# Symptom Management Guidelines: XEROSTOMIA

## Definition(s)

- **Xerostomia**: abnormal dryness in the mouth characterized by a marked decrease and/or thickening of saliva, may be acute or chronic in nature.

## Contributing Factors

### Cancer Treatment Related

<table>
<thead>
<tr>
<th>Chemotherapy Agents</th>
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<tbody>
<tr>
<td>Many chemotherapy agents have the potential to cause or contribute to xerostomia. Condition most often reverses post treatment. <strong>For specific chemotherapy information See Cancer Drug Manual in Resource Section</strong></td>
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</tbody>
</table>

### Radiation Therapy

- Radiation to head and neck/salivary glands. Severity of saliva reduction is dependent upon total dose of radiation received, degree of salivary gland radiated, and individual patient variables
- Total body irradiation

### Surgical excision of salivary glands

### Graft versus host disease

### Medication(s)

- Anticholinergics (e.g. atropine, transdermal scopolamine)
- Antipsychotics ((e.g. chlorpromazine, prochlorpromazine, risperidone)
- Antihistamines (e.g. diphenhydramine, chlorpheniramine)
- Opioids
- Antispasmodics
- Antihypertensives
- Diuretics
- Antidepressants (Tricyclic-TCAs & Selective Serotonin Reuptake Inhibitors-SSRIs)
- Antiparkinsonians
- Bronchodilators

### Other

- Dehydration
- Immune disorders (e.g. Sjogren’s syndrome, HIV/AIDS)
- Alcohol or tobacco use
- Oxygen therapy
- Infection (mumps)
- Anxiety

## Consequences

### Increased risk of:

- Local infection/systemic infection (sepsis) – fungal, bacterial, viral
- Altered nutrition – dehydration, malnutrition, weight loss
- Dental disease – increased rate of dental caries, gingivitis, osteoradionecrosis (ORN)
- Cancer treatment delay, reductions, or discontinuation
- Change to quality of life – psychological distress, difficulty eating dry foods and drinking, altered speech and taste

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# Focused Health Assessment

## GENERAL ASSESSMENT

<table>
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<tr>
<th>Contact and General Information</th>
<th>Normal</th>
<th>Symptom Assessment</th>
<th>Physical Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Physician name – oncologist, family physician</td>
<td>• Refer to pretreatment nursing assessment or dental evaluation</td>
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<tr>
<td>• Nurse Practitioner</td>
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<tr>
<td>• Dentist</td>
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<td>• Pharmacy</td>
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<td>• Other health care providers</td>
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<td>• Allergies</td>
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</table>

## Consider Contributing Factors

- Cancer diagnosis and treatment(s) – note type and date of last treatment
- Medical history, including pretreatment oral and dental evaluation
- Medications
- Recent lab or diagnostic reports

## Symptom Assessment

### Onset
- When did symptoms begin?

### Provoking / Palliatiing
- What makes it better? Worse?

### Quality (in last 24 hours)
- Do you have a dry mouth? (e.g. decrease in amount or consistency of saliva)
- Do you have any redness, blisters, ulcers, cracks, or white patchy areas? If so, are they isolated, generalized, clustered or patchy?

### Region / Radiation – NA

### Severity / Other Symptoms
- How bothersome is this symptom to you? (0-10 scale, with 0 not at all – 10 being worst imaginable)
- Have you been experiencing any other symptoms:
  - Fever? - possible infection
  - Difficulty breathing? – possible respiratory distress
  - Difficulty swallowing? – nutritional deficiency
  - Excessive thirst, weakness, dizziness, dark urine? – possible dehydration
  - Oral pain?

### Treatment
- Using any oral rinses? If so, what type? Effective?
- Using any salivary substitutes or stimulants? If so, what type? Effective?
- Using any pain medications? If so, what type (topical, systemic)? Effective?
- Any other medications or treatments? If so, what type (topical, systemic)? Effective?

### Understanding / Impact on You
- Functional Alterations?
  - Ability to eat or drink? How much? Swallow?
  - Taste changes (dysgeusia)?
  - Difficulty with speech?
  - Able to wear dentures?
  - Interfering with other normal daily activity?

