



**Ontario Health**  
Cancer Care Ontario

**Symptom Management Algorithm**

**Oral Mucositis**

**In Adults with Cancer**

## Screening and Performing Clinical Assessment

### Adapted Mucositis Assessment Acronym: OPQRSTUV (Adapted from Fraser Health<sup>1</sup>)

<b>Onset</b>	<ul style="list-style-type: none"> <li>When did the symptoms begin? How often do they occur? How long do they last?</li> </ul>
<b>Provoking/Palliating</b>	<ul style="list-style-type: none"> <li>What makes it better? What makes it worse? What do you think may be causing the symptom? What are the aggravating or alleviating factors (e.g. medications, active treatment, dietary changes, etc.)?</li> </ul>
<b>Quality</b>	<ul style="list-style-type: none"> <li>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?</li> </ul>
<b>Region/Radiation</b>	<ul style="list-style-type: none"> <li>Where are your symptoms (e.g. on lips, tongue, mouth)? Does your pain radiate anywhere? Do you have any other related or associated symptoms?</li> </ul>
<b>Severity</b>	<ul style="list-style-type: none"> <li>What is the intensity of this symptom (on a scale of 0 to 10, with 0 being none and 10 being worst possible)? Right now? At best? At worst? On average?</li> </ul>
<b>Treatment</b>	<ul style="list-style-type: none"> <li><i>If dry mouth:</i> Fluid intake? Are you using any oral rinses? What type? Are they effective? Are you using any saliva substitutes or stimulants? What type? Are they effective?</li> <li><i>If pain in mouth:</i> Are you using any pain medications? What type (e.g. topical/local, oral/injection)? Are they effective? Are there any other treatments you are using to help with pain? Alteration in diet texture?</li> <li><i>If bleeding from mouth:</i> Does it occur spontaneously? Where is it located? What aggravates it? What treatments have been recommended and have been used?</li> <li><i>What is your current oral care routine?</i> How effective is it? Have you had oral infections? What treatments have you used? How effective have they been?</li> <li>Do you have any side effects from the medications or treatments used to alleviate any of the above symptoms? What tests have you had for your oral symptoms, if any?</li> </ul>
<b>Understanding/ Impact on You</b>	<ul style="list-style-type: none"> <li>How bothered are you by this symptom?</li> <li>Is your ability to eat or drink affected? By how much? Are you having difficulty swallowing or chewing? Is it for solids, liquids, or both?</li> <li>Do you have any weight loss? How much? Over what time frame? Do you have taste changes (dysgeusia)?</li> <li>Do you have difficulty speaking? Are you able to wear dentures?</li> <li>Do any of your symptoms interfere with other normal daily activities? How does this symptom affect your day to day life?</li> </ul>
<b>Values</b>	<ul style="list-style-type: none"> <li>What is an acceptable level of severity for this symptom (on a scale of 0 to 10, with 0 being none and 10 being most severe)? What does this symptom mean to you? How has it affected you and your family and/or caregiver?</li> </ul>

### Consideration for All Patients

- Good oral care is important to prevent and decrease oral complications, to maintain normal function of the oral tissues, to maintain comfort, and to reduce the risk of local and systemic infection. See the basic oral care tables (pages 9 and 10)
- Significant risk factors for the development of oral complications include the type of cancer, type of cancer treatments, cumulative doses of chemotherapy or radiation treatment (current or prior), method of delivery, and duration of treatment
- Predisposing medical, dental, and lifestyle factors such as uncontrolled diabetes, pre-existing autoimmune conditions, polypharmacy, tobacco and alcohol use, and non-compliance with oral care may increase severity of oral complications
- Oral complications can significantly affect the patient's morbidity, ability to tolerate treatment, and overall quality of life
- Rigorous assessment, diagnosis and early intervention are important in preventing and decreasing oral complications; this includes the assessment of nutritional status and adequacy of oral intake
- A large variety of medications may cause oral complications. Consultation with the prescriber, dental provider, and/or pharmacist is strongly recommended
- Some pharmaceuticals may be unaffordable, and alternatives should be offered where possible
- If odontogenic or periodontal infection infections suspected, consultation with a oncology team is strongly recommended

