Nottingham University Hospitals NHS
NHS Trust

Bone Marrow Transplant Programme

Title: **Guideline for Oral Care and the Management of Mucositis Post-BMT**

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Version: 3.1

Area of Application: Clinical Unit

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(Programme Director or designated individual)

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Amendments to Version 3: *[note correction of version number in this section compared to version 2.0 of Sop]*

Version	Amendment	Released	Implemented	Archived
3.0	Early review and update – released as version 3.0 Direction to PSMA Programme removed. Description of NUH oral assessment tool as "combined WHO/NCI-CTC v.3 tool" removed. Section 6: Updated to reflect use of Caphasol as preventative and 1st line treatment. Use of Nystatin removed. Addition of Episil as 3rd line treatment Appendix 1: Example updated to Oral Assessment tool NUH03970N	01 Nov 2016	01 Dec 2016	
3.1	Pain section change Instructions changed from "Rinse around mouth for 2-3 minutes and can be swallowed" to "Sip slowly and swallow."			

Distribution:

Area		Area		Additional Copies
Master	√	Collection facility	x	Nil. *Copy is available on NUHnet web pages*
Electronic	√	Fletcher Ward	√	
Stem Cell Lab.	x	~~Haematology Day Case Unit~~		

CONTENTS page

1. Principles and Purpose / Objective:

Oral mucositis (inflammation of the buccal and oesophageal mucosa)is a frequently occurring side effect of high dose chemotherapy and radiotherapy affecting between 50%-100% of haemopoietic stem cell transplant recipients (Bellm et al, 2000). This results in pain, swelling, erythema of the buccal mucosa and in severe cases ulceration, difficulty in swallowing and sometimes inability to eat or drink. The impact on quality of life, nutrition and treatment outcomes depends on the severity of oral mucositis (Stone et al, 2005). The pathogenesis of oral mucositis is such that current prophylactic treatments have minimal impact on its progression (Sonis, 2004); however systematic assessment and oral care have been shown to reduce the incidence of severity and duration. (Dodd et al, 2000).

This document provides guidelines for the prevention and treatment of mucositis.

2. Related Documentation:

- SOP B18 Nursing Guidelines for the Care and Monitoring of Patients Undergoing Allogeneic Stem Cell Transplantation
- SOP B19 Nursing Guidelines for the Care and Monitoring of Patients Undergoing Autologous Stem Cell Transplantation
- NUH Guidelines for the Management of Mucositis Associated With Chemotherapy and/or Radiotherapy, – found on intranet at http://nuhnet/nuh_documents/Guidelines/Forms/Guidelines.aspx *(document 1537)*
- NUH Guideline for the Treatment of Specific Infections (Haematology) including Mucositis, Enterocolitis and Respiratory Viral Infections– found on intranet at http://nuhnet/nuh_documents/Guidelines/Forms/Guidelines.aspx *(document 1859)*

3. Terminology, Abbreviations and Definitions:

See Glossary in current Bone Marrow Transplant Programme Operational Policy and Quality Manual.

Difflam – trade name of Benzydamine mouth wash

4. Personnel and Training Requirement:

- Nursing staff
- Clinical staff

5. Equipment:

- Pen torch
- Oral assessment tool NUH03970N available on Fletcher ward – see example in Appendix 1
- Tongue depressor

6. Procedure / Method:

6.1 Oral Assessment

Action	*Rationale*
6.1.1 Risk factors: **Advise on Oral Care and Assess Degree of Risk.** • Inability to take adequate fluids leading to dehydration and dryness of mucosa. • Poor nutritional status leading to poor cellular repair and vitamin deficiencies. • Insufficient saliva production leading to infection and dryness of the mucosa. • Major interventions altering oral status – radiotherapy or chemotherapy causing biological changes. • High dose chemotherapy/total body irradiation and specific chemotherapy drugs, e.g. Methotrexate/ Melphalan. • Lack of knowledge, self-care ability, or motivation to undertake oral hygiene. • Previous degree of mucositis. • Low neutrophil count. • Treatment for certain solid tumours, e.g. head and neck, upper G.I tract and oesophageal. • Young or old age. • Dental status- poorly fitting dentures and general dentition. Dental assessment and subsequent treatment should be undertaken prior to chemotherapy treatment in order to reduce the likelihood of local and systemic infection. (Miller and Kearney, 2001). • History of smoking	*Effective assessment consists of several factors.* *These are:* *• Risk factors* *• Use of an oral assessment tool* *• Staff training* *• Patient education* *Interventions to minimise pain increases a sense of control and provides constructive ideas for self-help that can influence the clinical course.* *Greater care and vigilance is required in these circumstances*
6.1.2 Use of an oral assessment tool See overleaf for a step-by-step process to assessing the extent of oral mucositis.	

