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European Oral Care in Cancer Group Oral Care Guidance and Support

Contents

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1.0 Introduction

The European Oral Care in Cancer Group (EOCC) is a multi-professional group of oral care experts working in cancer settings from across Europe who have come together with the aim of improving oral care in clinical practice. Having being engaged in delivering lectures and workshops across Europe on the subject and as members of a number of national and international clinical groups, the group were keen to use their knowledge to further support multi-professional colleagues. Mindful of the many developments in cancer care aimed at improving survival and quality of life, the correct and consistent approach to managing oral care problems still remains a challenge in many clinical settings across Europe. There is much evidence to show that many clinical settings rather than taking a proactive approach to this aspect of care still simply react to oral complications once they occur with a sometimes inconsistent and anecdotal approach.

Using the existing guidelines and guidance from their own countries (Appendix: 1) and international organisations, the current evidence and their own clinical expertise the group developed this guidance to support clinical practice in the prevention and treatment of oral problems secondary to malignant disease and treatments including systemic treatments, radiation and supportive therapies (Table: 1).

Table: 1 Oral complications of cancer treatments include -

Oral mucositis	Xerostomia
Oral infections	Oral Graft versus Host Disease
Ulceration	Trismus
Taste changes	Halitosis
Bleeding	Dry lips
Pain	Dental decay
Ostenecrosis	Oral fibrosis

Leading to difficulties in eating, sleeping, talking and a reduction in quality of life

1.1 Purpose of the Guidance

Cancer and the treatment required directly impact on the patient with cancer in a multitude of ways which may include changes to the oral cavity affecting their well-being, potentially causing severe acute and long term physical, psychological and social problems (Quinn et al 2015).

Oral problems and damage may be temporary or permanent resulting in a significant health burden for the individual while making substantial demands on limited health care resources. However, oral complications are not always inevitable and much can be done to reduce or minimise the severity of symptoms by taking a more proactive approach to this aspect of care. Critically examining current evidence and clinical practice across Europe, EOCC estimate that the health burden on the individual and the demands on health care resources can be greatly reduced by the correct assessment, preventative measures, care and treatment of oral problems. This guidance will assist teams in both planning and implementing oral care thereby preventing or reducing the severity of this side effect of disease and treatment.

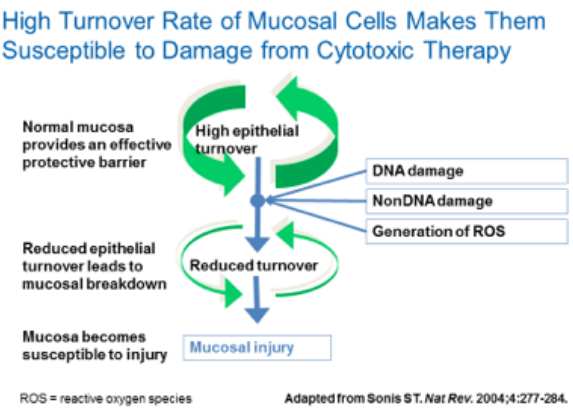
Working as a multi-disciplinary team with the patient at the centre of care and treatment plan, the early detection of potential and actual problems and treatment can help to reduce oral problems, prevent interruptions to cancer treatment plans and maximise patient safety and comfort (National Cancer Institute 2013). Each of these factors needs to be critically considered while applying the principles set out in this guidance.

1.2 **Oral mucositis (OM)**

One of the major challenges in the cancer setting is the need to correctly and consistently address the damage caused by oral mucositis (OM). Mucositis is general term that describes the inflammatory response of mucosal epithelial cells to the cytotoxic effects of chemo- and radiotherapy. Mucositis can affect all mucous membrane-covered surfaces from the mouth to the intestinal mucosa. OM has been defined as Rubenstein et al (2004), Al-Dasoogi et (2013) and others as the inflammation of the mucosal membrane, characterised by ulceration, which may result in pain, dysphagia and impairment of the ability to talk. The mucosal injury caused by OM provides an opportunity for infection to flourish, and in particular putting the severely immunocompromised patient at risk of sepsis and septicaemia.

Oral mucositis occurs as a frequent side effect of anticancer treatment because the cells have a high turnover rate and thereby are susceptible to damage from any influence causing DNA-damage leading to cell death and reduced reproduction (Al-Dasoogi et al 2013). The reduction of new cells plus an increase in cellular damage result in a breakdown of the mucosal barrier, giving way to many different symptoms and risks as shown in Fig: 1.

Figure: 1



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 some chemotherapy to treat a solid tumour, although some studies and reports (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 (Bhatt et al 2010, Filicko et al 2003). Li and Trovato (2012) 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 and approaches, problems in the oral cavity will increase and become even more of a challenge (Quinn et al 2015).

