



**BC Cancer Agency**  
CARE & RESEARCH  
An agency of the Provincial Health Services Authority

# Systemic Therapy Update

Volume 10, Number 9 *for health professionals who care for cancer patients* September 2007  
Website access at <http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/stupdate.htm>

## INSIDE THIS ISSUE

- **Editor's Choice:** Calculation of Body Surface Area for Chemotherapy Dosing
- **Cancer Drug Manual: New:** Sorafenib monograph and handout; **Complete Revision:** Dacarbazine, Vinblastine monographs and handouts
- **Drug Update:** Platinum-Aluminum Interaction
- **List of New and Revised Protocols, Pre-Printed Orders and Patient Handouts: Revised:** BRAJACTG, BRAJACTT, BRAJACTTG, BRAJDTFEC, BRAJFEC, BRAVCAD, BRAVDOC, BRAVDOC7, BRAVGEMD, BRAVTR, BRAVTRAD, BRLAACD, BRLAACDT, GIFURC, GOOVCARB, HNFUP, SAMV
- **Continuing Education** – Canadian Association of Nurses in Oncology Conference, National Oncology Pharmacy Symposium, BC Cancer Agency Annual Cancer Conference
- **Erratum** – Chemotherapy Preparation and Stability Chart
- **Website Resources**

**IN TOUCH** phone list is provided if additional information is needed.

## EDITOR'S CHOICE

### CALCULATING BODY SURFACE AREA FOR CHEMOTHERAPY DOSING

The BCCA has recently revised the Chemotherapy Process Policy (III-10) to promote consistent calculation of body surface area (BSA). The policy describes when BSA should be calculated or recalculated, and specifies that the Mosteller formula should be used as the provincial standard for calculating BSA (see December 2006 issue of the Systemic Therapy Update - [www.bccancer.bc.ca/RS/CommunitiesOncologyNetwork/stupdate](http://www.bccancer.bc.ca/RS/CommunitiesOncologyNetwork/stupdate)).

#### *Rationale*

Because of their narrow therapeutic index, chemotherapy drugs are traditionally dosed according to the patient's BSA instead of body weight.<sup>(1)</sup> However, there are two main limitations to using BSA for dose calculation: the limited predictive value for therapeutic or toxic response to many chemotherapy drugs, and the use of various formulas for BSA calculation, which may lead to slightly different results. Hence, the BCCA has recently revised its policy to outline when to recalculate the BSA and to adopt the Mosteller formula as the provincial standard

#### *Limited predictive value*

After administration, the actions of drugs inside the body are affected by a complex process involving absorption (for non-parenteral drugs), distribution, metabolism and excretion. BSA does not predict the effect of all of these processes on response to a drug. For example, BSA alone does not account for the influence on drug elimination by interpatient variability in hepatic and renal function, or by other medications and disease states.<sup>(2-4)</sup> The Chemotherapy Process Policy emphasizes the need to monitor and adjust doses based on the whole clinical picture of the patient, rather than basing it only on the BSA. Hence, the BSA is calculated when the first chemotherapy dose is prescribed and only recalculated if the patient's weight has changed significantly, taking into account of other clinical factors.

#### *BSA calculation formulas*

Various formulas exist for BSA calculation. The most common are the Du Bois and the Mosteller formulas.<sup>(2)</sup> The Mosteller formula has been adopted as the provincial standard, because it has similar precision to the Du Bois, but requires less complex calculation. The BCCA recommends that slide rules and nomographs should not

be used<sup>(5)</sup> because of their inaccuracy.<sup>(1)</sup> A BSA calculator that uses the Mosteller formula is now conveniently located on the BCCA website at [www.bccancer.bc.ca/HPI/DrugDatabase/Appendices/Appendix9](http://www.bccancer.bc.ca/HPI/DrugDatabase/Appendices/Appendix9).

### References

1. Vu T. Standardization of body surface area calculations. *Journal of Oncology Pharmacy Practice*. 2002 June 1, 2002;8(2-3):49-54.
2. Miller AA. Body surface area in dosing anticancer agents: scratch the surface! *J Natl Cancer Inst*. 2002 Dec 18;94(24):1822-3.
3. Gurney H. How to calculate the dose of chemotherapy. *Br J Cancer*. 2002 Apr 22;86(8):1297-302.
4. Sawyer M, Ratain MJ. Body surface area as a determinant of pharmacokinetics and drug dosing. *Invest New Drugs*. 2001 May;19(2):171-7.
5. BC Cancer Agency. Provincial Standardization of Body Surface Area Calculation. 2006 Dec [updated 2006 Dec; cited 2007 Jul 17]; 9(12):1-2:[Available from: <http://www.bccancer.bc.ca/RS/CommunitiesOncologyNetwork/stupdate.htm>].

