

Provincial Clinical Knowledge Topic

Mouth Care to Prevent and Treat Mucositis, Pediatric – Inpatient

V 1.0

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Revision History

Version	Date of Revision	Description of Revision	Revised By

Important Information Before You Begin

The recommendations contained in this knowledge topic have been provincially adjudicated and are based on best practice and available evidence. Clinicians applying these recommendations should, in consultation with the patient, use independent medical judgment in the context of individual clinical circumstances to direct care. This knowledge topic will be reviewed periodically and updated as best practice evidence and practice change.

The information in this topic strives to adhere to Institute for Safe Medication Practices (ISMP) safety standards and align with Quality and Safety initiatives and accreditation requirements such as the Required Organizational Practices. Some examples of these initiatives or groups are: Health Quality Council Alberta (HQCA), Choosing Wisely campaign, Safer Healthcare Now campaign etc.

This topic is based on the following guidance:

1. [Pediatric Oncology Group of Ontario \(POGO\) Supportive Care Clinical Practice Guideline](#). Sung L, Robinson P, Treister N, et al Guideline for the prevention of oral and oropharyngeal mucositis in children receiving treatment for cancer or undergoing haematopoietic stem cell transplantation. *BMJ Supportive & Palliative Care* 2017; 7:7-16. Also endorsed by the [Children's Oncology Group \(COG\)](#)
2. [American Academy of Pediatric Dentistry](#). Guideline on Dental Management of Pediatric Patients Receiving Chemotherapy, Hematopoietic Cell Transplantation, and/or Radiation Therapy. Reference Manual: 2013; 38(6) 334-342.

Rationale

Mouth Care is defined as the care of the oral or oropharyngeal mucosa in children with cancer and blood disorders to prevent and treat mucositis.

Mucositis is an acute inflammation and/or ulceration of the mucous membranes of the oral cavity and gastrointestinal tract. It is a common complication in Hematology–Oncology patients undergoing chemotherapy, radiation therapy (RT) and hematopoietic stem cell transplantation (HSCT)¹. Mucositis can also occur in immunocompromised patients caused by inherited or acquired bone marrow failure².

Mucositis occurs when cancer and hematological break down the rapidly dividing epithelial cells lining the gastro-intestinal tract leaving the mucosal tissue open to ulceration and infection. Mucositis causes: pain/discomfort; nutritional problems due to inability to drink, eat or swallow; and an entry point for infections.³

The severity of the mucositis depends on preexisting oral hygiene, intensity of chemotherapy or radiation therapy, baseline nutritional status and the extent of myelosuppression. Oral mucositis generally begins 5-10 days following treatment and lasts anywhere from one week to six weeks or more⁴. Resolution (in the case of myelosuppression chemotherapy and HSCT) coincides with recovery of the white blood cell count, specifically when the absolute neutrophil count becomes greater than 500 cells/ μ L.

Table 1.0 Common Chemotherapy Drugs that Cause Mucositis^{5,6}

Drug Name	Incidence/ Timing
actinomycin D (dactinomycin)	mucositis occasional (5-20%), occurs within 2-3 weeks
bleomycin	mucositis common (>20%), occurs within 2-3 weeks
CARBOplatin	rare mucositis, occurs within 1-2 days
CISplatin	mucositis rare (<5%), occurs within 1-2 days
cyclophosphamide	mucositis (frequency not reported)
cytarabine	mucositis (>15%) ⁷
DAUNOrubicin	mucositis occasional (5-20%), occurs within 2-3 weeks
DOXOrubicin	mucositis occasional (5-20%), occurs within 2-3 weeks
etoposide	mucositis (1-6%)
5FU fluorouracil	mucositis occasional (5-20%), occurs within 2-3 weeks
methotrexate	mucositis (5-20%), occurs within 2-3 weeks
thioguanine	rare <5%, occurs within 2-3 weeks

