MUCOSITIS IN CHILDREN AND YOUNG PEOPLE WITH CANCER - CLINICAL GUIDELINE FOR PREVENTION AND TREATMENT V3.0
1. **Aim/Purpose of this Guideline**

1.1. This guideline applies to all medical and nursing staff caring for children and young people within the CLIC Unit at RCHT.

2. **The Guidance**

2.1. **Mucositis** is an inflammatory process involving the mucous membranes of the gastrointestinal (GI) tract. Stomatitis is an inflammatory process affecting the mucous membranes of the oral cavity (oral mucositis).

2.2. Mucositis as a result of cancer treatment is common (chemotherapy and radiotherapy). Cancer treatments break down the rapidly dividing epithelial cells of the GI tract leading to ulceration and potentially infection. Oral mucositis can have a major impact on a child’s quality of life causing pain, difficulty in swallowing and phonation, and poor nutrition. It is important to try and prevent mucositis. It is crucial to keep the mouth clean through basic oral hygiene.

All children should undergo a dental assessment at the time of cancer diagnosis ideally by a dentist or dental hygienist linked to the cancer centre. The named dentist to refer Paediatric Oncology cases at the Royal Cornwall Hospital is Dr Tamsin Hearle (Senior Dental Officer).

Any invasive dental treatment should be undertaken by a consultant or specialist paediatric dentist.

All children diagnosed with cancer should be registered with a General Dental Practitioner or community dental service. This registration should be maintained during and following the cancer treatment.

Parents and children need to be informed of the possible long-term dental effects of childhood cancer treatment.

Mouth lesions should be swabbed for bacterial and fungal culture and viral PCR (Herpes simplex virus).

2.3. **Basic Oral Care – during treatment**

- Brush teeth twice a day using a fluoride toothpaste (1,000 ppmF +/- 10%) and soft toothbrush (small headed, soft, nylon bristled toothbrush – usually changed every 3 months).
  - For children up to the age of 6 years, parents/carers should be instructed on how to brush their children’s teeth.
  - For babies without teeth, parents/carers should be instructed on how to clean the mouth with oral sponges that have been moistened with water.
  - For children where it is not possible to brush teeth, parents/carers should be instructed on how to clean the mouth with oral sponges that have been moistened with water or an antimicrobial agent such as diluted...
chlorhexidine mouthwash 0.2%.

- Gloves should be worn by carers when performing oral hygiene.
- Additional aids eg flossing, fluoride tablets should only be when recommended by a member of the dental team.
- All inpatients’ should have an oral assessment daily (more frequently if clinically indicated).
- An oral assessment tool such as the Oral Assessment Guide (OAG) is useful if recording the status of the oral cavity.

### 2.4. Oral Assessment Guide (OAG) – see Appendix 3

The Eilers’ Oral Assessment Guide offers a valid, reliable and clinically useful tool for assessing oral status.

The OAG comprises 8 categories that reflect oral health. Each category is assessed and given a score of 1-3 (1=normal, 2=not normal but barrier intact and no loss of function, 3=barrier breakdown and function compromised). The minimum score is 8 (healthy oral cavity) and the maximum is 24 (severe mucositis).

The staff responsible for assessment of the oral cavity should be appropriately trained in the use of the OAG.

A total OAG score > 8 means an increased risk of oral complications.

Children with an OAG > 8 should be assessed to ensure appropriate analgesia is given.

### 2.5. Oral Hygiene Tools

Patients and their parents/carers need to be aware of the importance of keeping the mouth clean with good basic mouth care.

### 2.6. Cleansing agents

- Chlorhexidine based mouthwash (0.2% solutions) is an antiseptic that inhibits plaque formation on the teeth. It is not a substitute for effective tooth brushing as it does not completely control plaque deposition.

Chlorhexidine causes a reversible brown staining of the teeth and tongue if used over a long time.

It is not recommended for the prevention or treatment of radiotherapy or chemotherapy induced mucositis unless the child is unable to brush their teeth (see above).

### 2.7. Soft paraffin ointment

- This can be applied to the lips to soothe dryness. It should be not be used if oxygen therapy is required.

### 2.8. Antifungal agents

- Fungal infections of the mouth are usually caused by Candida sp. Certain categories of antifungals are effective at preventing oral candidiasis. These are drugs that are fully absorbed from the GI tract (fluconazole, ketoconazole, itraconazole) and those partially absorbed by the GI tract (miconazole, clotrimazole). Preventative therapy is not recommended for most patients. There is no evidence to support the use of nystatin or chlorhexidine for the prevention of candidiasis in children being treated for cancer.
Based on evidence for the prevention of oral candidiasis, absorbed or partially absorbed antifungal agents could be used for the treatment of visible oral candidiasis.