Action	*Rationale*
6.1.2 continued: The first step is to gain feedback from the patient using the following headings. It is important that this is done prior to any oral cavity examination, as this may impact on the self-scoring system, by disturbing the oral mucosa. • Nutrition assessment • Pain assessment • Saliva production assessment • Taste assessment The second step is a visual examination of the oral mucosa. This should include evaluating the following 8 sites in the mouth: • Upper lip • Lower lip • Right buccal mucosa • Left buccal mucosa • Right lateral and ventral tongue • Left lateral and ventral tongue • Floor of mouth • Soft palate. The tongue and hard palate are not assessed as they consist of keratinized epithelial cells, which respond differently to squamous epithelial cells, which the above sites are made up of.	*Thorough assessment of the oral cavity is required to provide a baseline assessment, monitor response to therapy and identify new problems as they arise.* *A baseline oral assessment should be performed on admission and prior to commencing chemotherapy. The patient should then have ongoing oral assessments on a daily basis.* *There are multiple assessment tools but limited evidence to support one over another. The tool used within Clinical Haematology is a combination of the WHO score and NCICTC, both of which are validated and reliable and consider subjective, objective and functional assessment*

6.2 Prevention

Action	*Rationale*
All patients anticipating a bone marrow transplant (BMT) should have been advised to seek dental care well in advance of admission to hospital to identify and eliminate / stabilise any pre-existing dental problems, e.g. dental caries, dental abscess, periodontal infection	*Elimination of these problems may help to increase patient tolerance to therapy and improve quality of life by reducing pain. Elective dentistry should be postponed until patients' immune recovery 12 months post-transplant*

Action	*Rationale*
Patients should always be advised to inform their dentist of their underlying diagnosis, present treatment and future bone marrow transplant	*Current medical status and treatment will influence the dental treatment plan*
All patients should receive verbal and written information on essential routine oral care to be undertaken during the post-transplant and on palliative therapy.	*Interventions to minimise pain increases a sense of control and provides constructive ideas for self-help that can influence the clinical course.*
*All patients receiving full intensity conditioning as part of their transplant regime or patients deemed to be at risk due to previous treatment will receive Caphasol QDS (increasing to 10xdaily as required).	*Coating agents are useful in providing a protective layer in the oral cavity reducing pain whilst eating or drinking (Marsden, 2015).*
Use toothpaste of choice and water. Rinse into a receiver not the sink.	*Water is a sufficient cleansing agent*
Moisturise and protect lips with aqueous jelly or yellow soft paraffin – N.B- not to be used if patient is receiving oxygen therapy.	*To prevent dryness, cracking and discomfort*
Patients undergoing a BMT should be advised not to wear dentures If patients wish or need to continue wearing dentures e.g. in order to eat or improved body image then the following advice should be given on caring for the appliance NEVER wear at night Always scrub area in contact with oral tissues with toothbrush and toothpaste.	*Dentures can cause trauma and may also harbour potentially infectious organisms* *Provides relief from potential trauma* *Prevents harbouring of infection*

6.3 Grading and Care of Mucositis

Nursing staff on Fletcher ward to fill out the Oral assessment guide **- daily** on all transplant patients *(see SOPs B18 and B19)*.

Depending on the patient's assessment of pain, taste, swallowing ability and the macroscopic appearances of erythema and ulceration as seen using a pen torch a **WHO score of 0-4** is assigned according to the table overleaf.

