

APPENDIX

Supplementary methods

Inter-site needs assessment (Plan step)

Teams from each center completed a quality assessment form on use of BTT at their center (Figure S1a) and a PDSA project flowsheet (Figure S1b) after initial structured discussions among their team members. The quality assessment form was organized in two main sections by type of BTT – life-prolonging, requiring an NM referral (radium-223) and supportive, general referral (denosumab, ZA, EBRT and calcium/vitamin D) agents. Each of these sections was divided in four fillable fields: i) met needs (gains – what our region is doing well to optimize BTT) and unmet needs (gaps – current challenges in optimizing BTT in our region), project ideas (potential short term actionable solutions), and out of scope (recommendations to BC Genitourinary (GU) Tumor Group [longer term]). Feedback from individual team members on each of these areas was documented in the respective form field. A third section was used to document the result from group discussion on most compelling HQI project idea(s) and top 1-3 recommendations to BC GU Tumor Group (longer term).

The HQI flowsheet outlined the PDSA process with a short description of each step and its output(s). During the initial discussion at the Plan step, teams at each site were to complete the form with their selected main project goal and list the tasks needed to set up the test of change as well as to assign a responsible and deadline for each of those tasks. Each group was also asked to predict what will happen when the test is carried out and identify measures to determine if prediction was successful.

Retrospective chart audits and physician surveys (plan step)

Two additional approaches were used at individual centers to assess patterns of BTT utilization (met and unmet needs) prior to or at initiation of the HQI process – retrospective patient chart audits and physician surveys. Chart audits were conducted after research ethics board approval in Abbotsford and Victoria. A prospective survey of medical oncologists was conducted in Kelowna to collect data on current and prior patterns of treatment in new patients seen in the first month of the initiative.

HQI tool development (do step)

Development of HQI tools and processes was performed by BOW team members at each site based on group discussion. Different tools were created and used in HQI initiatives – referral forms and guidelines, MDT meeting report form and database, and improvement charters.

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Supplementary Figure 1. Health quality (A) needs assessment and (B) improvement (plan-do-study-act [PDSA] project flowsheet) templates.

(A) Needs assessment form

BTT Life Prolonging Therapy (Radium-223)	
Gains What our region is doing well to optimize Ra-223 – ↑OS/↓SSE	Gaps Current challenges in optimizing Ra-223 in our region
Project ideas: Potential Short Term Actionable Solutions	Out of scope Recommendations to Prov. Tumour Group (longer term)
BTT Supportive Therapy (Due to time restrictions select 1 discuss): <input type="checkbox"/> Denosumab <input type="checkbox"/> Zolodronic Acid <input type="checkbox"/> EBRT <input type="checkbox"/> Calcium/Vitamin D	
Gains What our region is doing well to optimize supportive therapy	Gaps Current challenges in optimizing supportive therapy
Project ideas: Potential Short Term Actionable Solutions	Out of scope Recommendations to Prov. Tumour Group (longer term)
Group Discussion – My Vote	
MOST COMPELLING PROJECT IDEA	TOP 1-3 Recommendations to Prov. Tumour Group (longer term)

(B) PDSA project flowsheet template

BOW PDSA Project Flowsheet (Template) (Surrey Workgroup)



SMART Goal (Aim): <insert SMART goal>

PLAN - List the tasks needed to set up this test of change	Person responsible	Deadline/Test period
1.		
2.		
3.		
4.		

Predict what will happen when test carried out	SMART Measures to determine if prediction succeeds

DO - Describe what actually happened when you ran the test:

<Input conference call date to discuss & review results and plan for fall share back meeting>

STUDY - Describe the measured results and how they compared to the predictions:

<schedule 2nd fall workgroup learning event where team presents at an education dinner to peers on what was learned>

ACT - Describe what modifications to the plan will be made for the next cycle from what you learned:

Chairs to prepare to present results and recommendations for next cycle at the GUCU Satellite meeting - all 5 regions to present

- Adapt:** Improve the change and continue testing plan (add Plans/changes for next test)
- Adopt:** Select changes to implement on a larger scale and develop an implementation plan and plan for sustainability
- Abandon:** Discard this change idea and try a different one

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Supplementary Figure 2. Health quality improvement tools developed by site.

