

Second Edition

Mouth care guidance and support in cancer and palliative care

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Contributors

Maureen Thomson Consultant Radiographer (Chair)
Dr Barry Quinn Lead Nurse Cancer & Palliative Care/
Honorary Senior Lecturer (Guidance Lead)
Jeff Horn Clinical Nurse Specialist (CNS) Haematology
Dr Jenny Treleaven Consultant Haematologist
David Houghton Senior Pharmacist
Lorraine Fulman Information & Support Radiographer
Sonja Hoy CNS Head, Neck and Thyroid Cancer
Frances K Campbell CNS Head and Neck Cancer

Expert reviewers

M. Tanay (UK)
Professor R. Logan (Australia)
Dr D. Riesenbeck (Germany)
Dr A. Hovan (Canada)



UK Oral Mucositis in Cancer Group

UKOMiC

Oral Mucositis is no laughing matter...

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1.0 Executive Summary

The United Kingdom Oral Mucositis in Cancer Care Group (UKOMiC), is a multi-professional group of oral care experts working in cancer and palliative care. The group have drawn on their expertise and the most up-to-date evidence to support guidance on, prevention and treatment of oral problems secondary to disease and cancer treatments including radiation, systemic therapies and surgery.

Having delivered several multi-professional study days across the United Kingdom, numerous educational workshops and lectures and having collaborated with a number of international bodies, this guidance first published in 2012 has been updated and developed reflecting the most up to date research and expert guidance. The guidance are aimed at all health care professionals involved in the care of patients with cancer. It is anticipated that it can be adapted to other clinical settings, including palliative and end of life care, and other specialist areas such as elderly care and patients with dementia.

1.1 Purpose of the Guidance

Cancer and its treatments can directly impact on the condition of the oral cavity, dental health and patient well-being, potentially causing severe acute and long term physical, psychological and social problems (Hass & Mc Bride 2011, Lalla et al 2014).

Oral problems, including Oral Mucositis (OM), can be a significant health burden for the individual and make substantial demands on health care resources. One woman undergoing treatment for cancer recalled; *'My mouth became ulcerated and I could not swallow my own saliva. Every day of treatment brought some new horrifying change to my body'* (Liz). The expert group estimate, that the health burden on the individual and the demands on health care resources can be greatly reduced by the correct care and treatment of oral problems. It is anticipated that this guidance will assist teams in planning and implementing oral care.

The mouth provides a reflection of general health and may reveal some of the toxicities of cancer treatments (Haas & McBride, 2011). It is therefore the responsibility of the 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 cancer treatment plans and to maximise patient safety and comfort (Haas & McBride, 2011).

Oral changes including oral damage can be caused by numerous factors including; the disease, the direct or indirect impact of cancer treatments and/or supportive treatments, co-existing co-morbidities and underlying oral health problems. Each of these factors should be considered while applying the principles set out in this guidance. One of the major challenges within the cancer setting continues to be the need to correctly address the potential and actual change caused by oral mucositis and oral damage.

1.2 Definition of OM

OM is defined as inflammation of the mucosal membrane, 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 immunocompromised patient at risk of sepsis and septicaemia (Rubenstein et al., 2004).

1.3 Incidence of OM

It is now recognized that the incidence of OM in the cancer setting is much higher than previously thought and can be expected to occur in at least 50% of patients undergoing chemotherapy to treat a solid tumour, although some studies and reports (Kalemkerian et al 1999, Sonis et al 2004, Elad et al 2014) indicate that the incidence is likely to be

much higher. As many as 98% of patients undergoing haematopoietic stem cell transplantation (HSCT) are thought to be affected by OM and oral damage (Wardley et al 2000). Kostler et al. (2001) estimate that as many as 97% of all patients receiving radiotherapy (with or without chemotherapy) for head and neck cancers will suffer from some degree of OM. With the increasing use of targeted drug therapies, problems in the oral cavity may increase (Quinn et al 2008). Correct preventative measures can help reduce the burden of oral damage caused by some of these agents.