Drug doses for antifungal agents should be prescribed according to the BNFC.

MEMO – The metabolism of vincristine is inhibited by some azoles (increased risk of neurotoxicity).

In these circumstances azoles should be stopped at least 48 hours before and after vincristine.

Azoles interact with other medications – check BNFC and/or ward pharmacist before prescribing.

2.9. Antiviral agents

- Herpes infection of the mouth is usually associated with the Herpes simplex virus serotype 1. Aciclovir (oral and intravenous) is effective at reducing Herpes simplex infection in children with haematological malignancies. However it is not recommended for routine use prophylactically.
  - Aciclovir is effective for the treatment of Herpes simplex in patients receiving chemotherapy and/or radiotherapy.
  - Recommendations for the treatment of Herpes simples in children with cancer:
    - Mild and/or non-progressive lip lesion: topical aciclovir
    - Progressing and severe lip lesions: oral aciclovir
    - Intraoral lesions: oral aciclovir (or consider iv if unwell/neutropenic)
    - Severe cases, or where oral administration is not tolerated: IV aciclovir
    - Drug doses should be prescribed according to the BNFC.

2.10. Artificial saliva

- A dry mouth (xerostomia) may be very unpleasant for the child. Simple measures may give relief e.g. frequent sips of cold drinks, sucking ice chips, sugar free pastilles, sugar free chewing gum. These measures may stimulate salivation.
  - Artificial saliva may be helpful. Artificial saliva must be prescribed according to the BNFC.

2.11. Analgesia

- Oral mucositis can cause severe pain. Opiates are required for the treatment of such pain. Appropriate analgesia is vital.
- Assess pain using appropriate Pain Assessment Tool.

2.12. Other agents used for oral ulceration and inflammation

Simple mouthwashes
- saline mouthwash

Antiseptic mouthwashes
- Mucosal ulceration may be complicated by secondary bacterial infection. Chlorhexidine mouthwash is often beneficial

Mechanical protection
- A protective layer eg carmellose gelatin paste can be applied to the lesion.
- Gelclair forms a protective film of povidine and sodium hyaluronidate
Corticosteroids

- Topical corticosteroids may be used for some forms of oral ulceration

Local analgesics

- These have a limited role as their duration of action is short. Caution must be taken if using local anesthetics to ensure that the pharynx is not anaesthetised prior to eating as this can lead to choking.
  Benzydamine (Difflam) mouthwash or spray may be a useful local analgesic for a variety of ulcerative problems.

2.13. Supportive care

Any child who has difficulty swallowing must be carefully monitored.

- Commence a fluid balance chart
- Monitor weight – ensure adequate nutrition – liaise with dietician

2.14. Gastrointestinal Mucositis

- Develops along the GI tract and often causes diarrhoea (send stool sample for M,C&S, virology and Clostridium difficile toxin (CDT))
- There may be severe pain with mucositis – appropriate analgesia is vital
- Diarrhoea can lead to complications such as dehydration and malnourishment
- Supportive care is important
- Neutropenic children with severe diarrhoea are at risk of gram negative sepsis (add intravenous metronidazole)
- Some antibiotics, particularly broad spectrum antibiotics, can cause diarrhoea
- All children with diarrhoea are isolated according to local infection control policy.

2.15. Antibiotic-associated colitis (pseudomembranous colitis)

- Caused by Clostridium difficile
- Treat with oral metronidazole for 10 days
- Change to oral vancomycin (10-14 days) if no response
- Vancomycin may be preferred for very sick patients
- Severe or life-threatening complications: treat with vancomycin and metronidazole
- Vancomycin and metronidazole must be prescribed according to the BNFC.
3. Monitoring compliance and effectiveness

<table>
<thead>
<tr>
<th>Element to be monitored</th>
<th>All elements</th>
</tr>
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<tbody>
<tr>
<td>Lead</td>
<td>Oncology multi-disciplinary team.</td>
</tr>
<tr>
<td>Tool</td>
<td>Audit and peer review process.</td>
</tr>
<tr>
<td>Frequency</td>
<td>Annually</td>
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</table>
| Reporting arrangements  | Oncology multi-disciplinary team.  
                          | Directorate audit and guidelines |
| Acting on recommendations and Lead(s)  | Oncology multi-disciplinary team.  
                          | Directorate audit and guidelines |
| Change in practice and lessons to be shared | Required changes to practice will be identified and actioned within 6-12 months. A lead member of the team will be identified to take each change forward where appropriate. Lessons will be shared with all the relevant stakeholders |

4. Equality and Diversity

4.1. This document complies with the Royal Cornwall Hospitals NHS Trust service Equality and Diversity statement which can be found in the ‘Equality, Diversity & Human Rights Policy’ or the Equality and Diversity website.