A. Surrey – online form and database to track outcomes from multidisciplinary team meetings (follow link to access form)

B. Kelowna – general practitioner referral letter

Re: Bone Health in Prostate Cancer - Request for Assistance

Dear Colleague,

Mr. [Patient Name] has begun treatment of his prostate cancer. An important component of the treatment is androgen deprivation therapy (ADT). The ADT will be administered for a total of [____] years.

We appreciate your ongoing involvement in the care of Mr. [Patient Name] and request your assistance in the management of a potential complication of ADT – bone demineralization. ADT is associated with an increase rate of bone density loss in men, with a risk of osteoporosis and/or bone fractures. These changes are manifested as decreases in bone density on imaging, or fracture.

Thus the following should be considered^{1,2}:

- Baseline bone density test considered, especially if other risk factors for osteoporosis or fracture are present, and repeated years, if the period of ADT is prolonged.
- Daily intake of 1500 mg of Calcium / 800 IU Vitamin D in diet and/or supplements is recommended
- Moderate exercise 3 times / week
- Bisphosphonates or Denosumab to be considered if osteoporosis is detected at baseline or follow-up

This recommendation letter is part of a BC Cancer bone health quality improvement project. Feel free contact me if there are concerns or questions regarding this request and, if possible to provide any feedback on how to improve this request letter.

Thank you

1. The College of Family Physicians Canada Osteoporosis Resources <https://www.cfpc.ca/ProjectAssets/Templates/Resource.aspx?id=3523>

2. Bone health in cancer patients: ESMO Clinical Practice Guidelines <https://www.esmo.org/Guidelines/Supportive-and-Palliative-Care/Bone-Health-in-Cancer-Patients>

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C. Vancouver – patient referral form and radium-223 referral checklist



PATIENT REFERRAL FORM

Referral Re-Referral (*patient previously seen at BCCA*) Date of Referral _____

In order to process this referral/re-referral, a completed form with essential documentation should be directed to the Cancer Centre or Clinic*

For URGENT REFERRALS please contact an Oncologist directly at your Regional Cancer Centre.
 If oncologist contacted, please provide oncologist's name _____
 BC Cancer - Abbotsford 604-851-4710 | BC Cancer - Kelowna 250-712-3900 | BC Cancer - Prince George 250-645-7300 |
 BC Cancer - Surrey 604-930-2098 | BC Cancer - Vancouver 604-877-6098 | BC Cancer - Victoria 250-519-5500

For PATH REVIEW ONLY please complete [Pathology Request Form](#)..
 If you require assistance, please call 604-877-6000 ext. 672071 (Monday to Friday 8:00am-4:00pm)

HAS PATIENT BEEN INFORMED OF CANCER DIAGNOSIS? Yes No

CLINICAL/PATHOLOGICAL DIAGNOSIS _____

Name		<input type="checkbox"/> Male <input type="checkbox"/> Female		D.O.B. / /	
<small>(Last Name)</small>	<small>(First Name)</small>	<small>(Initial)</small>	<small>(Day)/(Month)/(Year)</small>		
PHN #		Self Pay <input type="checkbox"/> Yes <input type="checkbox"/> No			
Address					
<small>(Street)</small>		<small>(City)</small>		<small>(Province) (Postal Code)</small>	
Home Phone		Work Phone		Contact/Message Phone	
Referring Physician		Phone #		Billing #	
Family Physician		Phone #		Billing #	
Consultant		Phone #		Billing #	