Mucositis Grading

WHO GRADE	DESCRIPTION	CARE
GRADE 0	No objective findings, function irrelevant, normal.	▪ Rinsing schedule - rinse oral cavity with sterile water after each meal. ▪ Daily assessment for evidence of oral mucositis.
GRADE 1	Presence of erythema plus pain, function irrelevant. May include mucosal scalloping with or without erythema.	▪ Daily assessment for evidence of oral mucositis. ▪ Increase rinsing schedule. ▪ Commence first line pain scale treatment *(see below).*
GRADE 2	Presence of ulceration with or without erythema. Patient can swallow solid diet.	▪ Daily assessment for evidence of oral mucositis. ▪ Continue with increased rinsing schedule. ▪ Commence second line pain scale treatment *(see below)* if not already started.
GRADE 3	Ulceration, with or without extensive erythema. Patient is able to swallow liquid, but not solid diet.	▪ Daily assessment for evidence of oral mucositis. ▪ Continue with increased rinsing schedule. ▪ Implement recommendations from MUST tool findings. ▪ Follow third line pain scale treatment *(see below)*.
GRADE 4	Ulceration, TPN, alimentation not possible (able to take medication with water only).	▪ Daily assessment for evidence of oral mucositis. ▪ Continue with increased rinsing schedule. ▪ Implement recommendations from MUST tool findings. ▪ Follow fourth line pain scale*(see below)*.

Patients with grade 3-4 mucositis are at high risk of infection.
Assess for oral infection and take appropriate action as per NUH Guideline for the Treatment of Specific Infections (Haematology) – available online at:
http://nuhnet/nuh_documents/Guidelines/Forms/Guidelines.aspx (document 1859)

6.4 Procedure for Analgesia

The stepped approach in the table below should be utilised. This should start with first line interventions irrespective of level of pain identified by the patient on the visual analogue scale.

Once first line treatment has been implemented consistently, it is necessary to evaluate its effectiveness. A systemic approach to pain control with a clear record of analgesia and relief will help to minimise patient distress and rationalise analgesic use.

Only when the interventions are ineffective should the next level be implemented. This is the same for the following levels so that there is a progression through each level, with evaluation of effectiveness at each stage.

PAIN CONTROL
First Line ▪ Treat any underlying cause e.g. infection ▪ Difflam (Benzydamine) mouthwash 4 hourly prn ▪ Paracetamol mouthwashes (avoid swallowing due to masking of potential temperatures) ▪ *Caphasol QDS and PRN up to 10 times daily
Second Line ▪ Caphasol QDS and prn up to 10 times daily ▪ Oxetacaine and antacid suspension (10mls-QDS) pre-meal. Sip slowly and swallow. ▪ Oral morphine as required. To be held in the mouth for 2-3 minutes to be effective.
Third Line ▪ Caphasol increased frequency – 6-8 times daily and prn up to 10 times daily ▪ Oxetacaine and antacid suspension (10mls-QDS) pre-meal. Sip slowly and swallow. ▪ Oral morphine QDS and prn up to every 2 hours. To be held in the mouth for 2-3 minutes to be effective. ▪ Episil 1-3 pumps, 2-3 times daily.
Fourth Line ▪ Caphasol increased frequency – 6-8 times daily and prn up to 10 times daily ▪ Oxetacaine and antacid suspension (10mls-QDS) pre-meal. Sip slowly and swallow. ▪ Systemic morphine infusion 50mg/50mls – starting at a rate of 1ml/hr ▪ Episil 1-3 pumps, 2-3 times daily. ▪ If ineffective, consider ketamine – involve pain team.

6.5 Procedure for Opiate Infusion.

Morphine is the opiate of choice for the management of severe pain in Clinical Haematology at NUH. (NB Diamorphine 1mg iv is equivalent to 1.5mg Morphine iv).

An intra-venous infusion is often necessary (50 mg in 50 ml, infusion rate 0.5 - 5 ml/hr) Regular monitoring for hypoxia should be performed. *(See 6.4 below)*

6.5.1 For most patients, start at 1 mg (1 ml) per hour initially and assess pain after 1 hour. If pain score not improved then increase dose usually to a maximum of 5mg/hr depending on patient weight.