2.0 **Assessment**

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). The assessment process should begin prior to treatment by identifying patient risks and treatments most likely to cause oral damage (Tables: 2 & 3).

Table: 2 Risk of oral mucositis

- 5% - 15% during standard dose chemotherapy
- 50% during myelosuppressive chemotherapy
- 50% during head-neck radiotherapy
- 68% autologous stem cell transplantation
- 98% myeloablative allogeneic stem cell transplantation
- 97% during head-neck RT/CT

(Bellm et al, 2000, Bhatt et al 2010, Elting et al 2003, Filicko et al 2003, Kostler at al 2001, Li & Trovato 2012, Rose-Ped at al 2002, Sonis et al 2004, Trotti et al 2003, Vagliaino et al 2011)

Table: 3 Some of the systemic treatments that may cause oral damage

Targeted Agents	Chemotherapy	Chemotherapy
Alemtuzumab	Busulfan	Melphalan
Cetuximab	Capecitabine	Methotrexate
Erlotinib	Carboplatin	Mitomycin
Everolimus	Cisplatin	Mitoxantrone
Gemtuzumab	Daunorubicin	Oxaliplatin
Pazopanib	Docetaxel	Paclitaxel
Pertuzumab	Doxorubicin	Pemetrexed
Sorafenib	Epirubicin	Pentostatin
Sunitinib	Etoposide	Thiotepa
Temsirolimus	Fluorouracil	Topotecan
Trastuzumab	Idarubicin	Vinblastine
Trastuzumab emtansine	Irinotecan	Vincristine
Temsirolimus		Vinorelbine

(Barasch, & Peterson 2003, Boers-Doets at al 2011)

2.1 **The oral assessment**

Each patient also needs to be assessed in relation to other risk factors that may put them at higher risk of oral complications during treatment including:

- Pre-existing dental problems
- Older patients and females (at higher risk of oral damage)
- History of alcohol and/or tobacco use
- Poor nutrition and hydration
- Supportive feeding (Nasogastric, PEG, RIG)
- Supportive therapies (opiates, diuretics, sedatives, oxygen therapy - may cause dryness)

Patients, particularly those who are about to commence haematopoietic stem cell transplantation (HSCT) and head and neck radiation treatments, should undergo comprehensive oral and dental assessment by a specialist (Elad et al 2015). This is to establish general oral health status and identify and manage existing and/or potential source of infection, trauma or injury. Some patients will need regular periodontal follow-up throughout and after treatment. Depending on patients' oral health, they may need regular oral hygienist visits before, during and after treatment (Quinn et al 2015).

The oral cavity should be assessed by trained health care professionals using a recognized grading system. The expert group recommends using a recognized oral assessment tool (Appendix: 2) to ensure accurate monitoring and record keeping. The tool chosen will depend on the clinical situation but should contain both objective and subjective elements. The assessment should include changes to the oral mucosa, the presence or absence of pain and the patient's nutritional status (Quinn et al 2008).

Assessments should be completed at regular intervals to monitor interventions this will vary on whether the patient is being cared for in the outpatient setting where the majority of patients will be cared for or on an inpatient ward due to the nature of treatment or complications. The assessment should also focus on the personal impact on each patient and the assessment must be documented in the medical and 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 using a patient reported tool and to report any changes they notice or experience to their medical team or key worker. The oral cavity should be reviewed whenever a patient visits the treatment centre for any chemotherapy, targeted therapy, radiotherapy to the head and neck region or following head and neck surgery. The assessment is also a further opportunity to support and educate the patient (Quinn et al 2008).

Strongly recommended

- Oral damge should be assessed using a standardized protocol, oral care assessments should use instruments or a combination of suitable scales containing elements covering physical changes in the oral mucosa, functional changes and subjective changes.
- Oral assessments should continue after the end treatment until OM is fully resolved or the trend to resolution is established (Fig: 2).

Recommended based on expert opinion

- A comprehensive baseline dental and oral assessment should be made prior to treatment, where oral damage is expected.
- A further baseline assessment of the oral cavity should be taken as close to the administration of the first treatment dose as possible.
- Any identified dental problems should be treated before starting treatment regimen.
- The use of pain scoring, in relation to changes in the oral cavity, should form part of the oral assessment.
- The health care professional assessing patients should be specifically trained in the application of the scale.
- Since there are a number of assessment scales available, it is recommended that all members of the team who assess patients' mouths use always the same scale as to avoid interobserver differences.