### Value
- What is your comfort goal or acceptable level for this symptom (0 – 10 scale)?

## Vital Signs
- Frequency – as clinically indicated
- Assess any change in body weight

## Oral Assessment
- Assess lips, tongue and oral mucosa:
  - Color– note degree of pallor/erythema, presence of white patches, or discolored lesions/ulcers
  - Moisture– note altered texture, shininess, decrease in amount of saliva, increased thickness of saliva
  - Cleanliness– accumulation of debris or coating, discoloration of teeth, bad odour
  - Integrity– note presence of cracks/ fissures/ulcers/blisters
  - Note ability to swallow, changes in voice tone

## Hydration Status and Weight
- Assess:
  - Daily fluid intake/output
  - Mucous membranes, skin turgor, and capillary refill
  - Amount/character of urine
  - Weight if daily fluid intake inadequate

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## DRY MOUTH GRADING SCALE*
NCI Common Terminology Criteria for Adverse Events (Version 4.03)

<table>
<thead>
<tr>
<th>GRADE 1 (Mild)</th>
<th>GRADE 2 (Moderate)</th>
<th>GRADE 3 (Severe)</th>
<th>GRADE 4 (Life - threatening)</th>
<th>GRADE 5</th>
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</thead>
<tbody>
<tr>
<td>Symptomatic (e.g., dry or thick saliva) without significant dietary alterations; unstimulated saliva flow &gt;0.2 ml/min</td>
<td>Moderate symptoms; oral intake alterations (e.g., copious water or other lubricants needed, diet limited to purees and/or soft, moist foods); unstimulated saliva 0.1 to 0.2 ml/min</td>
<td>Inability to adequately aliment orally; tube feeding or TPN indicated; unstimulated saliva &lt;0.1 ml/min</td>
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*A Semi-colon indicates 'or' within the description of the grade and a single dash (-) indicates a grade is not available

### Step-Up Approach to Symptom Management:
Interventions Should Be Based On Current Grade Level and Include Lower Level Grade Interventions As Appropriate

### Management of Xerostomia

### GENERAL RECOMMENDATIONS FOR PREVENTION

#### Salivary Gland Sparing Radiation Therapy
- Intensity–modulated radiation therapy (IMRT) allows selective delivery of radiation to the head and neck sparing salivary gland tissue; thereby decreasing the severity of xerostomia

#### Dental Assessment and Care
- A dental exam and interventions should be performed as early as possible before starting cancer treatment
- Maintaining optimal oral health during and after treatment will facilitate adequate hydration and nutrition, reduce severity of xerostomia and prevent/minimize oral complications

**Daily Fluoride Treatments:**
- Essential to prevent/minimize development of dental caries and demineralization of teeth
- Initiated prior to cancer treatment and should be continued throughout life
- For long term/permanent xerostomia, use of a custom gel applicator tray is recommended for daily application
- For transient xerostomia fluoride gel may be brushed on teeth daily

**Types of Fluoride Gels:**
- 1.1% neutral pH sodium fluoride gel
- 0.004% stannous fluoride gel
- Remineralizing gel
- Fluoride gel with additional calcium

**NOTE:**
- Phosphate may be prescribed for severe xerostomia and early enamel breakdown
- Acidulated fluorides should not be used
- Patients with porcelain crowns should use a neutral pH fluoride

#### Pharmacological Management
- Avoid/discontinue any medications that may cause or exacerbate xerostomia in collaboration with physician/nurse practitioner and pharmacist

**Amifostine**
A cytoprotectant agent that reduces the incidence/severity of chronic/acute xerostomia in patients receiving radiation therapy for head and neck cancer.
## NON - URGENT:
Support, teaching & follow-up care as required

### Patient Assessment
- Nurses to screen for xerostomia and associated oral complications
- Once detected, assess at each patient visit
- Assess and treat underlying causes where possible:
  - Anxiety
  - Candidiasis
  - Smoking cessation
  - Alcohol and caffeine consumption
  - Discontinue contributing medications if possible

### Oral Hygiene
Encourage patient to begin oral hygiene recommendations two weeks before start of cancer treatment or as early as possible.