NOTE: This is not an exhaustive list, other drugs may cause mucosal disease

Decision Making

Initial Assessment

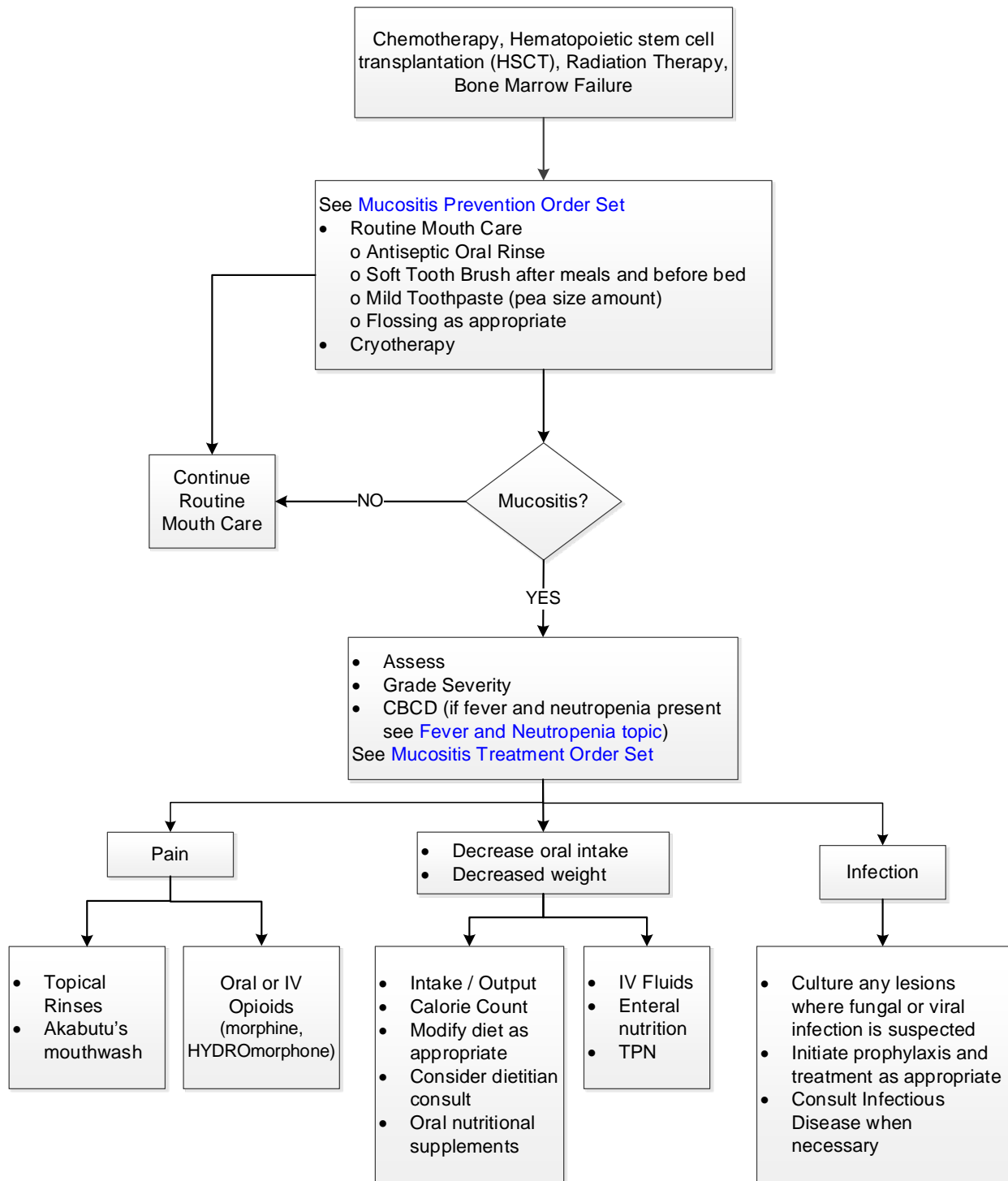
1. History of Present Illness:
 - When did it start?
 - Symptoms
 - Ulcers
 - Bleeding
 - Burning
 - Pain
 - Unable to speak, eat, swallow or drink
 - Associated fever and chills
 - Gingivitis
 - Assess pain using standard age appropriate pain scales (see examples in [Appendix A](#))
2. Past History:
 - Underlying diagnosis
 - Date and agents of last chemotherapy
 - Dose and location of radiation therapy (RT)
 - Date of hematopoietic stem cell transplantation (HCST)
 - Most recent absolute neutrophil count (ANC)
3. Medications & Allergies:
 - Any mouth care products or analgesia used?
4. Physical Examination:
 - Careful physical examination to determine condition of mouth and throat (use flash light and gloves) and grade mucositis (see [Table 2](#)):
 - Color, pallor or erythema, white patches, or discolored lesions/ulcers. Red, shiny, or swollen mouth and gums
 - Moisture – assess accumulation of debris or coating, discoloration of teeth, bad odor. Assess mucous membranes, skin turgor, capillary refill, white patches, pus, white coating on entire mouth and tongue
 - Integrity – assess presence of cracks, fissures, ulcers, blisters, bleeding, in mouth or throat, or on gums or tongue
 - Ability to swallow, speak, xerostomia (decreased saliva)
 - Assess daily intake and output, weight
5. Laboratory Investigations:
 - Complete blood count with differential
 - Swab if viral (e.g. Herpes Simplex Virus) or fungal (e.g. Candida) infection suspected