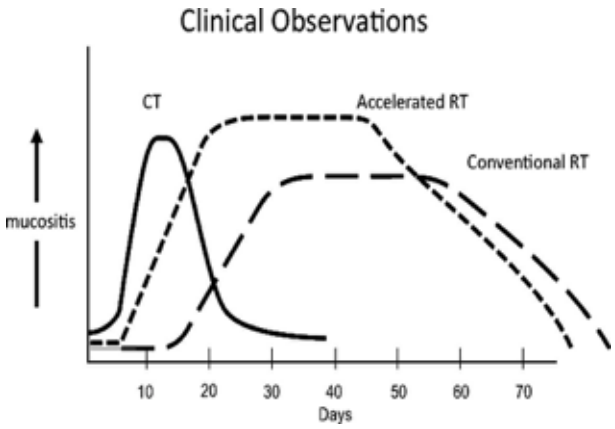
In clinical practice the most commonly used are the World Health Organization (WHO) grading scale which combines both objective findings and function into a single score, and National Cancer Institute Common Toxicity Criteria (NCI CTC) which scores only functional elements. The health care professional assessing patients should be specifically trained in the application of the scale. Periodic inter-rater reliability should be used to monitor the need for staff training.

2.2 **Frequency of oral assessment**

The optimum care for patients varies with different settings and risks. As for inpatients, everyone at risk of oral mucositis requires a baseline assessment, and patients at risk of oral mucositis should get daily oral assessments.

In the outpatient setting, again all patients at risk of oral mucositis require a baseline assessment, and patients at risk of oral mucositis should be assessed during every clinical visit. It is useful to consider guiding the patient to use a self-assessment instrument at home.

Fig: 2



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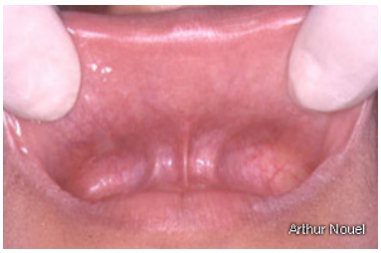
In most clinical settings chemotherapy-induced mucositis usually develops within 4–7 days after initiation of treatment and peaks within 2 weeks. Radiotherapy has a more gradual clinical course since it is most often administered in small fractions given over weeks. Radiation-induced mucositis typically begins at cumulative doses of about 15 Gy (after around 10 days) and typically reaches full severity at 30 Gy, lasts for weeks or even months (Li and Trovato (2012), Sonis et al (2004)) (Fig: 2)

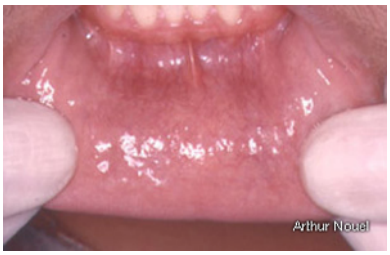
2.3 **Inspecting the oral cavity**

- Clinical tools: good light source, gloves, tongue depressor, dry gauze.
- Patient in convenient and comfortable position.
- Use valid and reliable assessment instrument which is easy to interpret.
- Oral sites to be evaluated (Fig: 3)

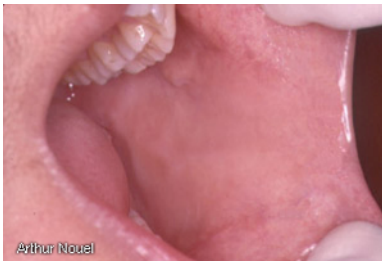
Fig: 3 Sites to be examined



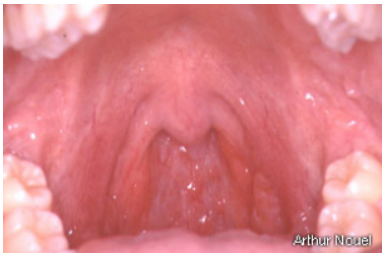
Upper inner inside of the lip



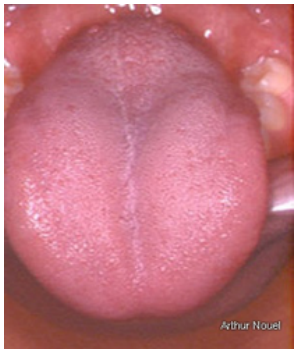
Lower inner inside of the lip



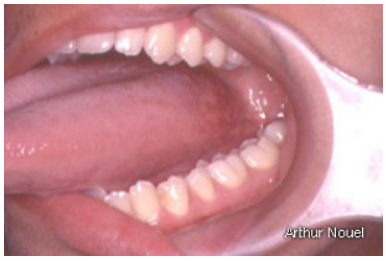
Left and right inner inside of the cheek



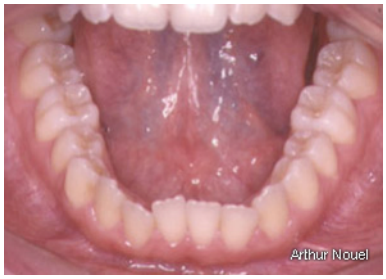
Soft palate



Tongue dorsal



Tongue right and left lateral



Floor of the mouth and ventral

2.4 Examples of oral assessment tools

The choice of oral assessment tool will depend on the clinical setting. Some tools are specifically designed for the outpatient, inpatient and radiotherapy settings, some focus on aspects of complications including pain and others encourage patients to assess their own oral care. These are some of the tools to consider and they are to be found in Appendix 2.