PROCEDURES/IMAGING RELATIVE TO CONDITION & PENDING PROCEDURES/TESTS

Operations/Procedures/Imaging	Hospital/Office	Date

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(Street)	(City)	(Province)	(Postal Code)
Home Phone	Work Phone	Contact/Message Phone	
Referring Physician	Phone #	Billing #	
Family Physician	Phone #	Billing #	
Consultant	Phone #	Billing #	
PROCEDURES/IMAGING RELATIVE TO CONDITION & PENDING PROCEDURES/TESTS			
Operations/Procedures/Imaging	Hospital/Office	Date	
SPECIAL PATIENT NEEDS/TREATMENT			
<input type="checkbox"/> Needs Accommodation: (CSI/VC/VIC only)	<input type="checkbox"/> Needs Interpreter/Dialect Specify: _____	<input type="checkbox"/> Patient & Family Counseling Referral Reason: _____	
Other Special Needs (include sight, hearing/physical impairments, oxygen, infection control such as MRSA, latex allergy)			
<input type="checkbox"/> Hospital Bed Required (physician must contact BCCA oncologist)		<input type="checkbox"/> Patient Currently in Facility Name _____	

*****ESSENTIAL REFERRAL INFORMATION:** Please fax your referral letter/pathology reports/radiology reports/patient history/related consultations and procedure reports to the appropriate Cancer Centre (fax numbers below).

Please send additional documents as per the essential information list referred to at the BCCA website www.bccancer.bc.ca/HPI/CancerManagementGuidelines/ReferralInformation/default.htm

Forms are available at the BCCA website <http://www.bccancer.bc.ca/Documents/Patient-Referral-Form.pdf>

Please choose Centre or Clinic:

- | | | |
|--|---|-------------------|
| <input type="checkbox"/> BC Cancer - Abbotsford | Phone: 604-851-4732 or 604-851-4737 | Fax: 604-875-7204 |
| <input type="checkbox"/> BC Cancer - Kelowna | Phone: 250-712-3969 or 250-712-3970 or 250-979-8622 | Fax: 250-979-4001 |
| <input type="checkbox"/> BC Cancer - Prince George | Phone: 250-645-7318 or 250-645-7320 | Fax: 250-645-7371 |
| <input type="checkbox"/> BC Cancer - Surrey | Phone: 604-930-4004 or 604-930-4016 or 604-587-4301 | Fax: 604-875-7222 |
| <input type="checkbox"/> BC Cancer - Vancouver | Phone: 604-877-6098 | Fax: 604-708-2005 |
| <input type="checkbox"/> BC Cancer - Victoria | Phone: 250-519-5585 or 519-5588 or 519-5587 | Fax: 250-519-2001 |
| <input type="checkbox"/> Kamloops Clinic | Phone: 250-314-2734 | Fax: 250-314-2733 |
| <input type="checkbox"/> Nanaimo Clinic | Phone: 250-716-7706 | Fax: 250-755-7676 |
| <input type="checkbox"/> Vernon Clinic | Phone: 250-558-1235 | Fax: 250-558-4113 |

Confidential Fax Warning: Documents accompanying this transmission contain confidential information intended for a specific individual and purpose. This information is private and protected by law. If you are not the intended recipient and have received this communication, please notify sender by phone. Number of pages faxed _____

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RADIUM-223 Supplementary Referral Checklist

(PILOT PROJECT – FORM VALID ONLY UNTIL Dec 31st, 2019)



Referring Physician: _____

Date of referral: _____

Patient ID: _____

TRIAGE NOTICE: For the purposes of a quality improvement project please direct this referral to Radiation Oncologist **Dr. Michael Peacock** and Medical Oncologist **Dr. Christian Kollmannsberger**

Section 1: ECOG status & Progression		
ECOG Status 0-2?	Recent PSA result	Documentation of castration-resistant disease progression
<input type="checkbox"/> Yes <input type="checkbox"/> No ECOG of: _____	PSA: _____ ng/ml on date: _____	The patient has: <input type="checkbox"/> Progression or appearance of > 1 lesion on bone scan AND/OR <input type="checkbox"/> PSA Progression, defined as the following: >25% increase from nadir (minimum of >2ng/ml)

