Mouth care guidance and support
in cancer and palliative care

Contents

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UK Oral Mucositis in Cancer Group
UKOMiC
Oral Mucositis is no laughing matter...

1.0 Executive Summary

This guidance has been developed for all health care professionals involved in the care and treatment of cancer patients. It is anticipated that it can be adapted to other clinical settings, including palliative and terminal care, and other specialist areas such as gerontology.

A multi-professional group of UK oral care experts working in cancer and palliative care has drawn on their expertise and the most up-to-date evidence to develop guidance and support on the assessment, care, prevention and treatment of oral problems secondary to disease and treatments.

These guidelines aim to support clinical practice but they are not intended to replace the clinician's judgement as applied in individualised patient care.

1.1 Purpose of the Guidance

Oral problems, including oral mucositis (OM), can be a significant health burden for the individual. They also make substantial demands on health care resources. The expert group estimate that both the health burden on the individual and the demands on health care resources can be greatly reduced by the correct proactive care and treatment of oral problems. It is anticipated that this guidance will assist teams in planning oral care. Cancer and its treatments can directly impact on the condition of the oral cavity, dental health and patient well-being (Haas & McBride, 2011), potentially causing severe and lasting physical, psychological and social problems (Sonis *et al.*, 2004).

The mouth provides a reflection of general health and may reveal the toxicities of cancer treatment (Haas & McBride, 2011). It is therefore the responsibility of the entire multi-professional team to anticipate, and attempt to minimise, oral side effects in all patients undergoing care and treatment for cancer. The early detection of potential and actual problems, correct assessment, and treatment plans with active intervention are paramount, in order to avoid or minimise oral problems, prevent delays or interruptions to anti-cancer treatment plans and to maximise patient comfort (Haas & McBride, 2011).

1.2 Definition of OM

OM is defined as inflammation of the mucosal membrane. It is characterised by ulceration, which may result in pain, dysphagia and impairment of the ability to talk. Mucosal injury provides an opportunity for infection to flourish, placing the patient at risk of sepsis and septicaemia (Rubenstein *et al.*, 2004).

1.3 Incidence of OM

The incidence of OM in the cancer setting is very high. It can be expected to occur in at least 40% of patients undergoing chemotherapy to treat a solid tumour, and as many as 70% of patients undergoing haematopoietic stem cell transplantation (HSCT) (Sonis, 2004). Moreover, Kostler *et al.* (2001) estimate that as many as 97% of all cancer patients receiving irradiation (with or without chemotherapy) for head and neck cancers will suffer from some degree of OM. Some patients have rated OM as the most distressing aspect of cancer treatment (Bellm *et al.*, 2000), and it may lead to unplanned dose reductions or interruptions in treatment regimens (Treister & Sonis, 2007). It is widely believed that the true picture of OM continues to be underreported and that the distress that it causes remains greatly underestimated.

2.0 **Assessment of the Oral Cavity**

All treatment strategies aimed at improving mouth care are dependent on good assessment (Sonis, 2004). Mouths must be assessed by trained health care professionals using a recognised grading system (Quinn *et al.*, 2008). Assessments must be completed at regular intervals, and documented in the medical records; patients undergoing regimens with a high risk of mucositis should have daily assessments. When a patient visits the hospital for chemotherapy, or radiotherapy to the head and neck region, the oral cavity should always be examined (Quinn *et al.*, 2008).

The expert group recommends using a recognised oral assessment grading system, e.g. the World Health Organisation (WHO) Oral Toxicity Scale (Table 1).

Table 1. WHO Oral Toxicity Scale

OM Grade	Clinical Presentation
1	Soreness +/- erythema, no ulceration.
2	Erythema, ulcers. Patients can swallow solid diet.
3	Ulcers, extensive erythema. Patients cannot swallow solid diet.
4	OM to the extent that alimentation is not possible.