Submitted by:

Rhonda Kalyn, BSP

Pharmacy CON Educator

Centre of Southern Interior – BC Cancer Agency

---

## CANCER DRUG MANUAL

---

**Sorafenib Monograph and Patient Handout** have been developed. Expert review was provided by Dr. Christian Kollmannsberger (Genitourinary Tumour Group). Sorafenib is currently funded for use in the treatment of advanced renal cell carcinoma (RCC) after failure of cytokine therapy. Physicians must obtain case-by-case approval via the BC Cancer Agency Compassionate Access Program (CAP) to verify indication. The BC Cancer Agency does not fund the sequential use of sunitinib and sorafenib in patients with progression of disease on one of these drugs. See REVISED TREATMENT POLICY FOR METASTATIC RENAL CELL CARCINOMA in the [July 2007 issue](#) of Systemic Therapy Update for a brief description of the role of sorafenib in treating RCC in BC.

**Dacarbazine Monograph and Handout** have been completely revised. Expert review was provided by Dr. Meg Knowling (Sarcoma Tumour Group) and Dr. Kenneth Wilson (Melanoma Tumour Group).

Highlighted *monograph* changes include:

- addition of a hepatotoxicity paragraph
- removal of phenytoin and phenobarbital from the Interactions table, as these are theoretical interactions
- further discussion of theoretical interactions below the table, including those mediated by xanthine oxidase and CYP 1A2 and 2E1
- addition of drug compatibility information
- chemotherapy preparation and stability chart updated

Highlighted *handout* changes include:

- removal of interleukin-2, phenytoin, and phenobarbital from the interaction statement
- expanded side effects and management table, including flu-like illness, skin rash, decreased white blood cells, and loss of appetite

**Vinblastine Monograph and Handout** have been completely revised. Expert review was provided by Dr. Joseph Connors (Lymphoma Tumour Group) and Dr. Nevin Murray (Genitourinary Tumour Group).

Highlighted *monograph* changes include:

- updated uses section
- addition of incidence data to the expanded side effects table
- addition of a respiratory toxicity paragraph
- addition of azole antifungals, carbamazepine, and erythromycin to the Interactions table, as well as theoretical CYP 3A4 interactions listed below the table
- addition of drug compatibility information
- chemotherapy preparation and stability chart updated

Highlighted handout changes include:

- additional interaction information
- expanded side effects and management table, including skin rash, tiredness, constipation, headache, jaw pain and muscle pain, paresthesias, and hair loss

**Chemotherapy Preparation and Stability Chart** has had several revisions:

- routine review and updating of dacarbazine and vinblastine
- addition of information on aluminum-containing equipment to carboplatin, cisplatin, and oxaliplatin
- deletion of oxaliplatin powder (oxaliplatin solution is now standard)

## DRUG UPDATE

**Platinum-Aluminum Interaction** Aluminum-containing IV sets, needles, and syringes should not be used in the preparation or administration of cisplatin, carboplatin, or oxaliplatin. Due to an oxidation-reduction reaction, a black precipitate will form. This information is already included in the relevant Cancer Drug Manual monographs, and has now been added to the Chemotherapy Preparation and Stability Chart (see above). All needles used at the regional cancer centres are aluminum-free.

## LIST OF NEW AND REVISED PROTOCOLS, PRE-PRINTED ORDERS AND PATIENT HANDOUTS

The **BC Cancer Agency Protocol Summaries, Provincial Pre-Printed Orders (PPPOs) and Patient Handouts** are revised periodically. New and revised protocols, PPPOs and patient handouts for this month are listed below. Protocol codes for treatments requiring “Compassionate Access Program” approval are prefixed with the letter **U**.

**REVISED PROTOCOLS, PPPOs AND PATIENT HANDOUTS (AFFECTED DOCUMENTS ARE CHECKED):**

CODE	Protocol	PPPO	Patient Handout	Changes	Protocol Title
BRAJACTG	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Adjuvant Therapy for Breast Cancer Using Dose Dense Therapy: Doxorubicin and Cyclophosphamide followed by Paclitaxel
BRAJACTT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Adjuvant Therapy for Breast Cancer Using Doxorubicin and Cyclophosphamide followed by Paclitaxel and Trastuzumab
BRAJACTTG	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Adjuvant Therapy for Breast Cancer Using Dose Dense Therapy: Doxorubicin and Cyclophosphamide followed by Paclitaxel and Trastuzumab
BRAJDTFEC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Adjuvant Therapy for Breast Cancer Using Docetaxel and Trastuzumab, and Fluorouracil, Epirubicin and Cyclophosphamide
BRAJFEC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Adjuvant Therapy for Breast Cancer Using Fluorouracil, Epirubicin and Cyclophosphamide
BRAVCAD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Palliative Therapy for Metastatic Breast Cancer Using Docetaxel and Capecitabine
BRAVDOC	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Palliative therapy for metastatic breast cancer using Docetaxel