Table 2.0 Summary of World Health Organization (WHO) and National Cancer Institute – Common Terminology Criteria (NCI-CTC) Oral Mucositis Scales⁸

	WHO Scale	NCI-CTC Clinical	NCI-CTC Functional
Grade 1	Oral soreness, erythema	Erythema	Minimal symptoms, normal diet; minimal respiratory symptoms but not interfering with function
Grade 2	Ulcers but able to eat solids	Patchy ulcerations or pseudomembranes	Symptomatic but can eat and swallow modified diet; respiratory symptoms interfering with functions but not interfering with activities of daily living
Grade 3	Oral ulcers and able to take liquids only	Confluent ulcerations or pseudomembranes; bleeding with minor trauma	Symptomatic and unable to adequately aliment or hydrate orally; respiratory symptoms interfering with activities of daily living
Grade 4	Oral alimentation impossible	Tissues necrosis; significant bleeding; life-threatening consequences	Symptoms associated with life-threatening consequences
Grade 5	N/A	Death	Death

Adapted from: Bensinger W, Schubert M, Ang K-K, et al. NCCN Task Force Report: Prevention and management of mucositis in cancer care. Journal of the National Comprehensive Cancer Network. 2008;6(1).

Algorithm 1.0 Mouth Care to Prevent and Treat Mucositis



Name of Order Set: Mucositis Prevention Pediatric Order Set

Order Set Keywords: Mouth care, oral care

Patient Care

- Assess mouth _____times a day and PRN
- Mouth Care: Post meals and at bedtime(Use soft tooth brush, mild toothpaste, and floss as appropriate)

Consider cryotherapy in age appropriate, cooperative children on chemotherapy with short administration times or short half-life:

- Clinical Communication: Cryotherapy-Hold ice cubes or ice chips (small so not irritating and can be moved around more easily), popsicles, or cold water in mouth five minutes prior, during, and for 30 minutes after the chemotherapy infusion PRN

Consider inserting an enteral feeding tube prior to treatment for patients at high risk of developing mucositis, such as hematopoietic stem cell transplant recipients

- Enteral Feeding Tube - Insert

Medications

Antiseptic rinses

- chlorhexidine gluconate 0.12% oral rinse 10 mL swish and spit
 - four times daily
 - PRN

Consider for young child unable to use oral rinse:

- chlorhexidine gluconate 0.12% swab entire mouth surface
 - four times daily
 - PRN
- Oral rinse: other _____swish and spit
 - four times daily
 - PRN

Name of Order Set: Mucositis Treatment Pediatric Order Set

Order Set Keywords: mouth care, mouth pain, oral pain, mouth sores, stomatitis

Order Set Requirements: Weight

If patient has a fever please refer to [Fever and Neutropenia, Pediatric – Acute Care](#) for further guidance on management.