3.0 **Care of the Oral Cavity**

- All patients undergoing high-dose chemotherapy or HSCT procedure, and all head and neck cancer patients, should ideally be referred for dental assessment prior to commencing treatment.
- All patients should be encouraged to maintain good oral hygiene, which requires that, at a minimum, the teeth are brushed twice daily and after meals with a soft to medium toothbrush, along with a fluoride-containing toothpaste (Beck, 2004; Quinn, 2008). If an oral infection develops, patients should use a fresh toothbrush (Cooley, 2002; Eilers, 2004). Some head and neck patients may require toothpaste with a high content of fluoride (over 1450 ppm) in order to protect the teeth (Horiot *et al.*, 1983 cited Vissink *et al.*, 2003).
- After brushing, toothpaste should be removed from the mouth by rinsing with water. If brushing becomes difficult, patients should be advised to use a soft toothbrush (i.e. baby toothbrush or silk toothbrush).
- Saline and salt-water rinses are recommended, but over-the-counter mouthwashes are normally not required and should be used with caution, as their constituents may exacerbate oral discomfort and reduce healing.
- Adequate oral fluid intake and a well-balanced diet should be encouraged. Alcohol and tobacco should be avoided. Spicy foods may irritate the mouth, and care should be taken with rough or crunchy foods as they may damage the mucosal lining or gums (Cooley, 2002; Clinical Knowledge Summaries, 2010).
- Dental flossing once a day may help unless the patient has thrombocytopenia or a clotting disorder (Quinn, 2008). Flossing may also be contraindicated in patients receiving radiotherapy as the severity of OM intensifies.
- Patients who find it difficult to carry out their mouth hygiene may find oral sponges easier to use than toothbrushes. These should be checked to ensure they are secure, to avoid choking and aspiration. An oral sponge should only be used once and not left in the cleansing solution (Beck, 2004).
- Dentures should be cleaned after each meal and soaked in denture solution overnight. They should be disinfected once or twice a week.
- Where patients cannot undertake their own oral hygiene, a nurse or carer can assist (Quinn, 2008). The mouth may be irrigated with saline with or without suction.

Dietary assessment and advice should be given to patients undergoing high dose chemotherapy and/or radiotherapy to ensure appropriate changes are made to prevent early onset of OM

For any concerns regarding dysphagia the patient should be referred to the Speech and Language Team (SALT)

3.1 Dry Lips

Patients undergoing chemotherapy can experience dry lips. Yellow/white soft paraffin or normal lip salve can be used to moisten the lips. These products are contraindicated if the patient is receiving radiotherapy to the head and neck region. This is because they create an additional artificial layer of tissue that affects the depth of treatment. Local alternatives like Actibalm® may be considered (Royal United Hospital Guidelines, 2005). If oxygen therapy is being given, a water-soluble lubricant should be used (Quinn, 2008).

3.2 Dry Mouth

Salivary-gland-sparing radiotherapy techniques (such as intensity-modulated radiotherapy treatment [IMRT]), which reduce the long-term effects of xerostomia, have been established in recent years. Oral hydration should still be encouraged where possible and early intervention to prevent the development of a dry mouth is important.

In addition, the team should pay particular attention to relieving a dry mouth in patients who are receiving oxygen and who are nil by mouth, including those undergoing enteral feeding and those who are terminally ill. The following may provide relief:

- **Sipping water or moistening the oral cavity (in patients who are unable to swallow).**
- **Saline mouthwashes, saline sprays/ nebulisers.**
- **Saliva replacement (e.g. Biotene® Oral Balance, AS Gel Saliva Orthana® or Glandosane®)** – can be detrimental to dental health if used long term.
- **Sucking crushed ice, frozen tonic water** – this may be contraindicated in patients who have already developed OM in the head and neck setting, as it may cause further discomfort.
- **Artificial lubricants** (Quinn, 2008).
- **Sugar-free chewing gum** – this can stimulate saliva production (Cheng, 2001; Clinical Knowledge Summaries, 2010) but may be contraindicated in the head and neck cancer setting due to thick secretions, which may increase the risk of choking.
- **Chewing fresh pineapple chunks** – this may help to stimulate saliva but may cause irritation in patients with ulceration of the mouth (Cheng, 2001), so is generally avoided in patients undergoing radiotherapy to the head and neck.
- **Addressing underlying causes of taste changes** – patients should be encouraged to vary their diet. However, patients receiving radiotherapy to areas of the throat and mouth that include the taste glands may lose their sense of taste. In this case the team should continue to encourage good hydration and nutrition either orally or via enteral feeding.
- **Monitoring oral intake.**
- **Ensuring thickened secretions are removed** – steam inhalation or saline nebulisers can loosen secretions and help expectoration. Sodium bicarbonate mouthwash (1 teaspoon of sodium bicarbonate in 1 pint of cooled boiled water) made fresh daily and used every 3–4 hours may assist in clearing thickened secretions. There is some evidence to suggest that the use of sodium bicarbonate may affect the pH of the mouth and interfere with mucosal healing (Feber, 1996); therefore, it should be used with caution.

4.0 **Prevention of Therapy-Induced Mucositis**

The choice of prevention regimens for mucositis will depend on the perceived risk of mucositis. Both patient and treatment-related risks should be considered (Appendix 1). Compliance with the prevention measures and good oral hygiene will minimise the risk of subsequent issues with mucositis.