It is recognized that some patients rate OM as the most distressing aspect of their cancer treatment (Bellm et al., 2000), and this can lead to unplanned dose reductions or interruptions in treatment regimens which can impact on treatment outcomes (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 four key principles: accurate assessment of the oral cavity; individualized plan of care, initiating timely preventative measures and correct treatment, (Quinn et al 2008).

Mouths should be assessed by trained health care professionals using a recognized grading system (Quinn et al., 2008). Assessments should be completed at regular intervals to monitor interventions, and documented in the medical/nursing records. Patients undergoing regimens with a high risk of oral mucositis should have daily assessments. Patients should be encouraged to assess their own mouth and to report any changes they notice or experience to their medical team or key worker. The oral cavity should be reviewed when a patient visits the hospital for any chemotherapy, targeted therapy, radiotherapy to the head and neck region or following head and neck surgery (Quinn et al., 2008). The expert group recommends using a recognized oral assessment grading system, e.g. the World Health Organisation (WHO) Oral Toxicity Scale (Table 1) to ensure accurate monitoring and record keeping. The tool chosen will depend on the clinical situation but should contain both objective and subjective elements.

(Revised version)
Table 1. WHO Assessment Tool

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 (ability to take fluids and solids orally) is not possible.



3.0 Care of the Oral Cavity

- All patients should be educated and encouraged to maintain good oral hygiene (Rubenstein et al 2004, National Cancer Institute (US) 2013).
- Patients undergoing high-dose chemotherapy or HSCT and all patients with head & neck cancer, should be referred for dental assessment prior to commencing treatment (Elad et al 2014).

Dentate Individuals (with teeth)

- Brush teeth at least twice a day and increase as necessary with a pea sized amount of fluoride toothpaste (1,350 -1,500ppm fluoride). (British Dental Health Foundation 2014).
- Spit out after brushing, do not rinse (Dept of Health 2009).
- If brushing becomes difficult advise use of a very soft toothbrush (i.e. baby toothbrush or silk filament toothbrush) (Royal College of Surgeons of England/ The British Society for Disability and Oral Health 2012).
- If an oral opportunistic infections develops, patients should use a fresh toothbrush and the infection treated appropriately (Cooley 2002; Eilers 2004).
- Some head and neck patients undergoing radiation may require toothpaste with a higher content of fluoride (over 1,500ppm) in order to protect the teeth (Horiot et al 1994 cited Vissink et al 2003).
- Correct dental flossing once a day may help with plaque reduction. In patients with thrombocytopenia or a clotting disorder flossing may be contraindicated (Quinn 2008, Elad et al 2014). Flossing may also be contraindicated in patients receiving radiotherapy, therefore check with a member of the clinical team.

Edentulous Individuals (absence of teeth)

- Dentures should be rinsed after meals and cleaned thoroughly, twice a day, by brushing with unperfumed soap with

a small to medium headed toothbrush (NHS Health Scotland 2013, The British Dental Health Foundation 2014).

- Dentures should be removed when uncomfortable due to oral damage, removed over night and soaked in water (NHS Health Scotland 2013, The British Dental Health Foundation 2014).
- If a fungal infection is present, dentures must be cleaned thoroughly – soak in chlorhexidine mouthwash (if dentures have metal components) or sodium hypochlorite (i.e. Milton) for 15 minutes twice a day. Toothbrushes should also be replaced (Scottish Dental Clinical Effectiveness Programme 2011).

For All

- 0.9% sodium chloride or salt water rinses are recommended (Peterson et al 2011; Scottish Dental Clinical Effectiveness Programme 2011; Lalla et al 2014, Elad et al 2014).
- 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 cleaning solution (Beck 2004). It should be noted that oral sponges are not equivalent to tooth-brushing and are not therefore effective for plaque control or the prevention of caries (Rubenstein et al 2004).
- Where patients can not undertake their own oral hygiene, a nurse or carer can assist (Quinn 2008). The mouth may be irrigated with saline with or without suction.
- Adequate oral fluid intake and a well balanced diet should be encouraged.
- Alcohol should be minimized 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, National Cancer Institute (US) 2013).



