mrs. Fraser starts to get mouth sores and experiences hair loss. Hair loss and mucositis are side effects commonly experienced by patients receiving chemotherapy. Why?

3) Mrs. Fraser is scheduled to receive her cancer treatments every three weeks. She has met other patients who are receiving treatments weekly and every two weeks. She asks why her treatment is spaced every three weeks.

4) Mrs. Fraser has heard about Trastuzumab from her next door neighbor who is receiving this treatment for her breast cancer. She asks if she should receive this drug. To understand the indications for the use of Herceptin please click on the following link and click the Herceptin MOA Video. This is also a useful resource to make your patients aware of.

http://www.herceptin.com/hcp/treatment/moa
5) When Mrs. Fraser has completed her treatment, she is placed on Tamoxifen for five years as her tumour was determined to be estrogen receptor-positive.

To understand why Mrs. Fraser is prescribed this mediation, go to the Cancer Quest website: [http://www.insidecancer.org/](http://www.insidecancer.org/). Click Diagnosis and Treatment; select blocking receptors, and change video preferences to view with narration.

Using this information to guide you, pretend that you are speaking with your colleague and explain the different mechanism of action between chemotherapy agents and this hormonal treatment.

For ease of navigation back to this study guide: Once you view the website below, simply hold down the alt key and while doing so depress the left arrow on your keyboard. This will bring you directly back to this study guide. Or, you may use the back arrow on your browser.

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**LEARNING ACTIVITY 2**

A patient insists that she is going to receive the best possible treatment available in North America and is prepared to go anywhere for it. In discussion with the physician you establish that most large centres are following the same protocol the patient is being offered although many centres are involved in clinical trials comparing a research protocol to this same protocol. How would you explain this to the patient?

- To help you better respond, you may also wish to read more about Clinical Trials; go to: **Canadian Cancer Society website**: [Click on Clinical Trials on the left hand side.](http://www.cancer.ca/Nova%20Scotia/About%20cancer/Treatment/Clinical%20trials.aspx?sc_lang=en&r=1)
Please post your answers to D2L at the link below:

https://nscconline.desire2learn.com/

OPTIONAL ENRICHED ACTIVITIES

The following learning activities are not a requirement but are provided to enrich your understanding of the topic:

Clinical Trials Video – Click the following link to watch the full Ginny Johnston interview.

http://www.cancerquest.org/index.cfm?page=2823

Angiogenesis Inhibitors Cancer Quest website:

http://www.cancerquest.org

Activity – Angiogenesis Inhibitors – On the top navigation bar, click on Education Center and click on Educational Games; click on Know the Flow; under Cancer Treatment, choose topic “Targeted Therapy”; follow instructions as indicated to play.