4.2. Equality Impact Assessment

The Initial Equality Impact Assessment Screening Form is at Appendix 2.
## Appendix 1. Governance Information

<table>
<thead>
<tr>
<th>Document Title</th>
<th>Mucositis in children and young people with cancer- clinical guideline for prevention and treatment V3.0</th>
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<tbody>
<tr>
<td>Date Issued/Approved:</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; Nov 2017</td>
</tr>
<tr>
<td>Date Valid From:</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; Nov 2017</td>
</tr>
<tr>
<td>Date Valid To:</td>
<td>9&lt;sup&gt;th&lt;/sup&gt; Nov 2020</td>
</tr>
<tr>
<td>Directorate / Department responsible (author/owner):</td>
<td>Dr.K. Macdonald - Associate Specialist</td>
</tr>
<tr>
<td>Contact details:</td>
<td>01872252891</td>
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<tr>
<td>Brief summary of contents</td>
<td>Clear guidance on Mucositis in children and young people with cancer</td>
</tr>
<tr>
<td>Suggested Keywords:</td>
<td>Mucositis Oncology Cancer Paediatric children</td>
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<td>Target Audience</td>
<td>RCHT</td>
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<tr>
<td>Executive Director responsible for Policy:</td>
<td>Medical Director</td>
</tr>
<tr>
<td>Date revised:</td>
<td>09/11/2017</td>
</tr>
<tr>
<td>This document replaces (exact title of previous version):</td>
<td>Mucositis in children and young people with cancer- clinical guideline for prevention and treatment V2.0</td>
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<tr>
<td>Approval route (names of committees)/consultation:</td>
<td>Paediatric oncology MDT Directorate audit and guidelines meeting Divisional board</td>
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<tr>
<td>Divisional Manager confirming approval processes</td>
<td>David Smith</td>
</tr>
<tr>
<td>Name and Post Title of additional signatories</td>
<td>Not Required</td>
</tr>
<tr>
<td>Name and Signature of Divisional/Directorate Governance Lead confirming approval by specialty and divisional management meetings</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Name: Caroline Amukusana</td>
<td></td>
</tr>
<tr>
<td>Signature of Executive Director giving approval</td>
<td>{Original Copy Signed}</td>
</tr>
<tr>
<td>Publication Location (refer to Policy on Policies – Approvals and Ratification):</td>
<td>Internet &amp; Intranet</td>
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Mucositis in Children and Young People with Cancer - Clinical Guideline for Prevention and Treatment.

Document Library Folder/Sub Folder: Clinical / Paediatrics

Links to key external standards: none

Related Documents:
- Adapted from the UKCCSG-PONF Mouth Care Group “Mouth Care for Children and Young People with Cancer: Evidence-based Guidelines”
- Great Ormond Street Hospital for Children NHS Trust Mouth Care
- British National Formulary for Children.

Training Need Identified?: no

Version Control Table

<table>
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<th>Date</th>
<th>Version No</th>
<th>Summary of Changes</th>
<th>Changes Made by (Name and Job Title)</th>
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<tr>
<td>May 2010</td>
<td>V1.0</td>
<td>Initial Issue</td>
<td>Dr. K. Macdonald</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Dr. N. Gilbertson</td>
</tr>
<tr>
<td>June 2014</td>
<td>V2.0</td>
<td>Review of content and re format.</td>
<td>Dr. K. Macdonald</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>T. Fergus- format only</td>
</tr>
<tr>
<td>Nov 2017</td>
<td>V3.0</td>
<td>No changes</td>
<td>Katrina Macdonald</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Associate Specialist</td>
</tr>
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This document is to be retained for 10 years from the date of expiry.
This document is only valid on the day of printing

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# Appendix 2. Initial Equality Impact Assessment Form

*This assessment will need to be completed in stages to allow for adequate consultation with the relevant groups.*

<table>
<thead>
<tr>
<th>Name of Name of the strategy / policy / proposal / service function to be assessed</th>
<th>Mucositis in Children and Young People with Cancer - Clinical Guideline for Prevention and Treatment V3.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directorate and service area:</td>
<td>Is this a new or existing Policy?</td>
</tr>
<tr>
<td>child health</td>
<td>existing</td>
</tr>
<tr>
<td>Name of individual completing assessment:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>t.fergus</td>
<td>01872252800</td>
</tr>
</tbody>
</table>

1. **Policy Aim***
   - **Who is the strategy / policy / proposal / service function aimed at?**
     - Clear guidance on prevention and treatment of Mucositis in Children and Young People with Cancer

2. **Policy Objectives***
   - **Clear guidance on prevention and treatment of Mucositis in Children and Young People with Cancer**

3. **Policy – intended Outcomes***
   - **Evidenced based and standardised practice**