- World Health Organisation recommended with a pain scoring tool (WHO) (i)
- National Cancer Institute grading scale (NCI-CTCAE) (ii)
- Oral Assessment Guide (OAG) (iii)
- Numerical Rating Score (iv)
- Acute Radiation Morbidity Scoring Criteria for the evaluation of Radiotherapy treatments (RTOG) (v)
- Patient-Reported Oral Mucositis Experience Questionnaire (vi)

3.0 **Care of the Oral Cavity**

Care of the oral cavity is central to helping to prevent and/or reduce oral complications during and after treatment. What comprises the oral care team may vary for every healthcare setting. Most often, this team consists of: dental professionals, dietician, nurse, doctor and pharmacist. The support provided by the team along with good communication and the patient at the centre of all care plans is central to maintaining patient's oral health.

Oral care and assessment should be performed routinely. Patients should be encouraged to observe their mouths and report changes early as changes in the patient's oral condition may require changes in oral care interventions.

3.1 **Patient education**

All patients should be provided instructions and encouraged to maintaining good oral hygiene. Education should also include potential oral complications to enable patients to identify and report these early (Clarkson et al 2011, Quinn et al 2015). All patients should receive written information, as well as verbal instruction about oral care as part of the prevention and treatment of oral changes. Patient education should be carried out in advance of treatment commencing and regularly during treatment and after the completion of treatment. Education should also include dietary requirements and advice.

3.2 **Nutritional screening and choice of foods**

Good nutrition is vital in helping to fight infection, maintain mucosal integrity, enhance mucosal tissue repair and reduce exacerbation of existing mucositis. Patients should be referred to a dietician for baseline nutritional screening and education (Elad et al 2014). Issues that may affect nutrition such as loss of appetite, taste changes and dysphagia should be assessed. Referral to a speech and language therapist may be necessary for patients undergoing head and neck treatment to assess dysphagia.

There are certain foods that can increase or escalate damage to the oral mucosa this may include rough, sharp and hard foods and should be avoided. Spicy, very salty, and acidic foods may cause mucosal irritation but may be preferred or tolerated by some patients.

3.3 **Brushing**

Depending on oral status, gentle brushing of teeth, gums and tongue should be performed two to four times a day preferably after meals and before going to bed (Petererson et al 2015). Soft-bristled toothbrush (manual or electric) is recommended to prevent injury to the oral mucosa; and must be rinsed thoroughly with water after each use. To enhance plaque removal, small circular brushing movements are recommended, making sure all surfaces are covered including hard-to-reach areas (Peterson et al 2015). If the mouth is painful or patients cannot open their mouths fully, soft oral sponges may be used. However, oral sponges are not effective for plaque control or prevention of dental caries, and should not be considered as alternative for brushing. Brushing of tongue is not recommended for patients who are undergoing radiotherapy to the head and neck.

To prevent infections, toothbrush should be stored with the brush head upwards and not soaked in disinfectant solution. Toothbrush should be changed regularly every month or more frequently in relation to patient's infection risk. These should also be monitored for evidence of fungal/bacterial colonisation.

In order to protect the enamel, non-abrasive toothpaste containing mild fluoride (1000-1500 ppm) should be used. Some head and neck patients may require higher fluoride content (over 1500 ppm). These patients should follow the dose fluoride content (of toothpaste) as prescribed by the oral care team. Ensure that patients can tolerate the flavour. For example, some patients may not be able to tolerate toothpaste with mint.

3.4 **Interdental cleaning**

Daily interdental cleaning with brushes may reduce plaque formation between teeth (Sambunjak et al 2011). However, it must be ensured that patients are able and confident on their use to prevent mucosal injury. The use of interdental cleaners should

be used with caution for patients with thrombocytopaenia or clotting disorders; and those receiving radiotherapy for head and neck cancer.

3.5 **Dentures**

Both full and partial prosthesis should fit well, as ill-fitting dentures cause movement that irritates the mucosa and breaks integrity. After each meal, dentures must be rinsed. Thorough cleaning by brushing with soap and water should be performed at least twice a day. Dentures should be cleaned, dried and stored in a close container overnight (Duyck et al 2013). During the course of radiotherapy and afterwards until complete healing of oral mucositis, patients should be advised to wear dentures as little as possible.