Risk Classification: LOW RISK of OM e.g. WHO grade 1

Risk Factors	Intervention

● Patients with no prior history of mucositis or who are receiving treatments not known to cause moderate or severe OM.	● **Good oral hygiene**
	  • Use of a soft or medium toothbrush with fluoride-containing toothpaste. Due to taste changes, many patients increase their intake of sweet foods, increasing the risk of plaque formation.
	● **Salt water mouthwash**
	  • Use of salt water mouthwashes throughout the day to clean the mouth and remove debris. The salt water rinse should be followed by rinsing with cold or warm water.
	  – Outpatients may make their own (1 teaspoon salt to 1 pint of cold or warm water); a fresh supply should be made daily.
	  – Inpatients may use 0.9% saline from a vial.

Risk Classification: MODERATE RISK of Mucositis, e.g. WHO grade 2

Risk Factors	Intervention
● Patients with a previous history of grade 2 OM despite OM treatment. ● Those undergoing regimens known to cause OM (e.g. capecitabine, fluorouracil, docetaxel, cyclophosphamide, anthracycline-containing regimens, transplant regimens, sunitinib, EGFR inhibitors, radiation to the head and neck [dose 40–60 Gy]). ● Agents predisposing the patient to dry mouth. ● The very young and the elderly.	**In addition to the interventions for low risk patients, consider:** ● **Using saline mouthwashes more frequently.** ● **Ice cubes** to reduce oral damage and the feeling of dry mouth. • Recommended during fluorouracil bolus treatment to reduce oral damage) (Rubenstein *et al.*, 2004; Keefe *et al.*, 2007) but should be avoided when OM has already occurred. ● **Caphosol® (4–10 times a day),** started on the first day of chemotherapy or the first day of radiotherapy to head and neck region (Papas *et al.*, 2003). ● Other mucosal protectants, including Episil®, Gelclair® and Mugard™

EGFR, epidermal growth factor receptor

Risk Classification: HIGH RISK of Mucositis e.g WHO grade 3 or 4

Risk Factors	Intervention
• Patients with previously documented grade 3 or 4 OM and/or patients with resistant grade 2 OM despite OM treatment. • Patients receiving high-dose chemotherapy regimens, including BEAM, high-dose melphalan-based autologous HSCT, reduced and full intensity allogeneic HSCT (with/without TBI). • High-dose methotrexate, cytarabine regimens. • Radiotherapy (>60 Gy) with/without chemotherapy. • Radiotherapy to head and neck region. • IMRT (any dose) to head and neck region.	**In addition to the interventions for low and moderate risk patients, consider:** • **Increasing the frequency of saline mouthwashes.** • **Ice cubes**, when the patient is receiving high-dose melphalan. • **Caphosol® (4–10 times a day),** started on the first day of chemotherapy or the first day of radiotherapy to the head and neck region. • **Palifermin HSCT +/- TBI** (Keefe *et al.*, 2007). • **Anti-infective prophylaxis.** • **Mucosal protectants,** including Episil®, Gelclair® and Mugard®. • **Low-level laser therapy** (Keefe *et al.*, 2007). • **Prophylactic insertion of enteral feeding tube before commencement of cytotoxic treatment.** • **Referral to the dietician.** ◦ All HSCT patients and head and neck patients should be reviewed by a dietician prior to commencing treatment and at regular intervals during treatment, and may require follow-up support post treatment. • **Daily Vitamin B supplements** for patients with alcohol misuse issues.

BEAM, carmustine (BiCNU®), etoposide, cytarabine (arabinoside), melphalan; HSCT, haematopoietic stem cell transplant; IMRT, intensity-modulated radiotherapy; TBI, total body irradiation.

4.1 Anti-Infective Prophylaxis

As well as good oral hygiene, patients receiving chemotherapy for haematological cancers may be prescribed antifungal and antiviral treatments to prevent infections. Infection prophylaxis for head and neck cancer patients is only required if the patient is known to be at risk of infection due to co-morbidity factors.

- **Antifungal prophylaxis** should be given to patients receiving high-dose steroids (the equivalent of at least 15 mg of prednisolone per day for at least one week), and may include 50 mg oral fluconazole once daily. High-risk patients, including those undergoing HSCT, should also receive an antifungal agent; this may include fluconazole, itraconazole or posaconazole (the choice of drug will be dependent on local guidance).
- **Antiviral prophylaxis** may comprise 200 mg aciclovir three times a day orally (or according to local guidance).

5.0 **Treatment of Therapy-Induced Mucositis**

All treatment plans should be based upon the grading of mucositis.