# Signs and Symptoms

## Oral Mucositis

- Erythema
- Bleeding
- Altered taste
- Oral pain
- Pain on swallowing (odynophagia)
- Oral mucositis lesions are characterized by:
  - Non-uniform shape and depth
  - Presence of a fibrinous pseudo-membrane
- Oral mucositis often occurs concurrently with damage to other areas of the gastrointestinal tract



Figure 1: Oral mucositis



Figure 2: Poor oral hygiene and oral mucositis



Figure 3: Oral graft versus host disease (GvHD)



Figure 4: Chronic GvHD



Figure 5: GvHD lichenoid reaction 1



Figure 6: GvHD lichenoid reaction 2

## World Health Organization (WHO) Grading of Mucositis<sup>2</sup>

### Mild

0	No signs or symptoms
I	Painless ulcers, edema, or mild soreness
II	Painful erythema, edema, or ulcers; able to eat

### Severe

III	Painful erythema, edema, or ulcers; unable to eat
IV	Parenteral or enteral support



Figure 7: Grade 2 oral mucositis



Figure 8: Grade 4 oral mucositis before intensified oral care



Figure 9: Grade 4 oral mucositis after intensified oral care

## Investigations and Diagnosis

- Patients should be assessed using a scale that incorporates the measurement of oral symptoms, clinical signs, and functional disturbances
- Each patient should be assessed for:
  - Oral pain and/or pain on swallowing (odynophagia), including response to any analgesia administered
  - Dysgeusia (altered taste/loss of taste)
  - Dysphagia (swallowing difficulties)
  - Dysphonia (hoarse voice)
  - Erythema and/or ulceration of the oral cavity
  - Xerostomia (dry mouth)
  - Thick ropery saliva
  - Signs and symptoms of oral candidiasis, viral or bacterial infection
  - Nutritional intake, including changes in appetite and/or weight
  - Hydration status and changes in fluid intake
  - Presence of ill-fitting dentures or jewelry (mouth piercings)
  - Patient compliance with mouth care

**Risk Factors**

- Patient's and healthcare providers should advise on modifiable risk factors, including: smoking, alcohol consumption, xerostomia, diet consistency, malnutrition, and poor oral health

- Anthracyclines

- Antimetabolites

- Antitumour antibiotics

- Tubulin interactive agents e.g. vinca alkaloids

- Severity increase with higher doses and/or combinations of cytotoxic drugs

- Risk is proportional to dose and duration of radiation administered, and the extent of the area being treated

- Intensity-modulated radiation therapy (IMRT) has lower rates of mucositis than conventional RT techniques

- Accelerated fractionation and hypofractionated radiotherapy

- Primary tumour located in or near oral cavity

- See Table 1 for late reaction grading scales (page 8)

**Prevention***Non-Pharmacological*

- Starting 5 minutes before CT administration, swish ice chips in mouth, continue for duration of CT infusion, and for 5 minutes after drug is completed

- See CT Induced

- Intra-oral photobiomodulation (PBM) therapy using low level laser therapy in adults receiving RT-CT; safety issues unique to oral cancer should be considered. See Table 2 for PBM protocols (page 8)

*Pharmacological*

- Use benzydamine mouthwash in head and neck cancer patients receiving a moderate dose of RT