3.6 **Mouthwash**

The goal of using mouthwashes may include: oral hygiene, preventing/treating infection, moistening the oral cavity or providing pain relief. As a minimum to keep the mouth clean, bland gargles and rinses with water, normal saline (0.9% NaCl) or saltwater are recommended at least four times a day (Lalla et al 2014, Quinn et al 2015). It is vital that clinicians assess the ability and confidence of patients using mouthwashes, gargling should be encouraged. Some patients will require assistance, it may be necessary for healthcare professionals to perform/ support oral care including through rinsing with normal saline (0.9% NaCl) and/or bicarbonate solutions (Elad et al 2015), with or without suction.

3.7 **Dryness of lips and mouth**

Lubricants, lip balm or lip cream may be used to moisten the lips. Water-soluble lubricants should be used for patients who are undergoing radiotherapy of the head and neck; and those receiving oxygen therapy (Quinn et al 2008).

Patients should maintain adequate hydration and drink water frequently to keep the mouth moist. Several factors could contribute to dryness such as oxygen therapy and supportive care medications (e.g. antidepressants, antihistamines, phenytoin, steroid inhalers and opioids); patients who are older or terminally ill are more prone to dryness of the lips and mouth.

- To keep the oral mucosa moist, regular sipping or spraying water may help.
- Use of saline sprays and mouthwashes may help.
- Saliva substitutes may be used. Some saliva substitutes may have acidic pH that could affect the teeth, therefore use products with neutral pH or contains fluoride, if indicated. Some saliva substitutes also contain animal components, thus must be checked against patient's preference.
- Sugar-free gum may stimulate saliva production.
- There is anecdotal evidence that fresh pineapple junks may also help stimulate saliva but should be used with caution as acid could irritate the oral mucosa and affect the teeth (Lalla et al 2014).
- Steam inhalation or nebulisers may help loosen thick secretions. Normal saline or sodium bicarbonate solutions may be used.
- Suctioning may be required to assist those who find getting rid of their secretions difficult, but must be used with caution as oral suctioning may cause mucosal injury.

4.0 **Prevention of Oral Complications**

In preventing oral complications and developing a treatment plan always consider the individual, the disease, the cancer treatment and other risk factors as discussed in section 2.1. Compliance with the prevention measures and good oral hygiene will minimise the risk of subsequent oral complications, and if anything occurs, early intervention is key to successfully avoid further complications. In addition, many patients are at risk of malnutrition or malnourished at the time of diagnosis with cancer, so the earlier interventions include nutritional screening, the sooner you can prevent malnutrition.

Alcohol and tobacco damages the oral mucosa. Advice should be provided to help patients gradually minimise or avoid these, if appropriate.

The choice of prevention regimens should be guided by evidence based interventions, working with the patient and the potential risk of oral mucositis which may include the following risk classification (adapted Quinn et al 2015)

4.1 **Risk Classification**

- No risk
- Low risk of oral damage and/or OM
- Moderate risk of oral damage and/or OM
- High risk of oral damage and/or OM

4.2. **Preventative Interventions**

Low risk: Patients with no prior oral problems, minimal related risk factors and planned treatment not known to cause moderate or severe oral damage.

- Educate and encourage self-reporting of any oral changes
- Correct patient and/or professional assessment of oral cavity and recording of findings
- Baseline dental/oral assessment and intervention as required
- Good and regular oral hygiene including gargling to remove any unwanted debris
- Plaque reduction
- Use high fluoride toothpaste/foam/gel/tray
- Use 0.9% sodium chloride/salt water rinse
- Encourage and support smoking cessation
- Encourage reduction of alcohol
- Early nutritional intervention including dietician support to detect possible malnutrition before therapy begins

Moderate risk: Patients with a previous history of oral problems, receving treatments known to cause moderate OM, low dose radiation to the head and neck, any pharmacological agents and/or related risk factors that may cause oral damage

In addition to low risk interventions

- Further monitoring for any early changes to the oral cavity
- Increase salt water/0.9% saline rinses
- Cryotherapy/sucking ice chips during bolus injection of 5FU and Melphalan infusion

Consider oral rinses (Caphosol®, Benzydamine®)

Mucosal protectants/barrier rinses licenced to use as a preventative measure/ reduce pain (Mugard®, Episil®).