5.1 Grade 1 or 2 Mucositis

- Ensure oral hygiene is adequate. Consider increasing the frequency of saline rinses. Consider the need to remove dentures if they are irritating.
- Closely monitor nutritional status and refer to dietician if eating and drinking are affected.
- Provide simple analgesia, which may include soluble paracetamol 1 g four times daily (two tablets should be dissolved in water and used as a mouthwash). It should be remembered that paracetamol may mask fever. Escalate to soluble co-codamol 30/500 if required. The use of NSAIDs is contraindicated due to the risk of bleeding and renal impairment (Keefe *et al.*, 2007).
- Consider benzydamine 0.15% oral solution (Difflam®), 10 ml rinsed around the mouth and spat out. Repeat between every 1.5 to 3 hours, as required. If the patient complains of stinging, dilute 10 ml of Difflam® with 10 ml of water prior to administration and use 10 ml. However, this may be poorly tolerated in patients receiving head and neck radiotherapy and in any patient with severe mucositis.
- Consider increasing folinic acid rescue for methotrexate-induced mucositis.
- Check to see if the patient has evidence of oral infection and if so ensure an anti-infective agent is prescribed (see Section 5.4).
- Consider Caphosol® (4–10 times a day) to prevent grade 1 and 2 OM becoming more severe.

5.2 Grade 3 or 4 Mucositis

In addition to the recommendations for grade 1 and 2 OM, the following should be considered:

- Use of stronger analgesia, including Oxynorm®, Sevredol® and Oramorph® to alleviate pain (Oramorph® may sting mucosa due to its alcohol base). If patients continue to suffer from pain from mucositis, consider using further opioid analgesia, such as fentanyl patches, patient-controlled analgesia or a syringe driver (seek advice from the acute pain team or the palliative care service). Laxative medications should be prescribed to prevent constipation and associated nausea.
- Ensure intravenous and/or enteral hydration and feeding is prescribed, as oral intake may be reduced (following consultation with the dietician).
- Consider Caphosol® (4–10 times a day).
- Consider applying a coating protectant, e.g. Gelclair®, Mugard®, Episil®. The product should be rinsed around the mouth to form a protective layer over the sore areas, and generally applied 1 hour before eating.

Chlorhexidine Mouthwashes

These are not recommended for any patient who has or is recovering from cytotoxic-induced mucositis, as they may inhibit the re-growth of the mucosa (Keefe *et al.*, 2007).

5.3 **Bleeding from the Mouth**

- 500 mg of tranexamic acid injection can be added to 5 ml of sterile water and used as a mouthwash every 4 hours to treat localised bleeding.

5.4 **Anti-Infective Treatment**

Despite prophylaxis, patients may still present with an infection of the mouth. The team should work closely with the microbiology team to ensure oral infections are treated appropriately. The team should be particularly vigilant for any patient who may be immunocompromised due to disease and/or treatment. Swabs should be taken from the mouth to identify bacterial, fungal and viral infections. Treatment options include the following:

Fungal infections

- Consider the use of first-line anti-fungal agents, which may include fluconazole.
- Consider the use of an alternative anti-fungal agent, such as Ambisome®, itraconazole, voriconazole or posaconazole. Refer to locally agreed anti-fungal guidelines.

Viral infections

- Consider topical aciclovir for local infection in low-risk patients.
- Consider oral aciclovir or intravenous aciclovir (for high-risk patients).
- Consider increasing the dose or changing the anti-viral drug in line with the local policy.

Bacterial

- Consider the use of antibiotics in line with locally agreed guidelines.

All of these principles may be appropriate to the palliative care and the terminally ill setting.

Particular attention needs to be paid to identifying oral problems relating to graft versus host disease (GvHD) in the allogeneic HSCT setting while these principles will still apply, anti GvHD treatment may be required.

Depending on the severity of OM the team may need to consider reducing, changing or stopping anti-cancer treatment.