#### Flossing
- Floss once daily, at bedtime, before brushing
- Do not floss if:
  - Not part of normal oral care routine (unless recommended by dentist)
  - Causes pain or bleeding gums which does not stop after 2 minutes
  - Platelet count below 50,000 mm$^3$ or unless otherwise advised by physician

#### Brushing
- Use small, extra soft nylon bristled brush
- Use non-abrasive, fluoride toothpaste with a neutral taste-flavoring agents may irritate gums
- Brush two-four times daily
  - Brush all tooth surfaces using a short circular motion or horizontal strokes
  - Brush tongue back to front
- Rinse toothbrush well after each use; allow to air dry
- Replace toothbrush when bristles are no longer standing up straight
- Use swab sticks (foam brush) to help scoop out copious and thick secretions

#### Oral Rinses
- Oral rinses help keep mouth moist and clean by removing debris
- Frequency and Use:
  - After brushing, rinse mouth minimum four times daily
  - Use 1 tablespoon (15ml) of oral rinse, swish in oral cavity for at 30 seconds, then spit out
  - Prepare mouth rinse solution daily to avoid risk of contamination
- **Recommended Bland Oral Rinses:**
  - Normal saline (NS) - ½ teaspoon (2.5 ml) of salt in 8 oz (240 ml) of water
  - NS/sodium bicarbonate mixture – ¼ teaspoon (1.25 ml) of salt and ¼ teaspoon (1.25 ml) baking soda in 8 oz (240 ml) of water
  - Sodium bicarbonate – ¼ to ½ teaspoon (1.25-2.5 ml) baking soda in 8 oz (240 ml) of water
  - Multi-agent rinses - "magic mouthwash" may be prescribed to reduce inflammation prevent fungus and help palliate pain; however, limited evidence to suggest superior to bland rinses
- **Oral Rinses Not Recommended:**
  - Commercial mouthwashes which contain alcohol- due to drying effect
  - Chlorhexidine
  - Povidone iodine
  - Hydrogen peroxide
  - Sucralfate

#### Fluoride Treatments
- Reinforce use of prescribed fluoride treatments to prevent oral complications

#### Lip Care
- Use water or aloe based lubricant to protect and moisten lips
- Apply after oral care, at bedtime, and as often as required
- Water based lubricants may be used with oxygen and can be applied inside the mouth
NOTE: Oil based lubricants (e.g. petroleum jelly) are not recommended due to increased risk of aspiration and their occlusive nature may promote bacterial growth

**Dentures**
- Remove dentures, plates, and/or prostheses before oral hygiene performed
- Brush and rinse dentures after every meal and at bedtime
- Soak dentures in oral rinse solution. Rinse before placing in mouth
- Do not wear tight or loose fitting dentures
- Allow long periods without wearing dentures, at least 8 hours daily
- If mouth sensitive, wear only during mealtime

### Moisture and Lubrication

<table>
<thead>
<tr>
<th>Humidity</th>
<th>Use cool humidifier or bedside vaporizer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Saliva Substitutes</strong></td>
<td>Use water as a saliva substitute- keep water bottle present at all times; encourage frequent sips</td>
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<tr>
<td>If water not effective, over the counter saliva substitutes may be purchased in a variety of forms (e.g. spray, lozenges, gels, and swab sticks, Oral Balance®)</td>
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</tbody>
</table>

NOTE: these products are often short acting and can be costly
- Milk, butter, or vegetable oil may be helpful

<table>
<thead>
<tr>
<th>Saliva Stimulants</th>
<th>Mastication/Gustative Stimulants - can help stimulate residual salivary flow</th>
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<tbody>
<tr>
<td></td>
<td>Chew sugar-free gum or candies</td>
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<tr>
<td>NOTE:</td>
<td>Patients with head and neck cancer may find chewing difficult from the residual effects of treatment</td>
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<tr>
<td>Over the counter oral lubricants may be helpful (e.g.: Moistir, Salivard)</td>
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</tbody>
</table>