High Risk: Patients with previous moderate or severe oral problems, high risk agents, high dose chemotherapy and/or radiation prior to stem cell transplantation, radical radiation to the head and neck

In addition to low and moderate interventions

- Nutritional monitoring and follow up
- Anti-infective prophylaxis (see 4.2)
- Palifermin (in HSCT setting)
- Low Level Laser therapy

4.3 **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 other 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). High-risk patients, including those undergoing HSCT, should also receive an anti-fungal agent given orally or intravenously. The choice of drug will be dependent on local policies/ guidance.

Anti-viral prophylaxis should be given according to local policies/ guidance). Higher doses may be required for some haematology patients.

5.0 **Treatment of Oral Complications**

Once oral complications occur, a treatment regimen is needed. As mentioned above, the treatment of OM just like the general oral care should be carried out by a multi-professional team. This may include medical staff, dentists, oral hygienists, specialist nursing staff, pharmacists or radiographers. Good communication and education of the patient is key to ensure any treatment provided gives maximum relief to patients. All treatment plans should be based upon the grading of oral damage and patient reports.

5.1 **Mild/Moderate Mucositis/Oral Complications**

- Once oral damage develops patients should be supported to continue oral care
- Frequency of oral rinsing maybe increased. The aim is to keep the oral surfaces clean and moist (Elad et al 2014)
- Check for oral infections, swab and treat appropriately. Antifungal treatment, local or systemic should be administered if required. (Watson et al 2011)
- Dexamethasone containing gels may be used for apthtous lesions
- Consider mucosal protectants (Quinn et al 2015)
- Dietary requirements should be assessed and foods causing discomfort avoided.
- Swallowing problems, malnutrition and weight loss should be monitored and patients given support/advice. Adjustments to food consistency, methods of intake, food fortification and methods of intake should be assessed, support and education offered to patients. Use of supplement drinks, PEG, RIG or Nasogastric feeding should be considered (Quinn et al 2015).
- Fluid intake should be assessed and route of administration of pain relief continually monitored. General health problems should also be assessed (swallowing of tablets, decreased blood sugar levels and decreased blood pressure, decreased renal function leading to overdosing of substances)
- Patients will need adequate pain medication including topical and systemic analgesia such as paracetamol, codeine, morphine rinses, benzydamine mouthwash, trimecain, lidocain. Patients should be offered education on use and possible side effects including numbness of the oral mucosa

5.2 **Severe Mucositis/Oral Complications**

- increase pain medication following patient needs
- increase nutritional support
- increase oral rinses and care

When oral damage progresses closer monitoring and support for patients is required. An important aspect of care is to control the pain thereby helping the patient to continue food and fluid intake, communication and sleep.

For topical treatment the use of topical analgesics can be intensified. There is insufficient evidence that many products reduce the severity of mucositis but comfort can be provided for the patient by some of these oral care products. Institutions can offer a range of mouthwashes selecting the most appropriate for the clinical situation and the patients trying out which one works best for them. Generally spoken, topical antibacterial substances are not recommended. The use of oral rinses, topical gels or films can be individually considered. Any with sufficient safety and positive experiences can be used: Caphosol®, Mugard®, Oralife®, Gelclair®, Episil® are just a few of them.

For systemic pain medication, it is useful to follow a step-by-step increase, with the aim of the patient becoming pain free within twenty four hours. It can be helpful to monitor the efficacy of pain medication with NRS scales. Institutions should follow a standardized pattern of pain medication following the WHO recommendations where applicable.

In severe mucositis, the use of opiates with the optimal application route should be used. The best route of application depends on many individual and setting factors and may be oral, subcutaneous, intravenous or transdermal with patches. Patients may require a combination of slow release and fast acting drugs. Careful monitoring should include pain relief and any potential side effects, and including family members may prove helpful to obtain a wider view of how well the patient copes outside the treatment unit.

5.3 Treatment of Specific Oral Complications

Bleeding from OM

Continue mouth gargling. In specific clinical situations including HSCT and head and neck cancers Tranexamic acid which has been widely used in oral surgery may be worth considering, gargling/swishing with tranexamic acid (500mg) as a mouthwash (Watson et al 2011).

Xerostomia/Hyposalivation

As this may be due to or increased by concurrent mediation, a review of the patient's medications is needed and if possible adjustments made. Patients should be encouraged to increase sipping of fluids. Artifical saliva, viscous solutions and gels to protect and moisten the mucosa should be considered, patients should be counselled on correct application.

In chronic radiotherapy related xerostomia where there is some evidence of some saliva production, pilocarpin could be used.

Trismus

This is a common side effect during and post high dose radiotherapy. Patients should be administered helpful mandibular stretching exercises, physiotherapy, trigger point injections, muscle relaxants and analgesics. The team may consider mechanical devices such as dental stabilization and relaxation appliances to help alleviate the problem.