- All patients should be nutritionally screened using a validated screening tool e.g. Malnutrition universal screening tool (MUST) and those identified as being at risk should receive early intervention for nutritional support from an experienced dietitian (SIGN 2006, BAHNO 2009, BAPEN 2011, Elad et al 2014).
- For any concerns regarding dysphagia, patients should be referred to the Speech and Language Therapist (SLT) (SIGN 2006, BAHNO 2009).

3.1 Dry Lips

Patients undergoing treatment/s 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. A water soluble lubricant may be considered. Patients receiving oxygen should be advised to use a water-soluble lubricant (Quinn 2008).

3.2 Dry Mouth

Oral hydration should be encouraged and early intervention to prevent the development of dry mouth is important. Salivary gland sparing radiotherapy techniques (such as intensity modulated radiotherapy (IMRT), which reduce the long term effects of dry mouth, have been established in recent years (Nutting et al 2011).

Teams should pay particular attention to relieving a dry mouth in patients with contributory risk factors including; opioids; antidepressants; steroid inhalers; oxygen and those who are nil by mouth and the terminally ill. The following interventions may provide some relief:

- **Sipping water or moistening the oral cavity (in patients who are unable to swallow).**
- **Saline mouthwashes and saline sprays.**
- **Saline nebulisers may help with thick or crusty secretions.**
- **Saliva replacement** - Dentate individuals should avoid preparations with an acidic pH, due to the increased risk of dental decay. A fluoride containing preparation is preferable for these individuals e.g. AS Saliva Orthana, Bioextra mouth rinse (UK Medicines Information 2013).
- **Sucking crushed ice, frozen tonic water** - Caution: in patients who have already developed OM this may cause further discomfort and damage to teeth.
- **Artificial lubricants** (Quinn 2008).
- **Sugar free chewing gum** - this can stimulate saliva production. May be contraindicated in the head and neck cancer setting due to thickened secretions or the complete absence of saliva, which may increase the risk of choking (Cheng 2001, Clinical Knowledge Summaries 2010).
- **Chewing fresh pineapple chunks** - this may help to stimulate saliva but can cause irritation in patients with ulceration of the mouth and damage teeth (Cheng 2001).
- **Addressing the underlying causes of taste changes** - patients should be educated and encouraged about simple dietary changes. Patients receiving radiotherapy to the head and neck may experience taste alterations or complete loss of taste. In this group of patients, the team should continue to encourage good hydration and nutrition either orally or via enteral feeding.
- **Ensuring thickened secretions are removed** - steam inhalation or saline nebulisers can loosen secretions and help with expectoration. Sodium bicarbonate mouthwash (1 tablespoon of sodium bicarbonate added to 900ml of cooled boiled water used every 3-4 hours may assist in clearing thickened secretions) (National Cancer Institute US 2013). Caution: 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).



4.0 Prevention of Oral Mucositis and Oral Complications

- In preventing OM and oral complications, always consider the patient, their disease, and treatment-related risks (Appendix 1).
- Compliance with the prevention measures and good oral hygiene will minimise the risk of subsequent issues with mucositis and oral damage (National Cancer Institute US 2013).
- The choice of prevention regimens will depend on the perceived risk of oral damage (Peterson et al., 2011).