6.5.2 Once pain is controlled the dose may be able to be reduced slightly to maintain the relief.

6.5.3 The need for the opiate infusion should be reviewed daily and when the mucositis score improves, the dose should be slowly tapered down and stopped.

6.5.4 If the mucositis is continuing consider the need for parenteral nutrition.

6.5.5 Patients receiving morphine infusions may require regular anti-emetics and may develop pruritus.

NOTES:

i. Patients previously on oral opiates which have had to be stopped due to inability to swallow may require higher doses of morphine than patients not previously exposed to opiate.

ii. Patients with renal impairment will be more sensitive and require a lower dose of opiate.

iii. When discontinuing morphine infusion reduce dose to 25% of present dose every 24 hours in order to prevent complications associated opiate withdrawal.

6.6 Nursing Observations during Opiate Infusions

6.6.1 Monitor for hypoxia every 30 minutes until pain settled and then every 4 hours whilst a patient is having intra-venous opiate infusions.

6.6.2 Observations must include respiratory rate, assessment of pupils and AVPU score (alert, responding to voice, responding to pain and unresponsive) to assess for signs of opiate toxicity.

- If respiratory rate is < 12, turn off pump temporarily and call the doctor to review the patient.
- If pupils are grade 1 size or smaller, turn off pump and call the doctor to review the patient.
- If the AVPU score is less than response to voice, turn off the pump and call the doctor.
- If there are significant signs of opiate toxicity consider the use of naloxone.

7. Endpoints, Expected Results and Limitations of Procedure:

7.1. Endpoint and Expected Results –

Timely, appropriate and safe treatment of mucositis until recovery of mucositis or discharge of patient from ward.

7.2. Limitations

7.2.1. This procedure may be modified after discussion with and approval by a Transplant Consultant and Pharmacist. If modified, the nature of the modification and reason for it must be recorded in the patients' medical record.
A Variance form is to be submitted to the BMT Quality Management Group by the clinician prescribing modified treatment.
Modifications will be monitored in this way to see if consistent improvements can be made to this guideline

7.2.2. Incidents must be reported via the NUH Trust Datix system.

8. Audit:

Incidents are reviewed by the Departmental Governance Meeting.

Incident reports are reviewed at the monthly BMT Quality Management meeting.

9. Evidence Base of Policies / References:

- NUH Guidelines for the Management of Mucositis Associated With Chemotherapy and/or Radiotherapy, Version 3.0, December 2012.
- Patient reports of complications of bone marrow transplantation.
- Bellm LA, Epstein JB, Rose-Ped A, Martin P, Fuchs HJ. Support Care Cancer. 2000 Jan;8(1):33-9.
- Management of oral mucositis in patients with cancer. Stone R, Fliedner MC, Smiet AC. Eur J Oncol Nurs. 2005;9 Suppl 1:S24-32.
- Pathobiology of mucositis. Sonis ST1. Semin Oncol Nurs. 2004 Feb;20(1):11-5.
- Bone Marrow Transplant Programme Operational Policy and Quality Manual for Nottingham University Hospitals NHS Trust BMT Programme.
- FACT-JACIE International Standards for Hematopoietic Cellular Therapy Product Collection, Processing, and Administration , 6th Edition
  - available at http://www.jacie.org
- The Royal Marsden Manual of Clinical Procedures, 9th Edition- available at http://www.rmmonline.co.uk.
- UKOMiC (2013) *Mouth care guidance and support in cancer and palliative cars*, [Online], Available: http://www.ukomic.co.uk/index.html [24 Jun 2013].
- World Health Organization. *Handbook for Reporting Results of Cancer Treatment*. Geneva, Switzerland: World Health Organization; 1979. pp. 15–22.

10. Training and Competency:

Clinical Guidelines *are "policy and/or guideline" documents. They do not require a competency, but still require a record that staff have read the document.*

Once they have read the SOP, relevant staff members are to sign the record on the controlled copy of the document for their area.