### Dietary Management

**Encourage soft diet to make swallowing easier**
- Changes to food texture, consistency and temperature according to individual tolerance may help to minimize discomfort and facilitate swallowing
- Moisten foods by adding extra sauce, dressing, gravy, broth, or butter/margarine
- Cook food until tender, cut into small pieces
- Alternate food with sips of fluid to facilitate chewing and swallowing

**Stimulate saliva and keep oral mucosa moist**
- Daily fluid intake of 8-12 cups- 2-2½ litres (unless contraindicated), including water, sugar-free popsicles, non-acidic juices, ice cubes, sports drinks, clear broth, nutrition supplements
- Suck on ice cubes, frozen grapes, sugar-free popsicles, or sugar-free hard candy
- Papaya may help reduce the thickness of saliva

**Discourage foods and fluids that may not be well tolerated or promote dental caries**
- Dry or coarse foods (e.g. toast, crackers, chips)
- Highly acidic fluids and foods (e.g. lemon glycerin swabs, orange juice vitamin C lozenges)
- Fluid or foods high in sugar or that may stick to teeth (e.g. dried fruit, chocolate, honey)
- Foods that have an extremely hot temperature
- Caffeine, tea, alcohol, tobacco

### Patient Education and Follow-Up

- Prior to cancer treatment, review oral care and hygiene recommendations with patient/family. Reinforce importance of self-care and compliance with recommendations to help prevent the development of oral complications
- Demonstrate/assess understanding of how to perform daily oral assessment at home
- Provide contact information and reinforce with patient/family when to seek immediate medical attention if the following develops;
  - Temperature greater than or equal to 38° C
  - Presence of white patches, redness, foul odour– possible infection
  - Difficulty breathing/respiratory distress
  - Unable to eat or drink fluids for more than 24 hours– risk for dehydration
  - Increased difficulty swallowing– reflective of severity of symptoms
  - Uncontrolled pain- reflective of deteriorating patient status and severity of symptoms

**Follow up:**
- Instruct patient/family to call back if xerostomia worsening or no improvement
- Arrange for nurse initiated telephone follow-up as indicated
- Arrange for physician follow-up in ambulatory care setting if indicated

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### Patient Assessment and Care

Collaborate with Physician/Nurse Practitioner if patient requires:
- Further evaluation and assessment of oral mucosa, hydration status in an ambulatory care setting. Facilitate arrangements as necessary
- A new/change in prescription (e.g. pain medication, saliva stimulant, or anti-infective agent).
- Lab and diagnostic testing that may be ordered:
  - Bacterial, fungal, or viral culture of oral mucosa
  - Complete blood count and electrolyte profile

### Oral Hygiene

- Continue with general oral hygiene recommendations as tolerated
- Increase frequency of oral hygiene recommendations according to symptom severity

### Moisture and Lubrication

**Humidity**
- Cool humidifier or bedside vaporizer

**Saliva Substitutes**
- Continue to use water as a saliva substitute. Keep a bottle of water present at all times. Encourage frequent sips
- If water not effective, consider over the counter oral lubricants and saliva substitutes (e.g. spray, lozenges, gels, and swab sticks, Oral Balance®, Moistir, Salivard)
- Milk, butter or vegetable oil may be helpful.

**Saliva Stimulants**
- **Mastication/Gustative Stimulants** – continue to chew sugar-free gum or candies as tolerated (e.g. Sialor®).
- **Pilocarpine (Salagen®)** – may be prescribed for symptomatic patients receiving radiation therapy for head and neck cancer with residual salivary flow.
- **Acupuncture** – Stimulation of salivary flow unclear, but may be helpful for some patients.