**Management***Non-Pharmacological*

- Start with soft, moist, easy to chew foods. If not tolerated, transition to minced and moist foods, then pureed foods, then foods with liquid texture\*
- Choose foods high in calories and protein, and eat 6 to 8 small meals or snacks a day
- Avoid foods that irritate the mouth or throat, are abrasive, rough, tart, salty, spicy, acidic, very hot, or very cold
- Oral commercial nutritional supplements may be necessary
- A multivitamin (crushed if required) may be considered if oral intake is significantly inadequate
- Consult dietitian, if possible
- See self-care strategies for managing taste changes post CT (page 6)
- Use a bland rinse (1 teaspoon salt, 1 teaspoon baking soda, 4 cups of water) after meals, every 1 to 2 hours while awake, and every 4 hours through the night, if awake. See the basic oral care tables for more details (pages 9 and 10)

*Pharmacological*

- If topical analgesic rinses are not sufficient for pain relief, the most responsible physician (MRP) should consider narcotics for pain control

*Grades III and IV—See WHO grading table for grade definitions (page 2)*

- If topical analgesic rinses are not sufficient for pain relief, and patient can no longer tolerate oral intake, request MRP to prescribe narcotic analgesic and consider a nasogastric insertion

**Persistent Past 3 Months Post Treatment***Differential Diagnosis*

- Local trauma, infection, drug eruption, neutropenic ulcer, anemia and/or nutritional deficiencies
- Vesiculobullous diseases should be considered

*Risk Factors*

- Diabetic related delayed wound healing or diabetic ulcer
- Age

*Management*

- Refer to oral medicine or hospital dentistry

\*Consult the International Dysphagia Diet Standardization Initiative (IDDSI) framework for the standardized terminology and definitions for texture-modified foods and liquids<sup>3</sup>

## Hematopoietic Stem Cell Transplantation (HSCT) Induced Oral Mucositis (OM)

### Risk Factors

- Patients and healthcare providers should advise on modifiable risk factors including: smoking, alcohol consumption, xerostomia, diet consistency, malnutrition, and poor oral health
- Frequency and severity in blood or bone marrow transplantation patients relate to:
  - Intensity of conditioning regime
  - Use of prophylactic methotrexate to prevent graft versus host disease (GvHD)

### Prevention

#### Non-Pharmacological

- See Chemotherapy (CT) Induced (page 4)
- Oral cryotherapy in patients undergoing autologous HSCT when conditioning includes high-dose melphalan
- Intra-oral photobiomodulation (PBM) therapy using low level laser therapy in adults receiving HSCT conditioned with high-dose CT, with or without total body irradiation. See Table 2 for PBM protocols (page 8)
- Keratinocyte Growth Factor-1 (KGF-1) intravenously for hematological cancer undergoing autologous HSCT with conditioning regimen that includes high-dose CT and total body irradiation (TBI)

#### Pharmacological

- Patients with hematological cancer receiving high dose CT and TBI with autologous stem cell transplant, KGF (palifermin) for 3 days prior to treatment and for 3 days post-transplant
- KGF (palifermin) is not commonly used in Ontario due to high costs and limited availability

### Management

#### Non-Pharmacological

- Start with soft, moist, easy to chew foods. If not tolerated, transition to minced and moist foods, then pureed foods, then foods with liquid texture<sup>\*</sup>
- Choose foods high in calories and protein, and eat 6 to 8 small meals or snacks a day
- Avoid foods that irritate the mouth or throat, are abrasive, rough, tart, salty, spicy, acidic, very hot, or very cold
- Oral commercial nutritional supplements may be necessary
- Ensure fluids are taken often throughout the day
- A multivitamin may be considered (crush if required) if oral intake is significantly inadequate
- Consult a dietitian, if possible
- Use a bland rinse (1 teaspoon salt, 1 teaspoon baking soda, 4 cups of water) after meals, every 1-2 hours while awake, and every 4 hours through the night, if awake. See the basic oral care tables for more details (pages 9 and 10)

#### Pharmacological

- If topical analgesic rinses are not sufficient for pain relief, the most responsible physician (MRP) should consider narcotics for pain control

#### Grades III and IV—See the WHO Grading of Mucositis Table for Grade Definitions (page 2)

- If topical analgesic rinses are not sufficient for pain relief, and patient can no longer tolerate oral intake, request MRP to prescribe narcotic analgesic and consider a nasogastric insertion
- Manage severe OM with appropriately placed feeding tube or total parenteral nutrition