Section 2: Required Criteria <small>Note this section pre-populated to protocol requirements (if changes made, exceptions may be required)</small>			
Symptomatic bone metastases <small>(use of any analgesic or history of palliative radiotherapy)</small>	History of visceral metastases	Current malignant lymphadenopathy > 3cm on short axis	Active inflammatory bowel disease
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

When to Refer ?		Check one that applies:
1	Post-ARAT* therapy: From the first signs of progression while on ARAT therapy. Progression, defined as 2 of the 3: <ul style="list-style-type: none"> • Biochemical progression (PSA, ALP, LDH) • Radiological progression of bone metastasis • Clinical progression of pain * AR-axis targeted therapy	<input type="checkbox"/>
2	Post-Docetaxel: From the first signs of progression during or after completing docetaxel. (This is usually the 3 rd line setting so there is no need to wait for significant symptoms).	<input type="checkbox"/>
3	Other: _____	<input type="checkbox"/>

Referring Physician's signature _____ Date: _____

KEY PROTOCOL REMINDERS (for full protocol description see UGUPRAD on BCC website or at this [link](#))

EXCLUSIONS not covered in checklist

For initial dose:	Other exclusions
<input type="checkbox"/> Hemoglobin less than 100 g/L <input type="checkbox"/> Platelets less than 100 x 10 ⁹ /L <input type="checkbox"/> ANC less than 1.5 x 10 ⁹ /L	<input type="checkbox"/> Untreated cord compression or fracture requiring orthopedic stabilization. <input type="checkbox"/> Patient currently receiving Abiraterone should discontinue treatment upon progression when receiving Ra-223 (Ra-223 should not be used concurrently with Abiraterone). <input type="checkbox"/> Significant fecal incontinence. <input type="checkbox"/> Creatinine clearance less than 30 mL/min. <input type="checkbox"/> Chemotherapy, hemibody radiotherapy, bone targeted radioisotope or other myelosuppressive therapy within last month.

TESTS (to be ordered by BC Cancer)

- Baseline: CBC and differential, platelets, serum creatinine, sodium, albumin, bilirubin, alkaline phosphatase, AST, ALT, PSA, TTT
- Before each treatment: CBC and differential, platelets, serum creatinine, bilirubin, alkaline phosphatase, AST, ALT, PSA

Contact Dr. Scott Tyldesley or Dr. Michael Peacock or tumour group delegate at (604) 877-6000 or 1-800-663-3333 with any problems or questions regarding this treatment protocol.

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D. Victoria – bone targeted therapy referral guidelines and referral forms for bone health specialists, and pre-printed order and assessment forms for bone health management

Referral guidelines for bone targeted agent therapy and management of bone health for Prostate Cancer patients

The following guideline is intended for patients with prostate cancer who are at risk for osteoporosis, fracture, skeletal related events, are receiving or planned to receive androgen deprivation therapy or with bone metastases.

Indications for referral for bone targeted agents (e.g. Denosumab, Zometa)

1. PC patients with bone metastases and Castrate resistant PC (which includes those receiving or planned to receive Radium 223)
2. PC patients with oligometastases to bone who are planned to receive stereotactic ablative radiotherapy
3. PC patients with bone metastases and Castrate sensitive Disease (may consider Prolia)


Indications for referral for management of bone health (e.g. osteoporosis, osteopenia):

1. PC patient receiving ADT for greater than 1 year
2. PC patient receiving ADT plus at least 2 other risk factors (see below)
3. PC patient on Intermittent ADT program
4. PC patient otherwise coincidentally identified at risk for fracture (see below) or with a positive bone mineral density scan

Risk factors for accelerated bone loss (ESMO 2014 guidelines):