6.0 **References**

- Barasch A & Peterson DE (2003) Risk factors for ulcerative oral mucositis in cancer patients: unanswered questions. *Oral Oncology.* 39(2):91–100.
- Beck SL (2004) Mucositis. In: Henke-Yarbro C, Hansen-Frogge M. & Goodman M. (eds) Cancer Symptom Management. 3rd Edn. p276–292. Jones and Bartlett, Sudbury.
- Bellm LA, Epstein JB, Rose-Ped A, *et al.* (2000) Patients reports of complications of bone marrow transplantation. *Support Care Cancer.* 8:33–39.
- Cheng KK, Molassiotis A, Chang AM, *et al.* (2001) Evaluation of an oral care protocol intervention in the prevention of chemotherapy-induced oral mucositis in paediatric cancer patients. *European Journal of Cancer.* 37(16):2056–2063.
- National Institute for Health and Clinical Evidence (2010) Clinical Knowledge Summaries: Oral problems – management. www.cks.nhs.uk – Accessed 12th July 2010.
- Cooley C (2002) Oral health: basis or essential care. *Cancer Nursing Practice.* 1(3):33–39.
- Davies A & Finlay I (2005) Oral Care in Advanced Disease. Oxford University Press. Oxford.
- Eilers J (2004) Nursing interventions and supportive care for the prevention and treatment of oral mucositis associated with cancer treatment. *Oncology Nursing Forum* 15(3):13–23.
- Feber T (1996) Management of oral mucositis in oral irradiation. *Clinical Oncology.* 8:106–111.
- Haas M & McBride D (2011) Managing the oral effects of cancer treatment. *Oncology Nursing Society.*
- Keefe DM, Schubert MM, Elting LS, *et al.* (2007) Updated clinical practice guidelines for the prevention and treatment of mucositis. *Cancer.* 109(5):820–831.
- Kostler WJ, Hejna M, Wenzel C, & Zielinski CC (2001) Oral mucositis complicating chemotherapy and/or radiotherapy: options for prevention and treatment *Cancer Journal for Clinicians* (51):290–315.
- Papas AS, Clark RE, Martuscelli G, *et al.* (2003) A prospective, randomized trial for the prevention of mucositis in patients undergoing hematopoietic stem cell transplantation. *Bone Marrow Transplantation.* 31(8):705–12.
- Patient UK. www.patient.co.uk/health/Mouth-Care.htm – Accessed 12th October 2011.
- Quinn B (2008) Personal Hygiene: Oral Care. In. Dougherty L & Lister S The Royal Marsden Hospital Manual of Clinical Nursing Procedures. 7th Edn. p647-659. Wiley Blackwell, Oxford.
- Quinn B, Potting C, Stone R, *et al.* (2008) Guidelines for the assessment of oral mucositis in adult chemotherapy, radiotherapy and haematopoietic stem cell transplant patients. *European Journal of Cancer.* 44(1):61–72.
- Royal United Hospital, Prevention and Treatment of Stomatitis & Mucositis in patient receiving chemotherapy, November 2005. www.ruh.nhs.uk/about/policies/documents/clinical_policies/local/406%202006%20Mouth%20Care%20Policy.pdf – Accessed 12th October 2011.
- Rubenstein EB, Peterson DE, Schubert M, *et al.* (2004) Clinical Practice Guidelines for the Prevention and Treatment of Cancer Therapy-Induced Oral and Gastrointestinal Mucositis. *Cancer* 100 (Suppl 9):2026–2046.
- Sonis ST (2004) The pathobiology of mucositis. *Nature Reviews Cancer.* 4: 277–284.
- Sonis ST (2004) Oral mucositis in cancer therapy. *Journal of Supportive Oncology 2*(Suppl 3):3–8.
- Treister N & Sonis S (2007) Mucositis: biology and management. *Current Opinion in Otolaryngology & Head and Neck Surgery.* 5:123–129.
- Vissink A, Jansma J, Spijkervet K, *et al.* (2003) Oral sequelae of head and neck radiotherapy. *Critical Reviews in Oral Biology and Medicine.* 14(3):199–212.

Mouth Care **Flow Chart**

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ASSESS

- **A recognised grading system, e.g. the WHO Oral Toxicity Scale**
- **Assess high-risk patients on a daily basis**

The relevant section of the main guidance document is listed here

SECTION 2.0

CARE AND PREVENT

ALL PATIENTS

SECTIONS .0 AND 4.0

- Encourage good oral hygiene and a well-balanced diet
- Avoidance of alcohol and tobacco should be emphasised
- Use a saline mouthwash
- Treat dry lips using appropriate lip salve products

MODERATE-RISK PATIENTS

- Increased frequency of saline mouthwashes
- Consider ice cubes to reduce oral damage and
- Consider anti-infective prophylaxis
- Consider Caphosol®

HIGH-RISK PATIENTS

- In addition to the intervention
  - Palifermin HSCT +/-TBI
  - Prophylactic insertic
  - Caphosol®
  - Daily vitami
  - Mucosa

OR 2 OM

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EUSA Pharma provided funding for the expert group to meet and develop these guidelines, and for the layout and editing of the guidelines once they had been written. EUSA Pharma had no input into their content.