### Chronic and Acute GvHD

#### Risk Factors

- Human leukocyte antigen disparity, gender mismatch, donor type, stem cell source, conditioning regimen, and GvHD prophylaxis regimen

#### Prevention—Pharmacological

- Calcineurin inhibitor with methotrexate, mycophenolate mofetil, or sirolimus

#### Management

- Refer patient to oral medicine or hospital dentistry

<sup>\*</sup>Consult the International Dysphagia Diet Standardization Initiative (IDDSI) framework for the standardized terminology and definitions for texture-modified foods and liquids<sup>3</sup>

## Management of Oral Mucositis

### Managing Taste Changes During Active Chemotherapy (CT), and Head and Neck Radiation (RT)\*

- See Dysgeusia algorithm for more prevention and dietary management strategies
- Practice good oral care. Rinse often with a bland rinse (1 tsp baking soda, 1 tsp salt, 4 cups of water). See the basic oral care tables for more details (pages 9 and 10)

#### Encourage patients to:

- Enjoy foods that are soft and moist
- Experiment with food flavours to enhance taste:
  - Add more or less seasonings and spices to food. AVOID these if your mouth is sore or dry
  - Use more or less condiments with food
  - Marinate meats to change the taste
- Eat foods that are
  - High in protein, e.g. chicken, beans, and eggs
  - Bland, e.g. potatoes, bread, and crackers

#### Patients may wish to avoid:

- Beef, if it tastes bitter or rotten
- Foods that have strong smells, like fish

#### If foods taste too salty:

- Eat low-salt or sodium-reduced products
- Add sugar to help mask the salty or acidic flavor

#### If foods taste too sweet:

- Dilute your drinks, such as juices or nutritional supplements
- Add a pinch of salt to decrease the sweetness of foods

#### If foods taste metallic:

- Eat fresh or frozen fruits, vegetables, and legumes instead of canned; eat homemade soup instead of canned
- Buy beverages stored in a glass bottle instead of a can
- Eat with plastic utensils or chopsticks instead of stainless steel utensils
- Use glass or ceramic cookware instead of metal pots and pans
- Eat foods that are cold or at room temperature as they may have a milder smell and flavor
- Eat 6 to 8 small meals or snacks a day
- Brush teeth before eating
- Try xylitol containing: lozenges, gum, and popsicles

### Pharmacological/Non-Pharmacological Management of Symptoms

Amlexanox 5% oral paste	
Budesonide 0.5%	<ul style="list-style-type: none"><li>• If several sites of oral cavity are involved or difficult to access</li></ul>
Clobetasol gel or ointment 0.05%	<ul style="list-style-type: none"><li>• Once or twice a day; with or without adhesive bases such as carboximethyl or hydroxyethyl-cellulose</li></ul>
Clobetasol propionate 0.05% in aqueous solution	<ul style="list-style-type: none"><li>• Swish three times a day</li></ul>
Dexamethasone Rinse (0.1-0.4mg/mL)	<ul style="list-style-type: none"><li>• Swish 10 –15cc, hold in mouth for 60 seconds and spit. Use three to four times a day. Do not eat or drink for 30 minutes after. Use for 10-14 days</li></ul>
Prednisone or prednisolone	<ul style="list-style-type: none"><li>• High-dose pulse of 30-60 mg oral prednisone, or 1 mg per kg prednisolone for 1 week followed by dose tapering over the second week for stomatitis</li></ul>

### Opioid Use

- The opioid crisis has devastating consequences for individuals, families, and communities across Canada. Choosing Wisely Canada has launched Opioid Wisely, a campaign that encourages thoughtful conversation between clinicians and patients to reduce harms associated with opioids
- Visit [Choosing Wisely Canada](#) for more information and best practices on administering opioids