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 <p>BC Cancer Agency Vancouver Island Center</p> <p align="center">DOCTOR'S ORDERS Referral for Bone Targeted Therapies with Denosumab/Zometa and/or Management of bone health with Bone Health Specialist (Drs Priya Manjoo or Jesse Perwarchuk)</p>	
Date:	Page 1 of 1
<p>Reminder to Physician:</p> <ul style="list-style-type: none"> <input type="checkbox"/> This PPO is intended for cancer patients (e.g. prostate cancer) who require management of bone health or requiring treatment with bone targeted agents such as Denosumab or <u>Zometa</u>. <input type="checkbox"/> Please choose either Dr Priya Manjoo (endocrinologist) or Dr Jesse Perwarchuk (Internist) in doctor orders and default referral letter. <input type="checkbox"/> Complete and sign default referral letter <u>or</u> dictate a referral letter <u>or</u> complete a "Consultation Requisition" form for Dr Manjoo or Perwarchuk <input type="checkbox"/> Please refer to "Referral guidelines for bone targeted agent therapy and management of bone health" for prostate cancer patients on following page. <input type="checkbox"/> <u>Zometa</u> and Denosumab are not funded by BC Cancer, but can be funded by Palliative Care Benefits (for patients with life expectancy less than 6 months). You must apply for or ensure patient is registered for Palliative Care Benefits. A form is included in this package. <input type="checkbox"/> Request required blood tests below if they are more than 3 months old. Otherwise cc: existing blood results to Dr P. Manjoo or J. Perwarchuk. <input type="checkbox"/> Request bone mineral density scan <i>only for patients without bone metastases and if previous scan is more than 2 years old</i>. Otherwise cc: existing bone density scan report to Dr P. Manjoo or J. Perwarchuk. <input type="checkbox"/> Complete & send Dental Referral letter <i>only if you would like dental assessment prior to sending to bone health specialist</i>. However, they should otherwise arrange dental assessment as needed. * <i>Instruct dentist to cc: Dr Manjoo or Perwarchuk their assessment notes.</i> 	UNIT CLERK/NURSE'S NOTES
<p>Doctor Orders for Clerk:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Send/fax completed & signed referral letter or completed Consultation Requisition form AND most recent BC Cancer dictated notes within last 3 months to: <ul style="list-style-type: none"> <input type="checkbox"/> Dr. Priya Manjoo <input type="checkbox"/> Jesse Perwarchuk <input type="checkbox"/> Blood tests for: CBC+diff, Alk Phos, Creatinine, Calcium, Albumin, Magnesium, Phosphate, TSH, PTH. cc: results to: physician above <u>or</u> fax previous blood test results if done within last 3 months. <input type="checkbox"/> Bone mineral density scan. cc results to: physician above <u>or</u> fax previous bone mineral density scan report if done within last 2 years <input type="checkbox"/> Send/fax completed Dental Referral Letter to (with most recent BC Cancer dictated notes within last 3 months to): <ul style="list-style-type: none"> <input type="checkbox"/> Drs. Peter Lobb/Dustin Holben (in Victoria) <input type="checkbox"/> Dr. Norman King (in Nanaimo) <input type="checkbox"/> _____ (insert dentist name here) <input type="checkbox"/> Send Completed BC Palliative Care Benefits Registration form <input type="checkbox"/> Clerk to process these orders within 3 weeks 	
DOCTOR'S SIGNATURE	NURSE'S SIGNATURE

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Doctor Orders for Clerk:

Send/fax completed & signed referral letter or completed Consultation Requisition form AND most recent BC Cancer dictated notes within last 3 months to:

Dr. Priya Manjoo

Jesse Pewarchuk

Blood tests for: CBC+diff, Alk Phos, Creatinine, Calcium, Albumin, Magnesium, Phosphate, TSH, PTH. cc: results to: physician above or fax previous blood test results if done within last 3 months.

