

GUIDELINES FOR THE MANAGEMENT OF MUCOSITIS ASSOCIATED WITH CHEMOTHERAPY AND/OR RADIOTHERAPY.

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Inclusion criteria	<ul style="list-style-type: none"> • Adult and teenage oncology patients receiving chemotherapy or radiotherapy under the care of an Adult Oncologist at the City Campus.
Distribution	<ul style="list-style-type: none"> • Oncology medical staff

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**This guideline has been registered with the Trust.
Clinical guidelines are guidelines only. The interpretation and application of clinical guidelines will remain the responsibility of the individual clinician. If in doubt contact a senior colleague.
Caution is advised when using guidelines after a review date.**

1. PRINCIPLES OF MUCOSITIS

1.1. Mucositis describes inflammation of the oral mucosa resulting from chemotherapeutic drugs or ionising radiation. It initially starts as erythema, progressing through to frank ulceration and necrosis as the severity of mucositis increases. It is commonly a dose limiting toxicity for cytotoxic agents and is a particular problem in the use of fluoropyrimidines, anthracyclines and folate-based drugs such as methotrexate. Radical radiotherapy treatments of the head and neck region that usually deliver a dose of 60-70 Gray will result in significant mucositis, which starts to develop during the second week of radiotherapy and can last for 3-4 weeks once radiotherapy is completed.

1.2. Factors that increase the risk of mucositis include:

- Smoking throughout course of chemotherapy or radiotherapy
- Drinking alcohol throughout course of chemotherapy and radiotherapy
- Poor oral hygiene and pre-existing mouth damage
- Mucositis with previous cycle of treatment
- Previous gastritis
- Impaired immune status

1.3. Mucositis can be a difficult issue to manage as it causes significant pain; increases the risk of oral infections; can result in significant reductions in nutritional intake and may require delays or interruptions in a course of treatment. The National Cancer Institute Common Toxicity Criteria of Adverse Events (NCI CTCAE) grades mucositis according to its severity based on clinical examination findings and functional/symptom assessment.

NCI CTCAE Version 3

Grade 0	Normal mucosa, no symptoms
Grade 1	Erythema of the mucosa; minimal symptoms; normal diet; minimal respiratory symptoms but not interfering with function
Grade 2	Patchy ulcerations or pseudomembranes; symptomatic but can eat and swallow modified diet; respiratory symptoms interfering with function but not interfering with activities of daily living (ADL)
Grade 3	Confluent ulcerations or pseudomembranes; bleeding with minor trauma; symptomatic and unable to adequately aliment or hydrate orally; respiratory symptoms interfering with ADL
Grade 4	Tissue necrosis; significant spontaneous bleeding; symptoms associated life-threatening consequences
Grade 5	Death

2. PREVENTION OF MUCOSITIS

2.1. General Advice.

Patients can be directed to the Macmillan Cancer Support leaflets of 'Mouth care during chemotherapy' and 'Dry Mouth (xerostomia)'

2.1.1. Patients should be encouraged to visit their dentist regularly. A visit before chemotherapy starts is advised to ensure that any oral hygiene issues have been addressed. Visits to a dental hygienist during treatment is not advised to avoid unnecessary trauma to the gums.

2.1.2. Prevention is based on good oral hygiene, use of mouthwashes and simple analgesia. Ideally the aim is to reduce the risk of severe mucositis developing during chemotherapy.

- All patients should be advised on the need for good oral hygiene to stop smoking and reduce alcohol intake during their treatment.
- Patients should brush their teeth regularly using a soft toothbrush and fluoride toothpaste after each meal and at bedtime. Toothbrushes should be replaced regularly to minimize infection risk.
- If brushing of the teeth becomes too painful patients should use fluoride toothpaste or gel applied to the teeth with a finger to maintain good oral hygiene.
- Dentures should be cleaned after each meal and left to soak in the patient's usual solution overnight.
- Patients may consider using normal saline or water mouthwashes regularly from the first day of their chemotherapy/radiotherapy as this may provide indirect benefits of reducing oral plaque and controlling the development of candidiasis and gingivitis.