\*Recommendations based on patient experience and clinical expertise



Rx Step 1	Dispense	Dose and Route
Viscous lidocaine 2%	100mL	<ul style="list-style-type: none"> <li>Swish and spit as needed for pain, can be swallowed. Maximum of 4.5 mg/kg (or 300 mg per dose) and no more than eight doses per 24-hour period</li> </ul>
Dyclonine 1.5 or 1% rinse	250mL	<ul style="list-style-type: none"> <li>Swish and swallow 5mL every 6-8 hours. Can be used in patients with allergy to amides (lidocaine)</li> </ul>
0.15% Benzylamine Rinse	250mL	<ul style="list-style-type: none"> <li>Rinse and gargle the mouth and throat with 15mL (1 Tbsp) 3 to 4 times daily, beginning the day prior to starting therapy</li> <li>Continue use during and after discontinuing therapy until symptoms disappear</li> <li>Maintain mouthwash in contact with the inflamed mucosa for at least 30 seconds. Spit the solution from mouth after use. Mouthwash should be used undiluted, but if stinging occurs it may be diluted with an equal volume of lukewarm water</li> <li>LU Code: 240 - For the symptomatic relief of treatment induced mucositis in cancer patients</li> </ul>
Rx Step 2	Dispense	Dose and Route
Codeine Phosphate 5mg/mL Syrup	168mL	<ul style="list-style-type: none"> <li>30mg/6mL four times daily for 7 days as needed for pain</li> </ul>
Tramacet (tramadol-acetaminophen) 37.5mg/325mg tablets	60 tablets	<ul style="list-style-type: none"> <li>Take 1 to 2 tablets every 6 hours as needed</li> </ul>
Doxepin suspension 5mg/mL containing 0.1% alcohol and sorbitol	200mL	<ul style="list-style-type: none"> <li>Rinse 5mL for one minute and then spit out. Repeat up to 6 times a day</li> </ul>
Rx Step 3	Dispense	Dose and Route
Hydromorphone 1mg/mL Liquid	60mL	<ul style="list-style-type: none"> <li>Take 1mL every 2 hours as needed for pain.</li> </ul>
0.2% topical morphine rinse	100mL	<ul style="list-style-type: none"> <li>15mL, hold in mouth for two minutes, then spit, every 3 hours as needed for pain</li> </ul>
Percocet Oxycodone 5mg-Acetaminophen 325mg	20 tablets	<ul style="list-style-type: none"> <li>Take 1 tablet 4 times daily as needed for pain</li> </ul>
Fentanyl Transderm Patch 12mcg/hour, 25mcg/hour, 50mcg/hour, 75mcg/hour	10 patches	<ul style="list-style-type: none"> <li>Apply new patch every 3 days. <u>LU Code – 201</u></li> </ul>

## Interventions with Limited Evidence

### Suggested Interventions with Limited Evidence

<b>Benzylamine Mouthwash</b>	Suggested for the prevention of oral mucositis in patients with head and neck cancer receiving radiotherapy-chemotherapy (RT-CT)
<b>Topical Morphine 0.2% Mouthwash</b>	Suggested for the treatment of oral mucositis associated pain in head and neck cancer patients treated with RT-CT
<b>Glutamine I</b>	Suggested for prevention of oral mucositis in head and neck cancer patients treated with RT or RT-CT at a dose of 10-30g a day
<b>Honey (Combined Topical-Systemic)</b>	Suggested for the prevention of oral mucositis in head and neck cancer patients treated with either RT or RT-CT
<b>Multi-Agent Combination Oral Care Protocols</b>	Suggested for prevention of oral mucositis during CT for hematologic cancer patients, RT for head and neck cancer patients, and hematopoietic stem cell transplantation patients (HSCT)



