Symptom Management Guidelines: DRY MOUTH (XEROSTOMIA)

NCI CTCAE GRADE AND MANAGEMENT | RESOURCES | CONTRIBUTING FACTORS |

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
- **Salivary Gland Hypofunction (SGH):** an objective, measurable decrease in salivary flow

FOCUSED HEALTH ASSESSMENT

SYMPTOM ASSESSMENT

Normal
• Refer to pretreatment nursing assessment or dental evaluation

Onset
• When did symptoms begin?

Provoking / Palliating
• What makes it better? Worse?
• Is it worse at night?
• Is it worse on CPAP?

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? Foul odour from mouth? - 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)?

PHYSICAL ASSESSMENT

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
  - Halitosis
  - Thick, ropey secretions

Skin Assessment
  - Assess skin surrounding head and neck for accompanying symptoms (e.g radiation dermatitis)
  -

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
  - Orthostatic blood pressure
  - Blood work

Functional Status
  - Activity level/ECOG or PPS

– 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)?	

DRY MOUTH (XEROSTOMIA) GRADING SCALE NCI Common Terminology Criteria for Adverse Events (CTCAE) (Version 5.0)				
GRADE 1 (Mild)	**GRADE 2 (Moderate)**	**GRADE 3 (Severe)**	**GRADE 4**	**GRADE 5**
Symptomatic (e.g., dry, or thick saliva) without significant dietary alteration; unstimulated saliva flow >0.2ml/min	Moderate symptoms; oral intake alterations (e.g., copious water, other lubricants, diet limited to purees or soft foods); unstimulated saliva 0.1 to 0.2 ml/min	Inability to adequately aliment orally; tube feeding or TPN indicated, unstimulated saliva <0.1ml/min	-	-

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

Management of Dry Mouth (Xerostomia)

Special Considerations

Assessment Tools	• The **PRISM** form has a symptom self-assessment section that asks questions around nutrition. The **Nutrition Screening Tool (NST)** is used by oncology nutrition to help identify patients who are at risk for malnutrition in ambulatory or hospitalized oncology patients. The NST is located in the PRISM form.
BC Cancer Agency - Oncology Nutrition Referral Criteria	• **Automatic Referrals** – All head and neck cancers, esophageal, and gastrointestinal cancer patients will be followed weekly by a Registered Dietician who will assess xerostomia as well as other symptoms in order to assist in maintaining the patients nutritional status **NOTE:** CNS, Thyroid and Lymphoma patients are not included in automatic referral criteria • **At Risk Referrals** – New patients with a score of 3 or greater on the Nutrition Screening Tool (PRISM form) – Patients with impaired intake or absorption due to one or more of the following: ➢ Anorexia and weight loss ➢ Difficulty chewing or swallowing ➢ Vomiting ➢ Diarrhea – Patients: ➢ At risk for or have partial bowel obstruction ➢ On tube feeding or TPN ➢ With a colostomy or ileostomy

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. This is the standard mode of delivery for sites at high risk for 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 • Ensure dentures and other appliances fit well prior to treatment. It may be recommended to remove dentures for part or all of treatment. Dentures may also need to be relined or refit after treatment due to changes in weight. **Daily Fluoride Treatments:** • Fluoride treatment based on recommendation from dentist, oral oncologist, radiation/medical oncologist, or nurse practitioner Essential to prevent/minimize development of dental caries and demineralization of teeth • Initiated prior to cancer treatment and may 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 High Fluoride Toothpaste: • Prevident 5000 • Clinpro 5000 **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 acute/chronic xerostomia in patients receiving radiation therapy for head and neck cancer. Use may be considered controversial. Collaborate with health care team.

NORMAL – GRADE 1

↓

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 • Assess mental health status, head and neck cancer patients have high rates of depression

	and anxiety
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 – A water pic is preferred due to their gentle yet effective nature • 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:** – Recommended by Dentistry: 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 – Normal saline (NS) - ½ teaspoon (2.5 ml) of salt 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" and "pink lady" 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 – Club Soda **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
Moisture and Lubrication	**Humidity** • Cool humidifier or bedside vaporizer **Saliva Substitutes** • Use water as a saliva substitute- keep water bottle present at all times; encourage frequent sips • 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®)

	• Biotene and Oral Science products for dry mouth • Xylitol products **NOTE:** these products are often short acting and can be costly • Milk, butter, or vegetable oil may be helpful **Saliva Stimulants** • Mastication/Gustative Stimulants - can help stimulate residual salivary flow – Chew sugar-free gum or candies **NOTE:** Patients with head and neck cancer may find chewing difficult from the residual effects of treatment • Over the counter oral lubricants may be helpful (e.g.: Moistir, Salivard)
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- 2-21/2 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

GRADE 2 - GRADE 3
OR
ORAL INTAKE ALTERATIONS

↓

URGENT:

Requires medical attention within 24 hours

Patient Care and Assessment	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** • **Xylitol products-** examples xlylimelts, or xylitol based losenges • **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. • Cevimeline • Antholtithian • Bethanechol • **Acupuncture** – Stimulation of salivary flow unclear, but may be helpful for some patients Note: Prescribed saliva stimulants may come with side effects including headache, sweating, nausea, runny nose, increased urination and blurred vision; increase the dosage slowly to minimize side effects
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 • Refer to Oncology Nutrition
Other	• Pharmacological management in collaboration with physician to treat accompanying symptoms: – Analgesics/opioids for oral pain – Antifungals/antibiotics for infection