Risk Classification: **LOW RISK** of Oral Damage and/or OM e.g. WHO grade 1

Risk Factors	Intervention
<ul style="list-style-type: none">● Patients with no prior OM.● Patients who are receiving treatments not known to cause moderate or severe OM.	<ul style="list-style-type: none">● Good oral hygiene All patients should be educated and encouraged to maintain good oral hygiene (Section 3.0) (Rubenstein et al., 2004; National Cancer Institute (US) 2013, Elad et al 2014).● Smoking cessation Provide advice and support prior to commencing cancer treatment.● Plaque reduction Taste changes experienced by many patients may result in a higher intake of sugary foods and the build-up of dental plaque. A soft or medium toothbrush with fluoride containing toothpaste is recommended (Royal College of Surgeons of England/ The British Society for Disability and Oral Health 2012).● High-fluoride toothpaste, foam, gel Higher concentrations of fluoride to prevent dental caries may be required for some patients in consultation with dental experts.● Salt water mouthwash 1 teaspoon salt to added 900ml of cold or warm water (Peterson et al.,2011; Scottish Dental Clinical Effectiveness Programme 2011; National Cancer Institute (US) 2013). Salt water mouthwashes used at least four times in 24 hours to clean the mouth and remove debris. A fresh supply to be made daily. Each salt water rinse (patients in hospital may use 0.9% sodium chloride from a vial) to be followed by rinsing with cold or warm water.● Nutritional assessment and referral to a dietician where appropriate

Risk Classification:**MODERATE RISK of Oral Damage and/or OM**
e.g. WHO grade 2**Risk Factors**

- Patients with a previous history of grade 2 OM.
- Patients receiving agents known to cause OM such as Capecitabine, 5-Fluorouracil, Docetaxel, Cyclophosphamide, anthracycline containing regimens, and targeted treatments including Epidermal Growth Factor Receptor (EGFR) inhibitors.
- Palliative radiotherapy to the head and neck region.
- Pharmacological agents and/ or co-morbidities predisposing the patient to xerostomia.
- The very young and the elderly.

Intervention**In addition to the preventative interventions for low risk patients, consider:**

- **Increasing the frequency of saline mouthwashes** (National Cancer Institute (US) 2013).
- **Ice chips** are recommended for 5 -fluorouracil bolus treatment and for high dose Melphalan (Keefe et al., 2007; Worthington et al., 2011; Lalla et al., 2014).

Swish ice chips in the mouth for 30 minutes, beginning 5 minutes before treatment is administered.
- **Benzydamine 0.15% oral solution** (Diffiam®) use 10 ml rinsed around the mouth and spat out 4 times a day.

In the head and neck setting, Diffiam is recommended for patients receiving radiation only (up to 50Gy) (Peterson et al 2011, Lalla et al, 2014).
- **Caphosol® (4-10 times a day)**, recommended to start on the first day of chemotherapy or the first day of radiotherapy to head and neck region (Papas et al., 2003, Quinn 2013).
- **Consider mucosal protectants, including Gelclair®, Oralife gel® MuGard®** (available in USA).



Risk Classification: SEVERE RISK of Oral Damage and/or OM e.g. WHO grade 3-4	
Risk Factors	Intervention
<ul style="list-style-type: none"> ● Patients with previously documented grade 3 or 4 OM and/or patients with resistant grade 2 OM. ● Patients who are undergoing surgery to the oral cavity or head and neck region. ● Patients receiving high dose chemotherapy agents prior to autologous HSCT, reduced and full intensity allogeneic HSCT (With/without Total Body Irradiation) ● High dose methotrexate and cytarabine containing regimens. ● Radical Radiotherapy to the head and neck region with/ without chemotherapy 	<p>In addition to the preventative interventions for low and moderate risk patients, consider:</p> <ul style="list-style-type: none"> ● Nutritional assessment. Referral to a dietician where appropriate. All patients should be nutritionally screened using a validated screening tool e.g. Malnutrition Universal Screening Tool (MUST) and those identified as being at risk should receive early intervention for nutritional support from an experienced dietician (SIGN 2006, BAHNO 2009, BAPEN 2011, Elad 2014). <p>All HSCT patients and all head and neck cancer patients should be reviewed by a dietician prior to commencing treatment, seen at regular intervals during treatment, and may require on-going support after treatment is completed (BAPEN 2011, Elad et al 2014).</p> <ul style="list-style-type: none"> ● Anti-infective prophylaxis according to local policies/ guidance. ● Palifermin HSCT +/- TBI 60 Qg/kg/day recommended for 3 days before conditioning treatment and for 3 days after transplant (Keefe et al., 2007; Worthington et al., 2011; Lalla et al., 2014). ● Daily Vitamin B supplements for patients with alcohol misuse issues.