## Recommendations Against Interventions for Oral Mucositis

### Suggestions Against Interventions with Limited Evidence

<b>Chlorhexidine (CHX) Oral Rinse</b>	Suggestion against for prevention of oral mucositis during radiation therapy (RT) for head and neck cancer patient
<b>Sucralfate (Combined Topical and Systemic)</b>	Suggestion against for the prevention of oral mucositis-associated pain in head and neck cancer patients treated with RT, or solid cancer patients treated with chemotherapy (CT)
<b>Systemic Pentoxifylline</b>	Suggestion against for prevention of oral mucositis in patients undergoing bone marrow transplantation
<b>Systemic Pilocarpine</b>	Suggestion against for prevention of oral mucositis in patients receiving RT for head and neck cancer, or high-dose CT, with or without total body irradiation, for hematopoietic stem cell transplantation (HSCT) patients
<b>Topical GM-CSF</b>	Suggestion against for prevention of oral mucositis in patients undergoing HSCT
<b>Honey (Combined Topical -Systemic)</b>	Suggestion against for the treatment and prevention of oral mucositis during CT for hematologic cancer patients, or CT for solid cancer patients

### Recommendations Against Interventions

<b>Antimicrobial Lozenges (PTA*, BCoG**, PTA paste)</b>	Recommendation against for prevention of oral mucositis in patients receiving radiotherapy for head and neck cancer
<b>Isegran Antimicrobial Mouthwash</b>	Recommendation against for prevention of oral mucositis in patients receiving high-dose CT with or without total body irradiation, for HSCT patients, or patients receiving RT/RT-CT for head and neck cancer
<b>Glutamine</b>	Recommendation against for the prevention of oral mucositis in patients undergoing HSCT

### Interventions with No Recommendations

<b>Management</b>	No suggestion for the prevention of CT induced oral mucositis: CHX, calcium phosphate rinse, calcitriol, and granulocyte colony-stimulating factor, vitamin B12, beta-carotene calcium, zinc, vitamin E, selenium, folic acid, chamomile, elemental diet, glutamine, or curcumin
<b>Fentanyl Transdermal Patch</b>	No guidelines possible for the treatment of oral mucositis with fentanyl transdermal patches for head and neck patients receiving RT or RT-CT, or HSCT patients. See medications for the management of pain related to oral mucositis (page 7)

## Reference Tables

**Table 1 - RTOG/EORTC Acute and Late Reaction Grading Scales**

#### Acute Radiation Morbidity Scoring Criteria - Mucous Membrane

0	No change over baseline
1	Injection/may experience mild pain not requiring analgesic
2	Patchy mucositis which may produce an inflammatory serosanguinous discharge/may experience moderate pain requiring analgesic
3	Confluent fibrinous mucositis/may include severe pain requiring narcotic
4	Ulceration, hemorrhage or necrosis

#### Late Radiation Morbidity Scoring Scheme-Mucous Membrane

0	None
1	Slight atrophy and dryness
2	Moderate atrophy and telangiectasia/little mucous
3	Marked atrophy with complete dryness/severe telangiectasia
4	Ulceration
5	Death directly related to radiation late effect

**Table 2: Recommended Intra-Oral Photobiomodulation Therapy Protocols for Prevention of Oral Mucositis (Adapted from Zadik, 2019<sup>5</sup>)**

Cancer Treatment Type	Wave-Length (nm)	Power Density (Irradiance mW/cm <sup>2</sup> )	Time per Spot (Sec)	Energy Density (Fluence J/cm <sup>2</sup> )	Spot Size (cm <sup>2</sup> )	# of Sites	Duration
HSCT	632.8	31.25	40	10.	0.8	18	From day after cessation of conditioning for 5 days
	650	1000 <sup>+</sup>	2	2.0	0.04	54-70	From 1 <sup>st</sup> day of conditioning till day + 2 post-HSCT (for 7-13 days)
RT	632.8	24	125	3.0	1	12	Entire RT course
RT-CT	660	417 <sup>+</sup>	10	4.2	0.24	72	Entire RT course
	660	625 <sup>+</sup>	10	6.2	0.04	69	Entire RT course