Graft versus Host Disease (GvHD)

Unlike mucositis which represents dose-limiting toxicity for both chemotherapy and radiotherapy, graft versus host disease (GvHD) is an autoimmune and alloimmune disorder that occurs after hematopoetic stem cell transplant (HSCT) and usually affects multiple organs and tissues. It can manifests in either acute or chronic form. The acute GvHD is potentially fatal and typically affects the skin, gastrointestinal tract and liver (Demarosi et al, 2005). The chronic form is characterized by the involvement of a number of organs in a very variable fashion. Oral cavity is involved in 45-83% (Mays et al 2013) and may be the only affected site (Triester et al 2008). At present, the distinction between these two forms of GvHD is based only on the clinical characteristics, since chronic GvHD is not simply chronic GvHD is not simply an evolution of preceding acute GvHD (Flowers et al 2011). (Jagasia et al.2015). According to the NIH 2004 consensus recommendations (Filipovich et al 2005) which are refined in 2014 (Jagasia et al 2015) diagnostic sign of oral chronic graft versus host disease (cGvHD) in patients after HSCT is the occurence of lichen planus like changes on oral mucosa. Common features seen with both acute and chronic GvHD include gingivitis, mucositis, erythema and pain. Distinctive clinical signs comprise xerostomia, the appearance of mucoceles, mucosal atrophy, pseudomembranes and

ulcers but without diagnostic signs these manifestations alone are not enough to establish the diagnosis of oral chronic GvHD (Jagasia et al 2015). Kuten-Shorrer et al (2014) suggest that solutions of dexamethasone or other steroids are used as first line treatment, second line may include solutions of steroids in combination with other immune suppressant drugs.

5.4 **Post Treatment Care/Follow-up**

After standard chemotherapy, most oral complications heal quickly, so generally no additional follow up is required. Oral damage in the HSCT, head and neck radiotherapy/chemo-radiation setting will need several weeks/months to heal and patients need continuing support and care during this period. Advice and support by suitably qualified health professional should continue during this period.

Support to manage side effects including pain and the gradual reduction of analgesia is extremely important

Chronic side effects of radiotherapy for head and neck cancers – especially dental decay, osteoradionecrosis, trismus, fibrosis, lymphedema, chronic xerostomia and chronic pain require careful management. Patients receiving bone modifying agents are at risk of osteonecrosis of the jaw requiring the medical and dental team to work closely in minimising risks. All patients should be individually assessed and appropriate care and treatment given. Follow up care should be planned and supervised especially in patients after radiotherapy and HSCT and those receiving bone modifying agents to address longer term and late complications.

6.0 **Conclusion**

The principles presented in this guidance are intended as a support and in no way should replace clinical decision making related to the particular patient and clinical situation. Depending on the severity of oral complications and the impact on the patient, the team will need to review the plan of care. Although thus guidance and recommendations focus on the oncology and the malignant haematology setting the principles may be appropriate to the palliative care and the terminally ill setting.

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Appendix **1**

National and International Guidance Reviews

- GITMO (Italy) (2016)
- National guidelines oral mucositis (Netherlands) (2015)
- National guidelines oral mucositis (Switzerland) (2016)
- Polish group specialist guidelines (2015)
- Institutional guidelines (Portugal) (2015)
- Institutional guidelines (France) (2016)
- Institutional guidelines (Czech Republic) (2015)
- Italian Ministry of Health Departm ent of Public Health and Innovation (2014).
- UK Oral Mucositis in Cancer (UKOMiC) Guidelines, Second Edition (2015)
- Multinational Association of Supportive Care in Cancer (2014)
- European Society Medical Oncology (2015)

Appendix **2**

(i) WHO Health Organization Toxicity Criteria Stomatitis (WHO 1979)

Grade	Description
0 (none)	None
1 (mild)	Soreness, erythema
2 (moderate)	Erythema, ulcers; Patients can swallow solid diet
3 (severe)	Ulcers, Extensive erythema; Patients cannot swallow solid diet only
4 (life-threatening)	Mucositis to extent that alimentation is not possible

(ii) National Cancer Institute grading scale (NCI-CTCAE)

Grade	Description
0	None
1	Painless ulcers, erythema or mild soreness in absence of lesions
2	Painful erythema, edema, or ulcers, but patients can eat/swallow
3	Painful erythema, edema, or ulcers, requiring i.v. hydration
4	Severe ulcerations, or requires parenteral/enteral nutritional support or prophylactic intubation
5	Death due to toxicity