### Dietary Management

- Change food texture, consistency, and temperature according to individual tolerance (e.g. soft diet, puree diet).
- Depending on symptom severity or if patient unable to tolerate adequate daily fluid intake, oral fluid supplementation or IV hydration may be indicated.
### Grade 3

**AND/OR the presence of the following symptoms:**

- Temperature greater than or equal to 38°C,
- Severe or uncontrolled pain
- Respiratory distress
- Unable to eat or drink for 24 hours

### EMERGENT:

**Requires IMMEDIATE medical attention**

<table>
<thead>
<tr>
<th>Patient Assessment and Care</th>
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<tbody>
<tr>
<td>Collaborate with Physician/Nurse Practitioner to determine if hospital admission required - facilitate arrangements as necessary.</td>
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<tr>
<td>Prophylactic intubation may be required if severe respiratory distress or at risk for aspiration.</td>
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<tr>
<td>Nursing Support:</td>
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<tr>
<td>- Oral assessment</td>
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<tr>
<td>- Monitor vital signs as clinically indicated</td>
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<tr>
<td>- Assess hydration status</td>
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<tr>
<td>- Accurate monitoring of daily intake and output, including daily weight</td>
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<tr>
<td>- Pain and symptom management as appropriate</td>
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<tr>
<td>- As patient stabilizes, reinforce importance of regular comprehensive dental follow-up and intensive prophylaxis</td>
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<thead>
<tr>
<th>Oral Hygiene</th>
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<tbody>
<tr>
<td>Frequent mouth care using oral rinse every 1-2 hours (or as tolerated).</td>
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<tr>
<td>Apply water based lubricant to lips every 1-2 hours.</td>
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<tr>
<th>Dietary Management</th>
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<td>NPO</td>
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<tr>
<td>IV hydration</td>
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<tr>
<td>Use of enteral or parenteral nutrition (TPN) until patient stable and symptoms resolving</td>
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### RESOURCES and REFERRALS

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<td>Home Health Nursing</td>
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<tr>
<td>Physician, Oral Oncology Specialist/Dentist</td>
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<tr>
<td>Speech Language Pathologist</td>
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<tr>
<td>Pain and Symptom Management/Palliative Care (PSMPC)</td>
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<tr>
<td>Patient Support Centre, Telephone Care for follow-up</td>
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<tr>
<td>Acupuncturist</td>
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<thead>
<tr>
<th>Healthcare professional Guidelines</th>
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<tr>
<td>Cancer management guidelines - Oral/Dental Care:</td>
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<tr>
<th>Patient Education</th>
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<tr>
<td>Nutrition Handouts: <a href="http://www.bccancer.bc.ca/health-professionals/professional-resources/nutrition/nutrition-handouts">http://www.bccancer.bc.ca/health-professionals/professional-resources/nutrition/nutrition-handouts</a></td>
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<tr>
<td>Chewing and Swallowing:</td>
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<tr>
<td>- Easy to Chew Recipes</td>
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<td>- Blenderized Foods</td>
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<tr>
<td>- Food Ideas to Try With a Sore Mouth</td>
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<tr>
<td>- Coping with Dry Mouth</td>
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<td>Decreased Appetite:</td>
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<td>- Food Ideas to Help With Poor Appetite</td>
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<tr>
<td>- Alternatives to Nutritional Supplements</td>
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<td>- Flavoring Suggestions for Supplements</td>
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<tr>
<td>- High Energy High Protein Menu and Recipes</td>
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<td>- High Calorie High Protein Smoothie</td>
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<td>- Healthy Eating Using High Energy High Protein Foods</td>
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<tr>
<td>Taste Changes:</td>
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<td>- Coping with Taste Changes</td>
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### Food Ideas to Cope with Taste and Smell Changes

- Additional Nutrition Resources: [http://www.bccancer.bc.ca/health-professionals/professional-resources/nutrition](http://www.bccancer.bc.ca/health-professionals/professional-resources/nutrition)

### Related Online Resources

- E.g. Fair Pharmacare; BC Palliative Benefits. Can be found in “Other Sources of Drug Funding Section” [http://www.bccancer.bc.ca/health-professionals/professional-resources/pharmacy/drug-funding](http://www.bccancer.bc.ca/health-professionals/professional-resources/pharmacy/drug-funding)

### Bibliography List

- [http://www.bccancer.bc.ca/health-professionals/professional-resources/nursing/symptom-management](http://www.bccancer.bc.ca/health-professionals/professional-resources/nursing/symptom-management)

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