+Potential thermal effect. The clinician is advised to pay attention to the combination of specific parameters

\*Polymyxin, tobramycin, amphotericin B

\*\*Bacitracin, clotrimazole, and gentamicin



## Basic Oral Care Tables

### Flossing

<b>Basic</b>	<ul style="list-style-type: none"> <li>• Patients who have not flossed routinely before cancer treatment should not begin flossing at this time</li> <li>• Patients with mouth cancers, trismus, dysphagia, and/or dysgeusia may not be able to floss; use of interproximal brushes can replace flossing</li> <li>• Floss at least once daily</li> <li>• Waxed floss may be easier to use and minimize trauma to the gums</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>• Continue with basic plan until discomfort becomes too great</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>• Discontinue flossing if patient chooses</li> </ul>

#### Discontinue flossing if:

- Gums bleed for longer than two minutes

#### Restart flossing if:

- Platelet count is  $>20 \times 10^9$  cells/L, or as instructed by cancer care team

### Brushing

<b>Basic</b>	<ul style="list-style-type: none"> <li>• Use a small, ultra-soft-headed, rounded-end, bristle toothbrush (an ultrasonic toothbrush, may be acceptable)</li> <li>• Rinse toothbrush in hot water to soften the brush before using</li> <li>• Use a prescription strength fluoride toothpaste. Spit out the foam but do not rinse mouth</li> <li>• Use a fluoridated toothpaste and re-mineralizing toothpaste containing calcium and phosphate</li> <li>• Brush tongue gently from back to front, using a sweeping motion</li> <li>• Rinse brush after use in hot water and allow to air dry</li> <li>• Change toothbrush when bristles are not standing up straight</li> <li>• Brush within 30 minutes after eating and before bed. Ensure the gingival portion of the tooth and periodontal sulcus (where the tooth and gums meet) are included</li> <li>• Consider topical anesthetics (e.g. viscous lidocaine 2% or viscous xylocaine 2%, 2-5 mL) before brushing and eating to minimize pain</li> <li>• With continuous pain, a regularly prescribed oral analgesic allows for more thorough tooth brushing</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>• Encourage patient to continue brushing through treatment phase even when it causes discomfort</li> <li>• If bleeding occurs, encourage gentler brushing</li> <li>• Use a non-flavoured, non-alcoholic chlorhexidine gluconate (CHX) 0.12% rinse to aid in plaque control, 2 times a day after meals</li> <li>• If unable to continue brushing with a toothbrush, use a moist gauze or foam swab</li> <li>• Discontinue use of toothpaste if it is too astringent and dip toothbrush in bland rinse</li> <li>• If there has been an oral infection, use a new toothbrush after infection has resolved</li> <li>• If unable to tolerate brushing, seek assistance from nursing or dental staff</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>• Continue with basic and intensified mouth care plan, if possible</li> <li>• Instead of moist gauze may use a foam brush soaked in CHX</li> </ul>

#### Discontinue brushing if:

- Gums bleed for longer than two minutes

#### Restart brushing if:

- Platelet count is  $>20 \times 10^9$  cells/L, or as instructed by cancer care team

#### Bland rinse:

- 1 teaspoon salt, 1 teaspoon baking soda, 4 cups of water

#### Lidocaine alternative:

- Dyclonine 0.5 or 1% rinse (5 mL every 6 to 8 hours, swish and swallow) as needed for pain

#### Patients with head and neck cancers:

- Brushing may not be appropriate in the area of tumour involvement
- Consult with a dentist
- Patients should be assessed for the use of daily fluoride tray

#### Patients with dentures:

- Remove dentures, plates and prostheses before brushing
- Brush and rinse dentures after meals and at bedtime
- Remove from mouth nightly (at least 8 hours per 24 hours) and soak in bland rinse
- Leave dentures out as much as possible during radiation therapy
- Patients who have had head and neck surgery should not wear dentures post-surgery unless assessed by a dental specialist or head and neck surgeon, to prevent trauma to the