CODE	Protocol	PPPO	Patient Handout	Changes	Protocol Title
BRAVDOC7	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Palliative Therapy for Metastatic Breast Cancer using Weekly Docetaxel
BRAVGEMD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Palliative Therapy for Metastatic Breast Cancer using Gemcitabine and Docetaxel
BRAVTR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Typo deleted in treatment section</i>	Palliative Therapy for Metastatic Breast Cancer using Trastuzumab
BRAVTRAD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Palliative Therapy for Metastatic Breast Cancer using Trastuzumab and Docetaxel as First-Line Treatment for Recurrent Breast Cancer
BRLAACD	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Treatment of Locally Advanced Breast Cancer Using Doxorubicin and Cyclophosphamide followed by Docetaxel (TAXOTERE®)
BRLAACDT	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Liver function tests more clearly defined in lab section</i>	Treatment of Locally Advanced Breast Cancer Using Doxorubicin and Cyclophosphamide followed by Docetaxel (TAXOTERE®) and Trastuzumab
GIFURC	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Dosing time of capecitabine in relation to radiation clarified</i>	Combined Modality Adjuvant Therapy for High Risk Rectal Carcinoma Using Fluorouracil, Folinic Acid (Leucovorin), Capecitabine and Radiation Therapy
GOOVCARB	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Lab values required to proceed with treatment clarified</i>	First or Second Line Therapy for Invasive Epithelial Ovarian Cancer Using Single-Agent Carboplatin
HNFUP	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<i>Diluent for fluorouracil clarified</i>	Advanced Head and Neck Cancer Using Cisplatin and Fluorouracil
SAMV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<i>Antiemetic changed to low emetogenic potential</i>	Palliative Therapy for Aggressive Fibromatosis Using Weekly or Alternate Week Methotrexate and Vinblastine Intravenously

### CONTINUING EDUCATION

**Canadian Association of Nurses in Oncology (CANO) Annual Conference** will be held on 28-31 October, 2007 at the Hyatt Regency Hotel, Vancouver, BC. The theme for this year is *"Using Hearts, Minds and Voices, Oncology Nurses Influencing Cancer Care"*. Conference information and registration forms are available on the CANO website at <http://www.cano-acio.org/>.

**National Oncology Pharmacy Symposium (NOPS) 2007** will be held by the Canadian Association of Pharmacy in Oncology on **26-28 October, 2007** at the Marriott Harbourfront Hotel in Halifax, Nova Scotia. The theme for this year is *"Oncology Pharmacy in Your Community"*. Conference information and registration is available on [www.peopleware.net/index.cfm?siteCode=2431j&](http://www.peopleware.net/index.cfm?siteCode=2431j&). Early bird registration deadline is 14 September, 2007.

**BC Cancer Agency Annual Cancer Conference 2007** will be held on **29 November – 1 December**, at the Westin Bayshore Resort & Marina in Vancouver. This critical three-day conference is the BC Cancer

Agency's premier professional development, learning and networking event. It is the only Canadian west coast event of its kind, attracting 1000-plus professionals working in the oncology field.

This year's theme, *Innovation and Technology – Bench to Bedside*, creates the framework for our examination of the role of the BC Cancer Agency and its partners in the 'living laboratory' of British Columbia and their endeavours to enhance population-based cancer control outcomes. A highlight of this year's conference is a keynote presentation on November 30 by Dr. Roberta Bondar, a space scientist, neurologist, author, astronaut and Canada's first woman in space.

For a detailed agenda, schedule and registration information, please visit: [www.bccancer.bc.ca/HPI/ACC2007/default](http://www.bccancer.bc.ca/HPI/ACC2007/default)

## ERRATUM

In the Cancer Drug Manual section of the June issue, the revision in the Chemotherapy Preparation and Stability Chart should read "...with preservative-free diluent", and not ".....with preservative diluent".