Bone mineral density scan. cc results to: physician above or fax previous bone mineral density scan report if done within last 2 years

Send/fax completed Dental Referral Letter to (with most recent BC Cancer dictated notes within last 3 months to):

Drs. Peter Lobb/Dustin Holben (in Victoria)

Dr. Norman King (in Nanaimo)

_____ (insert dentist name here)

Send Completed BC Palliative Care Benefits Registration form

Clerk to process these orders within 3 weeks

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BC Cancer Agency
CARE & RESEARCH

VANCOUVER ISLAND

Today's date: _____

Dear Dr. J. Pewarchuk / P. Manjoo (*circle one*):

I would like to refer this oncology patient to you for longitudinal management of bone health and/or possible bone targeted therapy.

I would be grateful if this patient could be seen within 3 / 12 / _____ weeks (*circle one or insert number of weeks*) from date of referral.

I have requested or will send you a copy of a bone mineral density scan and baseline blood tests and recent BC Cancer progress notes. Please arrange any additional assessments such as dentistry as you see fit.

I will make arrangements for palliative care benefits if applicable.

Please have your MOA contact the patient directly for an appointment. I would appreciate a copy of your evaluations to be sent to my attention at BC Cancer – Vancouver Island Centre and his/her family doctor.

If you have any questions, please contact me.

Sincerely,

Print

and sign your name here

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BONE DENSITY REQUISITION

Cowichan District Fax: 250-709-3009
 South Island Fax: 250-370-8362
 Campbell River Fax: 250-850-2401
 Oceanside Health Centre Fax: 250-951-9507

Appointment Date, Time and Location:
Facility Requested: ... OHC ... CDH ... CRH ... RJH ... SPH

Ordering Physician: Billing #: _____ PRINT Full Name: _____ Signature: _____ Phone #: _____ Fax #: _____ Copies to: _____	Patient Name: _____ Address: _____ Phone #1: _____
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BRITISH COLUMBIA Ministry of Health

BC PALLIATIVE CARE BENEFITS REGISTRATION

For – 1. palliative care drug coverage, reassessment or cancellation, and
 2. requesting an assessment for medical supplies and equipment

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For full information on these benefits, see the Prescriber Guide at www.gov.bc.ca/pharmacare/palliativecareprescriberinfo.

NOTE: FORMS THAT ARE INCOMPLETE, UNSIGNED OR SUBMITTED BY UNAUTHORIZED PERSONS WILL BE RETURNED.

If no medical or nurse practitioner fax number or address is provided, Health Insurance BC (HIBC) will be unable to send a response.

This form is Practitioner-Patient privileged and contains confidential information intended only for the recipient. Any other distribution, copying or disclosure is strictly prohibited. If you have received this form in error, please destroy it and notify the practitioner.

FAXING INSTRUCTIONS: 1. Fax **ONE** copy of this page to HIBC at 250-405-3587. 2. Fax **ONE** copy of this page to the local Home and Community Care Office. Contact numbers are available from HealthLink BC (phone 8-1-1), or by visiting <http://find.healthlinkbc.ca> and, in the Find Services "What?" field, entering "home and community care".

<input type="checkbox"/> New Patient	<input type="checkbox"/> Reassessment (required after 12 months)	<input type="checkbox"/> Cancellation (patient no longer qualifies) – complete Step 1 and 4 only
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Dear Dr. _____ (*insert Dentist name here*):

I would like to refer this oncology patient to you for dental assessment/care in preparation for possible bone targeted therapy (e.g. Zoledronic acid, Denosumab).

I would be grateful if this patient could be seen within 4 weeks from date of referral.

Please have your MOA contact the patient directly for an appointment. I would appreciate a copy of your evaluations to be sent to the attention of

Dr. Priya Manjoo / Dr. Jesse Pewarchuk (*circle one*) and my attention here at BC Cancer – Vancouver Island Centre.