## Rinsing

<b>Basic</b>	<ul style="list-style-type: none"> <li>Rinse the oral cavity with a bland rinse vigorously, at least twice a day to maintain mouth moisture, remove the remaining debris and toothpaste, and reduce the accumulation of plaque and infection</li> <li>Use a bland rinse to increase oral clearance for oral hygiene maintenance and improved patient comfort.</li> <li>Following emesis, rinse with bland rinse immediately to neutralize the mouth</li> <li>If allergic to lidocaine, dyclonine 0.5 or 1% rinse (5 mL every 6 to 8 hours, swish and swallow) may be used as needed for pain</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>Rinse in place of brushing if patient is unable to brush</li> <li>Seek dental care where possible for removing plaque</li> <li>In addition to rinsing twice a day, encourage rinsing every 1 to 2 hours while awake and every 4 hours through the night if awake, to minimize complications of decreased saliva</li> <li>If unable to clean using moist gauze, or foam swab, consider rinsing via syringe if platelet count <math>&gt;20 \times 10^9</math> cells/L</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>Continue with basic and intensified mouth care plan</li> <li>Consider sialagogues in instances of dry mouth for pharmacotherapy relief (pilocarpine, and anethole trithione)</li> </ul>

### Patients with dentures:

- After removing dentures, rinse mouth thoroughly with rinse solution
- Brush and rinse dentures after meals and at bedtime
- Rinse with rinsing solution before placing in mouth
- Remove from mouth nightly (at least 8 hours per 24 hours) and soak in rinsing solution

### Bland rinse:

- 1 teaspoon salt, 1 teaspoon baking soda, 4 cups of water

### Avoid:

- Club soda due to the presence of carbonic acids
- Commercial mouthwashes with hydroalcoholic base or astringent properties

### Avoid:

- Glycerin or lemon-glycerin swabs as they dry the mouth
- Acidic or minty mouth products, if they burn

## Moisturizing the Oral Cavity

<b>Basic</b>	<ul style="list-style-type: none"> <li>Moisturize the mouth with water, artificial saliva products, or other water soluble lubricants</li> <li>Apply lubricant after each cleaning, at bedtime, and as needed. Water-based lubricant needs to be applied more frequently</li> <li>Frequent rinsing as needed with basic mouth rinse</li> <li>Patients may suck on xylitol lozenges (up to 6 grams a day), xylitol containing popsicles, or xylitol containing gum</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity</li> <li>Increase frequency of bland mouth rinse to every hour</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity, as needed</li> <li>Use a steam vaporizer at night</li> <li>May use a cool mist humidifier at night, but use should be weighed against the risk for fungal infection</li> </ul>

## Lip Care

<b>Basic</b>	<ul style="list-style-type: none"> <li>To keep lips moist and avoid chapping and cracking, use water soluble lubricants, lanolin (wax-based), or oil based lubricants (mineral oil, cocoa butter)</li> <li>Water soluble lubricants should be used inside and outside the mouth, and may also be used with oxygen (e.g. products compounded with Glaxal base or Derma base)</li> <li>Apply lubricant after each cleaning, at bedtime, and as needed. Water-based lubricants need to be applied more frequently</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity, as needed</li> <li>May use a cool mist humidifier at night, but use should be weighed against the risk for fungal infection</li> </ul>

### Avoid:

- Touching any lip lesions
- Oil based lubricants on the inside of the mouth
- Petroleum based products

## Miscellaneous

<b>Basic</b>	<ul style="list-style-type: none"> <li>Dental evaluation and treatment as indicated prior to cancer therapy is desirable to reduce risk for local and systemic infections from odontogenic sources for hematologic, solid or head and neck cancers</li> </ul>
<b>Intensified</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity</li> </ul>
<b>End of Life</b>	<ul style="list-style-type: none"> <li>Continue with basic mouth care plan with increased frequency and intensity, as needed</li> </ul>

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