Monitoring

- Weigh Patient: Daily
- Intake and Output every 4 hours
- Calorie Count
- Vital Signs every _____ hours
- Pain Score Monitoring every _____ hours

Laboratory Investigations

Hematology

- Complete Blood Count with differential

Microbiology

- Mouth Candida/ Yeast Stain - mouth swab
- Oral Infection Panel (Viral) - mouth swab (Panel includes testing for HSV, VZV, Enterovirus and Parechovirus)

Diet/ Nutrition

- Regular Diet: modify as tolerated (e.g. easy to chew)
- Nutritional oral supplements
- High Protein High Calorie - Peds

If patient unable to eat or drink in consultation with dietitian consider enteral nutrition or Parenteral Nutrition (PN).

- Follow orders for Enteral Nutrition Peds. Refer to local institutional practices until provincial orders available.
- Follow orders for Parenteral Nutrition Peds. Refer to local institutional practices until provincial orders available.

Intravenous Therapy

If patient unable to tolerate oral fluids

- potassium chloride 20 mmol/L in dextrose 5% - sodium chloride 0.9% at _____ mL /hour
- _____ (additive) in _____ (IV fluid) at _____ mL / hour

Medications

Oral Care

- chlorhexidine gluconate 0.12% oral rinse 10 mL swish and spit
 - four times daily
 - PRN

Consider for young child unable to use oral rinse:

- chlorhexidine gluconate swab entire mouth surface
 - four times daily
 - PRN

- Oral rinse: other _____ swish and spit
 - four times daily
 - PRN

Oral Care Analgesics

- Akabutu's mouthwash 5 to 10 mL swish and spit every _____ hours. (*Each mL provides lidocaine 5 mg + nystatin 21,000 units + hydrocortisone 0.25 mg*)
- Pink Lady _____ mL swish and spit every _____ hours. (*15 mL lidocaine viscous 2% PLUS 15 mL Almagel [aluminum hydroxide/magnesium hydroxide 40-40 mg/mL]*)

Order additional oral and parenteral analgesia based on the severity of the patient's pain. Refer to local institutional practices until provincial orders available.

Consult

- Dietitian Referral: Assess and Treat. Reason for consult _____.
- Consult Pediatric Infectious Diseases. Reason for consult _____.
- Consult Pain Service. Reason for consult _____.

Rural Considerations

Rural sites should consult with the pediatric oncologist on call at either the Stollery Children's Hospital or the Alberta Children's Hospital. In discussion with the pediatric oncologist a decision will be made to either:

1. Admit and treat patient at rural site
 - a. Patient should be transferred to tertiary centre if remains febrile after 48 hours.
2. Discharge with appropriate follow-up instructions
3. Transfer to tertiary centre

Relevant Guidelines, Procedures, Protocols and Clinical Knowledge Topics

AHS Practice Support Documents

[Oral Care Protocol for Dependent Patients](#)

Patient and Family Education Resource

[Mouth and Dental Care for Cancer Patients](#)

Clinical Decision Support

- CDS Requirements:
 - References:
 - Please place a link to this Clinical Knowledge Topic within the following order set: Mucositis Prevention Pediatric Order Set and Mucositis Treatment Pediatric Order Set

Analytics

Baseline Analytic – Outcome Measure #1

Name of Measure	Order Set Usage for Topic: Mouth Care to Prevent and Treat Mucositis, Pediatric- Inpatient
Definition	For all pediatric inpatients receiving chemotherapy, radiation therapy (RT) and hematopoietic stem cell transplantation (HSCT), number of times Mucositis Prevention Order Set is being used. Overall, by region, by sites, and by units
Rationale	Intended to measure if the order set cited in the knowledge topic is being used and with what frequency. May indicate areas with adoption issues or gaps in topic
Notes for Interpretation	Site capacity, roll out of provincial CIS

Baseline Analytic – Outcome Measure #2

Name of Measure	Order Set Usage for Topic: Mouth Care to Prevent and Treat Mucositis, Pediatric- Inpatient
Definition	For all pediatric inpatients receiving chemotherapy, radiation therapy (RT) and hematopoietic stem cell transplantation (HSCT), number of times Mucositis Treatment Orders is being used. Overall, by region, by sites, and by units
Rationale	Intended to measure if the order set cited in the knowledge topic is being used and with what frequency. May indicate areas with adoption issues or gaps in topic
Notes for Interpretation	Site capacity, roll out of provincial CIS