GRADE 3
AND/OR the presence of the following symptoms:
• Temperature greater than or equal to 38 degrees C
• Severe or uncontrolled pain
• Respiratory Distress
• Unable to eat or drink for 24 hours

↓

EMERGENT:

Requires IMMEDIATE medical attention

Patient Assessment and Care	• Collaborate with Physician/Nurse Practitioner to determine if hospital admission required- facilitate arrangements as necessary. • Prophylactic intubation may be required if severe respiratory distress or at risk for aspiration. • Nursing Support: – Oral assessment (visual, auditory and olfactory assessment, foul odour may indicate infection) – Monitor vital signs as clinically indicated – Assess hydration status – Accurate monitoring of daily intake and output, including daily weight – Pain and symptom management as appropriate – As patient stabilizes, reinforce importance of regular comprehensive dental follow–up and intensive prophylaxis
Oral Hygiene	• Frequent mouth care using oral rinse every 1-2 hours (or as tolerated) • Apply water based lubricant to lips every 1-2 hours
Pharmacological Management	• Medications that may be helpful in collaboration with physician – Analgesics/Opioids for pain management – Antibiotics/Antifungals for infection
Dietary Management	• IV hydration • Dietitian to assess for need for enteral nutrition until patient stable and symptoms resolving

RESOURCES AND REFERRALS	
Referrals	• Oncology Nutrition Services • Home Health Nursing • Physician, Oral Oncology Specialist/Dentist • Speech Language Pathologist • Pain and Symptom Management/Palliative Care (PSMPC) • Patient Support Centre, Telephone Care for follow - up • Acupuncturist

Healthcare Professional Guidelines	• Cancer management guidelines - Oral/Dental Care: http://www.bccancer.bc.ca/health-professionals/clinical-resources/cancer-management-manual/head-neck/oral-dental-care Nutrition Handouts and Pamphlets: http://www.bccancer.bc.ca/health-professionals/clinical-resources/nutrition • Increasing Fluid Intake • Coping with Dry Mouth • Coping with Taste Changes • Food Ideas to Cope with Taste and Smell Changes • Food Ideas to Try With a Sore Mouth • Easy to Chew Recipes • Food Ideas to Help with Decreased Appetite • Healthy Eating Using High Protein High Energy Foods • High Energy, High Protein Menu and Recipes • High Calorie High protein Smoothie Resources about managing anxiety, positive thinking, etc http://www.bccancer.bc.ca/health-info/coping-with-cancer/emotional-support
BC Inter-professional palliative symptom management guideline	• https://www.bc-cpc.ca/cpc/symptom-management-guidelines/
Bibliography List	• http://www.bccancer.bc.ca/nursing-site/Documents/Bibliograpy%20-%20Master%20List.pdf

Contributing Factors	
Cancer Treatment Related	• **Chemotherapy Agents** – Many chemotherapy agents have the potential to cause or contribute to xerostomia. Condition most often reverses post treatment. ***For specific chemotherapy information, See Cancer Drug Manual in Resource Section*** • **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. Often irreversible damage if salivary glands are affected – Total body irradiation – • **Surgical Excision of Salivary Glands** • **Graft Versus Host Disease**
Medication(s)	• Anticholinergics (e.g. atropine, transdermal scopolamine) • Antipsychotics (e.g. chlorpromazine, prochlopromide, risperidone) • Antihistamines (e.g. diphenhydramine, chlorpheniramine) • Opioids • Antispasmodics • Antihypertensives • Diuretics • Antidepressants (e.g. tricyclic- TCA's, Selective serotonin reuptake inhibitors) • Antiparkinsonians • Bronchodilators • Skeletal muscle relaxants • Antidiabetics • Cannabinoids/ Synethic Cannabinoids

Other	• Dehydration • Immune Disorders (e.g. Sjogren's Syndrome, HIV/AIDS) • Alcohol or tobacco use • Oxygen therapy • Infection (mumps) • Anxiety, depression and/or stress • Diabetes • Renal Disease

Consequences

- Local infection/systemic infection (sepsis) – fungal, bacterial, viral
- Increased risk of cancer treatment dosage reductions, delays or discontinuation of treatment
- Altered nutrition – dehydration, malnutrition, weight loss
- Dental disease – increased rate of dental caries, gingivitis, osteoradionecrosis (ORN)
- Quality of life – psychological distress, difficulty eating dry foods and drinking, altered speech and taste, pain, fatigue from malnourishment, change of role function
- Decreased nutritional status may result in increased INR or increased risk of bleeding for patients on warfarin

Date of Print:
Revised: May, 2019**;** February 2025 (limited revisions to include new NCI CTCAE scale)
Created: January, 2010
Contributing Authors:
Revised by: Jeevan Dosanjh, RN BScN, Michelle LaFreniere, RN (2025)
Revised by: Jen Pesut, RN, BscN; Ava Hatcher, RN BN CON(c)
Created by: Vanessa Buduhan, RN MN; Rosemary Cashman, RN MSc(A), MA (ACNP); Elizabeth Cooper, RN BScN, CON(c); Karen Levy, RN MSN; Ann Syme RN PhD(C)
Reviewed by: Dr. Terry Meadows (2019), Eleah Stringer, BSc (2019), RD Paula N. Kostuik, MS NP-A AOCNP; Erica Kang BSc RD