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Supplementary Table 1. Specialty and roles of BeTTER Outcomes Workgroup participants					
Name	Credentials	Current specialty	BOW project role	Initial meeting role	City, center/clinic
Steering committee					
Dr. Alan So	MD, FRCSC	Urologic Oncology	SC Chair (& pre-launch), CUA	Chair	Vancouver, VPC/VCC
Dr. Kim Chi	MD, FRCSC	Medical Oncology	Pre-launch SC, Regional Director	Participant	Vancouver, VCC
Dr. Scott Tyldesley	MD, MPA, ABR, FRCPC	Radiation Oncology	Pre-launch SC, Provincial Lead	Participant	Vancouver, VCC
Abbotsford BOW team members					
Dr. Jenny Ko	MD, FRCSC	Medical Oncology	SC & Regional lead & QI lead	Co-Speaker	Abbotsford, ACC
Dr. Gaurav Bahl	MD, FRCPC	Radiation Oncology	SC & Regional Chair, Provincial RO lead	Co-Speaker	Abbotsford, ACC
Dr. George Vrabec	MD	Urology	Regional Lead	Participant	Abbotsford, ACC
Dr. Adiel Mamut	MD	Urology	BOW Community partner (ACC), QA lead	Participant	Abbotsford, ACC
Dr. Michael Sia	BSc, MD	Radiation Oncology	Regional Lead	Participant	Abbotsford, ACC
Dr. M. Zulfiqar	MD	Medical Oncology	BOW Guest, Regional Director	Participant	Abbotsford, ACC

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Kelowna BOW team members					
Dr. Daygen Finch	MD	Medical Oncology	Regional Chair	Speaker	Kelowna, CSI
Dr. David Kim	MD, BSc, RCPSC, FRCPC	Radiation Oncology	Regional Lead	Participant	Kelowna, CSI
Dr. J. Weisenthal	MD	Urology	Regional Lead	Participant	Kelowna, CSI
Dr. Francois Bachand	MD, FRCPC	Radiation Oncology	Regional Lead	Participant	Kelowna, CSI
Dr. Ross Halperin	MD, FRCPC	Radiation Oncology	BOW consultant, Regional Director	Participant	Kelowna, CSI
Surrey BOW team members					
Dr. Krista Noonan	MD	Medical Oncology	SC & Regional Chair	Speaker	Surrey, FVCC
Dr. Clement Ho	BSc, Bed, MSc, MD	Radiation Oncology	Regional Lead	Participant	Surrey, FVCC
Dr. Cal Andreou	MD	Urology	Regional Lead	Participant	Surrey, FVCC
Dr. Akshay Jain	MD, FRCPC, FACE, CCD, ECNU, DABIM, DABOM	Endocrinology	BOW Community partner (FVCC)	Participant	Surrey, FVCC
Vancouver BOW team members					
Dr. C. Kollmannsberger	MD, FRCPC	Medical Oncology	Regional Co-Chair	Participant	Vancouver, VCC
Dr. Peter Black	MD, PhD	Urologic Oncology	Regional Co-Chair	Speaker	Vancouver, VPC/VCC
Dr. Michael Peacock	BSc, MD	Radiation Oncology	Regional Lead	Participant	Vancouver, VCC
Nikita Ivanov	MN-NP	Nursing	Regional Lead	Participant	Vancouver, VCC
Dr. Justin Lee	MD	Urology	Regional Lead	Participant	Vancouver, VCC
Dr. Ercole Leone	MD, FRCSC	Urology	Regional Lead	Participant	Vancouver, VCC