4. **How will you measure the outcome?**
   - Audit and peer review

5. **Who is intended to benefit from the policy?**
   - Children and families

6a. **Who did you consult with?**
   - Workforce
   - Patients
   - Local groups
   - External organisations
   - Other
   - x

   **Please record specific names of groups**
   - Clinical Guideline Group
   - Child Health Directorate

What was the outcome of the consultation?  
- Guideline agreed
7. The Impact
Are there concerns that the policy *could* have differential impact on:

<table>
<thead>
<tr>
<th>Equality Strands:</th>
<th>Yes</th>
<th>No</th>
<th>Unsure</th>
<th>Rationale for Assessment / Existing Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sex</strong> (male, female, trans-gender / gender reassignment)</td>
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<tr>
<td><strong>Race / Ethnic communities /groups</strong></td>
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<tr>
<td><strong>Disability</strong> - Learning disability, physical impairment, sensory impairment, mental health conditions and some long term health conditions.</td>
<td></td>
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<tr>
<td><strong>Religion / other beliefs</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Marriage and Civil partnership</strong></td>
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<tr>
<td><strong>Pregnancy and maternity</strong></td>
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<td></td>
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<tr>
<td><strong>Sexual Orientation,</strong> Bisexual, Gay, heterosexual, Lesbian</td>
<td></td>
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</tbody>
</table>

You will need to continue to a full Equality Impact Assessment if the following have been highlighted:
- You have ticked “Yes” in any column above and
- No consultation or evidence of there being consultation- this *excludes* any policies which have been identified as not requiring consultation. or
- Major this relates to service redesign or development

8. Please indicate if a full equality analysis is recommended.  
<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

9. If you are **not** recommending a Full Impact assessment please explain why.

No areas indicated
Keep one copy and send a copy to the Human Rights, Equality and Inclusion Lead
c/o Royal Cornwall Hospitals NHS Trust, Human Resources Department, Knowledge Spa, Truro, Cornwall, TR1 3HD

This EIA will not be uploaded to the Trust website without the signature of the Human Rights, Equality & Inclusion Lead.

A summary of the results will be published on the Trust’s web site.

Signed Chris Warren

Date 09/11/2017
# Appendix 3:

## Oral Assessment Guide for Children and Young People

<table>
<thead>
<tr>
<th>Category</th>
<th>Method of assessment</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swallow</td>
<td>Ask the child to swallow or observe the swallowing process. Ask the parent if there are any notable changes.</td>
<td>Normal. Without difficulty</td>
<td>Difficulty in swallowing</td>
<td>Unable to swallow at all. Pooling, dribbling of secretions</td>
</tr>
<tr>
<td>Lips and corner of mouth</td>
<td>Observe appearance of tissue</td>
<td>Normal. Smooth, pink and moist</td>
<td>Dry, cracked or swollen</td>
<td>Ulcerated or bleeding</td>
</tr>
<tr>
<td>Tongue</td>
<td>Observe the appearance of the tongue using a pen-torch to illuminate the oral cavity</td>
<td>Normal. Firm without fissures (cracking or splitting) or prominent papilla, pink and moist</td>
<td>Coated or loss of papillae with a shiny appearance with or without redness and/or oral Candida</td>
<td>Ulcerated, sloughing or cracked</td>
</tr>
<tr>
<td>Saliva</td>
<td>Observe consistency and quality of saliva</td>
<td>Normal. Thin and watery</td>
<td>Excess amount of saliva, drooling</td>
<td>Thick, ropy or absent</td>
</tr>
<tr>
<td>Mucous membrane</td>
<td>Observe the appearance of tissue using a pen-torch to illuminate the oral cavity</td>
<td>Normal. Pink and moist</td>
<td>Reddened or coated without ulceration and/or oral Candida</td>
<td>Ulceration and sloughing, with or without bleeding</td>
</tr>
<tr>
<td>Gingiva</td>
<td>Observe the appearance of tissue using a pen-torch to illuminate the oral cavity</td>
<td>Normal. Pink or coral with a stippled (dotted) surface. Gum margins tight and well defined, no swelling.</td>
<td>Oedematous with or without redness, smooth</td>
<td>Spontaneous bleeding</td>
</tr>
<tr>
<td>Teeth (If no teeth score 1)</td>
<td>Observe the appearance of teeth using a pen-torch to illuminate the oral cavity</td>
<td>Normal. Clean and no debris</td>
<td>Plaque or debris in localised areas</td>
<td>Plaque or debris generalised along gum line</td>
</tr>
<tr>
<td>Voice</td>
<td>Talk and listen to the child. Ask the parent if there are any notable changes</td>
<td>Normal tone and quality when talking or crying</td>
<td>Deeper or raspy</td>
<td>Difficult to talk, cry or not talking at all</td>
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</table>