2.2. Guidance specifically related to fluorouracil (5FU) bolus chemotherapy.

Cryotherapy is being increasingly used in the USA to try and reduce the incidence of 5-fluorouracil induced mucositis. Patients are advised to chew on ice cubes/chips for 30 minutes before their 5-fluorouracil bolus injection. It is thought this reduces the vascular delivery of the cytotoxic to the oral epithelium and thereby ameliorates its mucosal side effects. Its use must be discussed with the consultant in charge of the patient's care, prior to initiation.

2.3. Prevention of mucositis in radiotherapy patients.

For patients receiving radiotherapy to the head and neck consider caphosol: 15ml of the phosphate solution (Solution A) should be mixed with 15ml of the calcium solution and rinsed round the mouth for 1-2

minutes and spat out four to ten times daily. This is to lubricate the mouth and tongue and maintains a healthy oral cavity by promoting mucosal repair.

3. TREATMENT OF MUCOSITIS

Check if there is any evidence of infection – if infection is present see section below on oral infection.

Assess severity of mucositis and treat accordingly.

3.1. Grade 1-2 mucositis

- Consider regular normal saline or water mouthwashes 10ml QDS. It is important to encourage vigorous rinsing using a 'ballooning and sucking' motion of the cheeks for at least 30 seconds; this action removes loose debris from the teeth. There is no clinical benefit in using a commercial product, however if the patient prefers this, an alcohol free preparation should be used. In chemotherapy patients there is **no** reliable evidence to show that chlorhexidine mouthwash is superior to saline or water mouthwashes, and therefore should be avoided.
- apply bonjela PRN to mouth ulcers, if not contra-indicated
- regular analgesia including gargling with aspirin (if not contra-indicated) or paracetamol four times a day (patient not to swallow); opioid analgesia may be necessary.
- consider antacid and oxycetacaine suspension 5-10mls, sipped slowly, QDS before meals to improve local analgesia within the oral cavity and pharynx, to aid eating. Patients should be advised that this contains a local anaesthetic and therefore should avoid hot or cold foods immediately following its use.
- consider increasing folic acid rescue for methotrexate induced mucositis.
- closely monitor nutritional status and hydration and consider hospital admission for symptom management if mucositis worsening or patient not able to maintain oral intake

3.2. Grade 2 mucositis

- In addition to the measures above Gelclair or Caphosol may be used:
 - Gelclair. 15ml up to TDS from the onset of symptoms until resolution. Gelclair forms a bioprotective barrier that adheres to the oropharyngeal mucosa and covers exposed nerve endings and reduces pain.
 - Caphosol. 15ml of the phosphate solution (Solution A) should be mixed with 15ml of the calcium solution and rinsed round the mouth for 1-2 minutes and spat out four to ten times daily.

3.3. Grade 3 mucositis and above

- patient to be admitted to hospital
- Discuss whether to stop chemotherapy and/or radiotherapy with a registrar or consultant.
- commence IV fluids
- assess for oral infection as high risk of infection with this grade of mucositis

- repeat mouth swabs for microscopy, sensitivity and culture and virology, if cultures positive see section below on oral infection
- mouthcare as for grade 1-2 mucositis
- discuss with a senior regarding appropriateness of enteral or parenteral feeding and patient to be reviewed by dietician
- dose of chemotherapy/radiotherapy for next cycle should be reduced

3.4. Treatment of oral infection

Continue mouthwashes and analgesia

3.4.1. Fungal infection:

- Initiate nystatin suspension 1ml QDS for 14 days
- if insufficient use systemic therapy: fluconazole 50mg OD orally for 7-14 days, increase to 100mg OD if immunocompromised
- seek microbiology advice if antifungals not working
- consider prophylactic antifungals if repeated oral candidiasis

3.4.2. Herpes infection:

- Initiate aciclovir 200mg 5 times a day, orally for 5 days, increase dose to 400mg if immunocompromised
- consider prophylactic antivirals in repeated herpes infection

3.4.3. In grade 3 mucositis treat according to type of infection with:

- fluconazole 100mg OD, orally (or 100mg OD IV) for candidiasis
- aciclovir 200mg 5 times a day orally (or 5mg/kg TDS IV) for viral infections, increasing to 400mg 5 times a day orally (or 10mg/kg TDS IV) if immunocompromised
- metronidazole 400mg TDS, orally (or 500mg TDS IV) for anaerobic bacterial infections
- for resistant oral candidiasis seek advice from microbiology