Baseline Analytic – Outcome Measure #3

Name of Measure	Prevention of Mucositis
Definition	What is the rate mucositis in pediatric oncology/hematology patients (on chemotherapy, HSCT, Radiation) that receive the Prevention of Mucositis Order Set vs those where it is not ordered?
Rationale	Patients that receive preventative mouth care should have lower incidence of mucositis.
Notes for Interpretation	Variation in complexity of patients, roll out of provincial CIS

Baseline Analytic – Outcome Measure #4

Name of Measure	Mouth Assessment in Pediatric Cancer patients
Definition	What is the rate mucositis in pediatric oncology/hematology patients (on chemotherapy, HSCT, radiation) that have daily mouth assessment documented?
Rationale	Daily mouth assessment in patients should increase appropriate and timely treatment for mucositis.
Notes for Interpretation	Variation in complexity of patients, roll out of provincial CIS

Keywords

- oral mucositis
- chemotherapy
- radiation
- treatment
- prevention
- management
- stomatitis

References

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Additional Reading and General References

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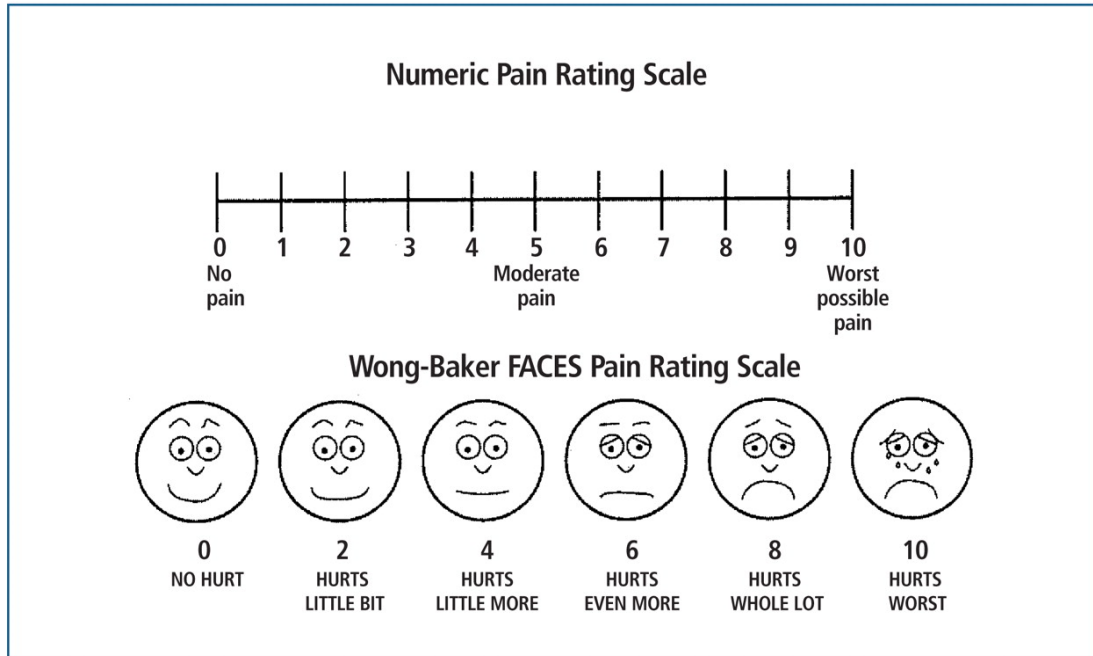
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Appendix A- Pain Scales

Table 1: Pain Scales



Top: Numeric scale for patient's rating of intensity of pain.

Bottom: Wong-Baker FACES Scale used for patients to rate the intensity of their pain.

Wong-Baker FACES Foundation (2016). Wong-Baker FACES® Pain Rating Scale. Retrieved December 11, 2017 from <http://www.WongBakerFACES.org>. Originally published in *Whaley & Wong's Nursing Care of Infants and Children*. © Elsevier Inc

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