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Dr. Michael McKenzie	MD, FRCPC	Radiation Oncology	BOW consultant, PHSA VP QI	Participant	Vancouver, VCC
Victoria BOW team members					
Dr. Howard Pai	MD, FRCPC	Radiation Oncology	SC & Regional Co-Chair	Co-Speaker	Victoria, VICC
Dr. Joanna Vergidis	MD	Medical Oncology	SC & Regional Co-Chair	Co-Speaker	Victoria, VICC
Dr. M. Metcalfe	MD	Urology	Regional Lead	Participant	Victoria, VICC
Dr. Abe Alexander	BSc, MD, FRCPC	Radiation Oncology	Regional Lead	Participant	Victoria, VICC
Dr. Priya Manjoo	MD, FRCPC	Endocrinology	BOW Community partner (VICC)	Participant	Victoria, VICC
Dr. Jesse Pewarchuk	MD FRCPC	Endocrinology	BOW Community partner (VICC)	Participant	Victoria, VICC
BOW guests and community partners					
Dr. Daniel Khalaf	MD	Medical Oncology	BOW guest	Participant	Vancouver, VCC
Dr. Stacy Miller	MD, FRCPC	Radiation Oncology	BOW guest	Participant	Prince George, PG
Dr. John Yun	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Richmond, RH
Dr. Puneet Bains	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Vancouver, N. Van
Dr. Wendy Lam	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Burnaby, BHRCC

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Dr. Simon Yu	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Richmond, PCO
Dr. Sasha Smiljanic	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Vancouver, N. Van
Dr. A. Avanesian	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Vancouver, N. Van
Dr. Jeremy Ho	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Richmond, PCO
Dr. David Telio	MD	Medical Oncology*	BOW Community partner (VCC)	Participant	Burnaby, PCO
Dr. M. Zulfiqar	MD	Medical Oncology	BOW guest, Regional Director	Participant	Abbotsford, ACC

*Community. ACC, Abbotsford Cancer Centre, Abbotsford; BHRCC, Burnaby Hospital Regional Cancer Centre (non-BCCA centre/clinic); BOW, BeTTER Outcomes Workgroup; CSI = Sindi Ahluwalia Hawkins Centre for the Southern Interior, Kelowna; CUA, Canadian Urological Association; FVCC = Fraser Valley Cancer Centre, Surrey; N. Van, North Vancouver, Vancouver (non-BCCA centre/clinic); PCO, private clinic or office (non-BCCA centre/clinic); PG, Prince George (Centre for the North), PHSA, Provincial Health Services Authority; Prince George; QA, quality assurance; QI, quality improvement; RH, Richmond Hospital, Richmond (non-BCCA centre/clinic); RO, radiation oncology; SC, steering committee; VCC = Vancouver Cancer Centre, Vancouver; VICC = Victoria Cancer Clinic, Victoria; VPC, Vancouver Prostrate Centre, Vancouver; VP, vice-president

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Supplementary Table 2. Outcomes of chart audits and surveys by site		
(A) Kelowna – Medical oncologist survey		
Questionnaire item	Response options	Number of responses
Current androgen deprivation therapy approach?	Continuous	11
	Intermittent	0
Is a candidate for life-prolonging bone targeted treatment (radium-223)?	Yes	8
	No	3
	Already on Tx or completed course	0
Is your patient taking vitamin D?	Yes	6
	No	5
	Don't know	0
Is your patient taking Calcium supplements?	Yes	0
	No	11
	Don't know	0
Has a bone density scan for this patient been completed within the last 3 years?	Yes	1
	No	2
	Don't know	8
Is your patient already receiving a bisphosphonate or denosumab?	Yes	0
	No	11
	Don't know	0
(B) Victoria – retrospective chart review on use of concomitant bone health agents in patients receiving radium-223		
Questionnaire item	Victoria (n=70)	ALSYMPCA trial (n=614)¹
Patients treated with concurrent BHA (denosumab or zoledronic acid)	10%	41%
Patients treated with systemic therapy prior to radium-223	99%	57%
Patients treated with concurrent systemic therapy (enzalutamide)	21%	0%
Patients who completed 5-6 cycles of radium-223	50%+	73%
Patients experiencing SSE during or after radium-223	73%	33%

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EBRT as SSE	84%	73%
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BHA: bone health agent; EBRT: external beam radiation therapy; SSE: symptomatic skeletal event.

REFERENCE

1. Parker C, Nilsson S, Heinrich D, et al. Alpha emitter radium-223 and survival in metastatic prostate cancer. *N Engl J Med* 2013;369:213-23. <https://doi.org/10.1056/NEJMoa1213755>