## WEBSITE RESOURCES

The following are available on the BC Cancer Agency website ([www.bccancer.bc.ca](http://www.bccancer.bc.ca)) under the Health Professionals Info section:

REIMBURSEMENT AND FORMS: BENEFIT DRUG LIST, CLASS II, COMPASSIONATE ACCESS PROGRAM (UNDESIGNATED INDICATION)	<a href="http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Forms">www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Forms</a>
CANCER DRUG MANUAL	<a href="http://www.bccancer.bc.ca/cdm">www.bccancer.bc.ca/cdm</a>
CANCER MANAGEMENT GUIDELINES	<a href="http://www.bccancer.bc.ca/CaMgmtGuidelines">www.bccancer.bc.ca/CaMgmtGuidelines</a>
CANCER CHEMOTHERAPY PROTOCOLS	<a href="http://www.bccancer.bc.ca/ChemoProtocols">www.bccancer.bc.ca/ChemoProtocols</a>
CANCER CHEMOTHERAPY PRE-PRINTED ORDERS	<a href="http://www.bccancer.bc.ca/ChemoProtocols">www.bccancer.bc.ca/ChemoProtocols</a> under the index page of each tumour site
SYSTEMIC THERAPY PROGRAM POLICIES	<a href="http://www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies">www.bccancer.bc.ca/HPI/ChemotherapyProtocols/Policies</a>
<a href="#">UNCONVENTIONAL CANCER THERAPIES MANUAL</a>	under Patient/Public Info, Unconventional Therapies

## Editorial Review Board

Mário de Lemos, PharmD, MSc(Oncol) (Editor) Sarah Jennings, BSc(Biomed), BScPhm (Assistant Editor) Caroline Lohrisch, MD Johanna Den Duyf, MA Judy Oliver, BScN, MEd	Beth Morrison, MLS Jaya Venkatesh, MHA, CMA Susan Walisser, BSc (Pharm) Gigi Concon (Editorial Assistant)
--	--

IN TOUCH	<a href="http://www.bccancer.bc.ca">www.bccancer.bc.ca</a>	<a href="mailto:bulletin@bccancer.bc.ca">bulletin@bccancer.bc.ca</a>
BC CANCER AGENCY .....	(604) 877-6000 .....	Toll-Free 1-(800) 663-3333
COMMUNITIES ONCOLOGY NETWORK .....	Ext 2744 .....	<a href="mailto:ivenkate@bccancer.bc.ca">ivenkate@bccancer.bc.ca</a>
EDUCATION RESOURCE NURSE .....	Ext 2638 .....	<a href="mailto:nursinged@bccancer.bc.ca">nursinged@bccancer.bc.ca</a>
NURSING PROFESSIONAL PRACTICE .....	Ext 2623 .....	<a href="mailto:ilundie@bccancer.bc.ca">ilundie@bccancer.bc.ca</a>
PHARMACY PROFESSIONAL PRACTICE .....	Ext 2247 .....	<a href="mailto:gconcon@bccancer.bc.ca">gconcon@bccancer.bc.ca</a>
PROVINCIAL SYSTEMIC THERAPY PROGRAM .....	Ext 2247 .....	<a href="mailto:gconcon@bccancer.bc.ca">gconcon@bccancer.bc.ca</a>
COMMUNITIES ONCOLOGY NETWORK PHARMACIST .....	Ext 6277 .....	<a href="mailto:lkovacic@bccancer.bc.ca">lkovacic@bccancer.bc.ca</a>
DRUG INFORMATION .....	Ext 6275 .....	<a href="mailto:druginfo@bccancer.bc.ca">druginfo@bccancer.bc.ca</a>
LIBRARY/CANCER INFORMATION .....	1-(888)-675-8001 .....	<a href="mailto:requests@bccancer.bc.ca">requests@bccancer.bc.ca</a>
	Ext 8003	
OSCAR HELP DESK .....	1-(888)-355-0355 .....	<a href="mailto:oscar@bccancer.bc.ca">oscar@bccancer.bc.ca</a>
	Fax (604) 708-2051	
COMPASSIONATE ACCESS PROGRAM OFFICE .....	Ext 6277 .....	<a href="mailto:cap_bcca@bccancer.bc.ca">cap_bcca@bccancer.bc.ca</a>
(FORMERLY UNDESIGNATED DRUG APPLICATION OFFICE)	Fax (604) 708-2026	
UPDATE EDITOR .....	Ext 2288 .....	<a href="mailto:mdelemos@bccancer.bc.ca">mdelemos@bccancer.bc.ca</a>
CENTRE FOR THE SOUTHERN INTERIOR (CCSI) .....	(250) 712-3900 .....	Toll-Free 1-(888) 563-7773
FRASER VALLEY CENTRE (FVCC) .....	(604) 930-2098 .....	Toll-Free 1-(800) 523-2885
VANCOUVER CENTRE (VCC) .....	(604) 877-6000 .....	Toll-Free 1-(800) 663-3333
VANCOUVER ISLAND CENTRE (VICC) .....	(250) 519-5500 .....	Toll-Free 1-(800) 670-3322