Staff Member	Signature	Date
Chantelle Randall		
Louise Ellison		
Nicola Turner		
Tara Shearman		
Leanne Mills		
Kathryn Roberts		
Clare Cooper		
Peggy Chipendo		
Richard Kasanyinga		
Helen Claydon		
Sam Osei		
Charlette Philips		
Jyothy Thomas		
Rachel Fox		
Kerris Henshaw		
Jade Pass		
Kat Anisco		
Melissa Conroy		
Jeorge Duldulao		
Katie Henson		
Amelia Ellis-Lane		

Kieren Shergill		
Hannahlee Day		
Oliver Hunt-Blow		
Rebecca Richmond		

APPENDIX 1

Please affix patient label

Patient Name:

Date of birth:

NHS / K Number:

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DEPARTMENT OF CLINICAL HAEMATOLOGY
ORAL ASSESSMENT TOOL

Please complete all details on this form daily for all patients

Ward .....

Section 1		Date						
What has the patient been able to consume in the last 24 hours	Solids							
	Liquids only							
	Nothing orally							
If the patient is taking **liquids only** or **nil orally**, is this due to oral mucositis	Yes							
	No							
If No, what does the patient feel they could eat based soley on how their mouth feels?	Solids							
	Liquids only							
	Nothing orally							
Section 2 *Please ask the patient the following questions using a scale of 0 to 10:*								
Please describe the **amount of mouth pain** you're are feeling with 0 equal to 'no pain' and 10 equal to 'the worst possible pain'								
Please describe the **amount of mucosal dryness** you're are with 0 equal to 'none' and 10 equal to 'the worst mucosal dryness'								
Please describe **how difficult it is for you to swallow** with 0 equal to 'no difficulty swallowing ' and 10 equal to 'extreme difficulty swallowing' **(Consider liquid medications, also soft diet and cold foods)**								
Please describe **your taste function** on with 0 equal to 'normal taste ' and 10 equal to 'complete lack of taste' **(Advise regular mouth washes/rinses)**								

Example

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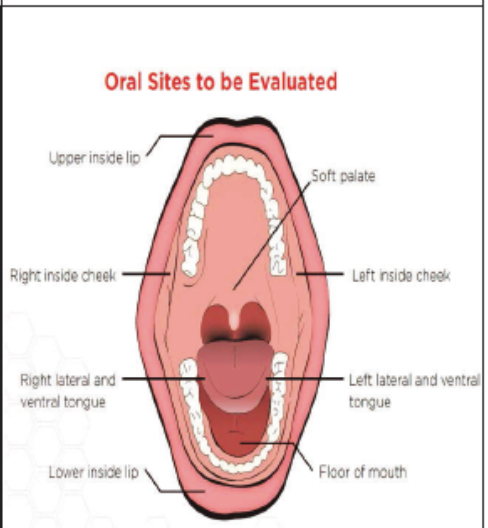
Section 3 *Now observe the eight sites in the patient's mouth using a torch and gloves with the gentle assistance of a tongue depressor and record the following (please tick in appropriate box):*

DATE																						
Site	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding	Erythema	Ulceration	Bleeding
Upper lip																						
Lower lip																						
Right cheek																						
Left cheek																						
Rt ventral and lateral tongue																						
Lt ventral and lateral tongue																						
Floor of mouth																						
Soft palate																						

Example



Please tick if present at evaluated site. NE = Not Evaluated

DATE									DATE							
Is scalloping present on tongue/cheeks?									**Time**							
Has the patient's salivary production been affected?	Yes								WHO2 score							
	No															
	Absent								**Initials of nurse**							

WHO = 0 *(no findings)*
WHO = 1 *(soreness present with or without erythema. Normal diet)*
WHO = 2 *(ulcers present but able to take solid food)*
WHO = 3 *(ulcers present and only able to take liquids)*
WHO = 4 *(ulcers present/not able to take anything orally)*

PLEASE REFER TO SOP- B66 FOR GUIDANCE ON ORAL ASSESSMENT AND ASSOCIATED TREATMENTS.