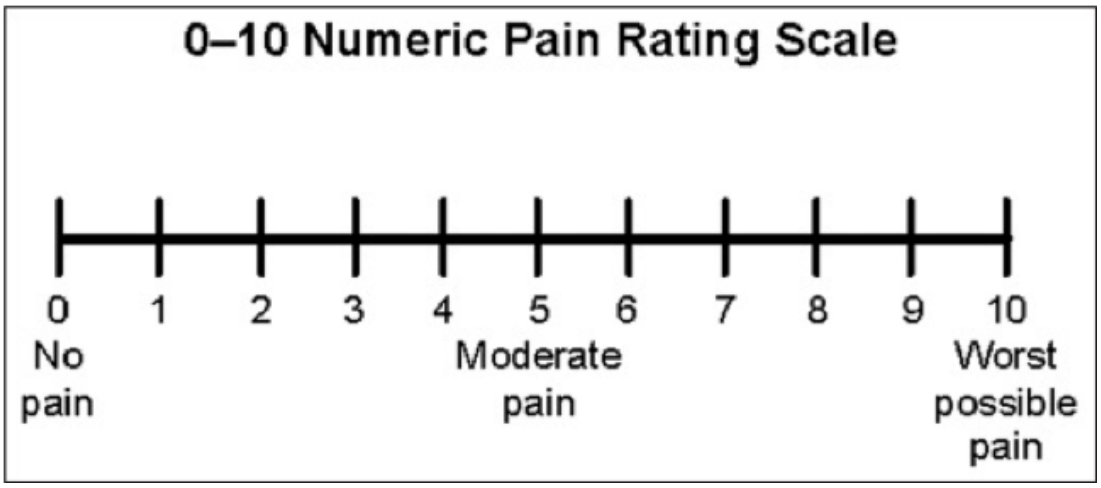
NCI-CTC v 2.0, 1999 : http://ctep.cancer.gov/

(iii) Oral Assessment Guide (OAG)(Eilers et al 1988)

The scores of the eight categories are summed. A normal mouth will receive a score of 8.

Category	Method of observation	Rating .1.	Rating .2.	Rating .3.
Voice	Converse with patient. Listen to crying.	Normal	Deeper or raspy	Difficulty talking or crying, or painful.
Ability to swallow	Ask patient to swallow.	Normal swallow	Some pain on swallowing	Unable to swallow
Lips	Observe and feel tissue.	Smooth, pink and moist	Dry or cracked	Ulcerated or bleeding
Saliva	Insert depressor into mouth, touching centre of tongue and the floor of the mouth.	Watery	Thick or ropy. Excess salivation due to teething.	Absent
Tongue	Observe appearance of tissue.	Pink, moist and papillae present	Coated or loss of papillae with a shiny appearance with or without redness. Fungal infection.	Blistered or cracked
Mucous membrane	Observe appearance of tissue.	Pink and moist	Reddened or coated without ulceration. Fungal infection.	Ulceration with or without bleeding
Gingiva	Gently press tissue.	Pink and firm	Oedematous with or without redness, smooth. Oedema due to teething.	Spontaneous bleeding or bleeding with pressure
Teeth (if no teeth, score 1)	Visual. Observe appearance of teeth.	Clean and no debris	Plaque or debris in localised areas (between teeth).	Plaque or debris generalised along gum line

(iv) Numerical Rating scale (NRS). (Farrar et al 2001)



(v) RTOG Scoring Criteria

Grade	Description
0 (none)	No change over baseline
I (mild)	Irritation, may experience slight pain, not requiring analgesic
II (moderate)	Patchy mucositis that may produce inflammatory serosanguinitis discharge; may experience moderate pain requiring analgesia
III (severe)	Confluent, fibrinous mucositis, may include severe pain requiring narcotic
IV (life-threatening)	Ulceration, hemorrhage, or necrosis

RTOG: http://www.rtog.org/

(vi) 10 Patient-Reported Oral Mucositis Experience Questionnaire (Gussgard et al 2014)

1. Mouth pain (Mouth encompass also lips, cheeks, tongue, gums, palate and throat)
no pain _____ worst possible pain

2. Difficulty speaking because of mouth* sores
no trouble speaking — impossible to speak

3. Restriction of speech because of mouth* sores
no restriction of speech _____ complete restriction of speech

4. Difficulty eating hard foods (hard bread, potato chips etc) because of mouth* sores
no trouble eating hard foods — impossible to eat hard foods

5. Difficulty eating soft foods (Jello, pudding etc) because of mouth* sores
no trouble eating soft foods _____ impossible to eat soft foods

6. Restriction of eating because of mouth* sores
no restriction eating _____ complete restriction of of eating

7. Difficulty drinking because of mouth* sores
no trouble drinking _____ impossible to drink

8. Restriction of drinking because of mouth* sores
no restriction drinking _____ complete restriction of of drinking

9. Difficulty swallowing because of mouth* sores
not difficult to swallow _____ impossible to swallow

10. Change in taste
no change in taste _____ complete change in taste