4.1 Anti-Infective Prophylaxis

- Whilst good oral hygiene is fundamental, anti-fungal and anti-viral treatments may be prescribed to prevent infections for patients who are immunocompromised including patients with haematological cancers who are receiving chemotherapy (according to local policies/ guidance).
- **Infection prophylaxis** for patients with head and neck cancers is only required if the patient is known to be at risk of infection due to known co-morbidity factors.
- **Anti-fungal prophylaxis** should be given to patients receiving high-dose

steroids (the equivalent of at least 15 mg 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 anti-fungal agent; this may include fluconazole, itraconazole or posaconazole given orally or intravenously for some patients (the choice of drug will be dependent on local policies/ guidance).

- **Anti-viral prophylaxis** may comprise 200mg aciclovir three times a day orally (or according to local policies/ guidance). Higher doses may be given to some haematology patients.

5.0 Treatment of Oral Mucositis and Oral Complications

All treatment plans should be based upon the grading of oral damage.

5.1 Mild/Moderate Mucositis/Oral Complications (Grade 1-2)

- Ensure oral hygiene is adequate including plaque removal.
- Consider increasing the frequency of saline rinses.
- Consider the need to remove dentures if they are irritating.
- Offer support with smoking cessation.
- 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 (tablets should be dissolved in water and used as a mouthwash before swallowing). It should be remembered that paracetamol may mask fever. Escalate to soluble co-codamol 30/500 if required. The use of non steroidal anti-inflammatory drugs may be contraindicated due to the risk of bleeding and renal impairment (Keefe et al., 2007).
- Consider Benzydamine 0.15% oral solution (Difflam®), 10ml rinsed around the mouth and spat out. Repeat 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 any patient with severe mucositis.
- Consider the use of low level laser therapy (Lalla et al, 2014).
- 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) (Quinn 2008).

- Consider Caphosol® (4-10 times a day) to prevent grade 1 and 2 OM becoming more severe (Quinn 2013).
- Consider applying a coating protectant.
- Consider a saliva replacement/substitute.

5.2 Severe Mucositis/Oral Complications (Grade 3-4)

In addition to the recommendations for mild/moderate the following should be considered:

- Use of stronger analgesia, including Oxynorm®, Sevredol® and Oramorph® to alleviate pain (some liquid based analgesia may have an alcohol base which should be used with caution as it may cause irritation to the mucosa). If patients continue to suffer with pain from mucositis, consider using further opioid analgesia and review administration route, 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 as standard to prevent constipation and associated nausea (Watson et al, 2011).
- 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®, Oralife gel®, 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. These products are not to be swallowed.

5.3 Bleeding from the Mouth

If there is associated bleeding in the oral cavity, consider using 500mg of Tranexamic acid for injection or tablets (these can be added to 5ml water or dissolved). Use as a mouthwash every 4-6 hours to treat localized bleeding (unlicensed, Watson et al, 2011).

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 systemic anti-fungal agents. Refer to locally agreed anti-fungal guidance.

Bacterial

Consider the use of antibiotics in line with locally agreed guidance.

Viral infections

Consider topical anti-viral agent for local infection in low-risk patients.

Consider systemic anti-viral agents (for high-risk patients) in line with local policy.

Summary

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 and the impact on the patient, the team will need to review the plan of care.



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M. Tanay, Clinical Nurse Tutor, King's College, London

Professor R. Logan, President of International Society of Oral Oncology,
Head of Oral Diagnostic Services, University of Adelaide, Australia

Dr D. Riesenbeck, Clinical Oncologist, Munster, Germany

Dr A. Hovan, Dentist, Surrey, British Columbia, Canada



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