Oral Mucositis Assessment and Oral Care

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Speaker Disclosure Statement
The speaker has no industry relationships to disclose.
No off-label use will be discussed.

Objectives
Discuss identification and utilization of an evidence-based oral assessment tool for adult and pediatric oncology patients in inpatient and ambulatory care settings.
Identify evidence-based interventions to promote oral health and minimize the risk of oral mucositis development for all oncology patients.
Participate in an interactive discussion on assessment and oral care for oncology patients in all settings.

The Iowa Model of Evidence Based Practice to Promote Quality Care

Project Triggers

Problem Focused Triggers
1. Risk Management Data
2. Process Improvement Data
3. Internal/External Benchmarking Data
4. Financial Data
5. Identification of Clinical Problem

Knowledge Focused Triggers
1. New Research or Other Literature
2. National Agencies or Organizational Standards & Guidelines
3. Philosophies of Care
4. Questions from Institutional Standards Committee

Consider Other Triggers
Is this Topic a Priority for the Organization?
Yes
No

Form a Team

Yes

Institute the Change in Practice

Yes

Is There a Sufficient Research Base?

Yes

Monitor and Analyze Structure, Process, and Outcome Data

Yes

Pilot the Change in Practice

1. Select Outcomes to be Achieved
2. Collect Baseline Data
3. Design Evidence-Based Practice (EBP) Guideline(s)
4. Implement EBP on Pilot Units
5. Evaluate Process & Outcomes
6. Modify the Practice Guideline

The Iowa Model of Evidence-Based Practice to Promote Quality Care

Evidence-Based Practice Framework

Problem Focused Triggers

Knowledge Focused Triggers

Project Triggers

Research committee received requests in June 2005 for project support related to oral health problems with assessment of oral mucositis.

Adult leukemia and bone marrow transplant unit

Adult inpatient oncology unit
Purpose: Oral Assessment

Implement an evidence-based oral mucositis assessment for oncology patients to improve identification and documentation of mucosal changes and early intervention for patients who may develop mucositis.

The Iowa Model of Evidence Based Practice to Promote Quality Care

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Knowledge Focused Triggers
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Consider Other Triggers

Is this Topic a Priority for the Organization?
Form a Team

Team
Carryn Anderson, MD
Sharon Baumler, MSN, RN, CORLN, OCN
Deb Bruene, MA, RN, CPHON
Laura Cullen, MA, RN, FAN
Cindy Dawson, MSN, RN, CORLN
Rhonda Evans, BSN, RN, OCN
Michele Farrington, BSN, RN, CPHON
Peggy Folkman, BSN, RN
Roger Gingrich, MD, PhD
John Hellstein, DDS
Kelly Hochstetler, BSN, RN
Sheryl Long, MA, RN, CORLN
Robert Schmidt, DDS
Brandon Veld, MA, CCC-SLP
Jane Utech, BSN, RN, OCN
Sheryl Lang, MA, RN, CPNP, CNA-BC
Robert Schneider, DDS
Helen Stegall, BSN, RN, CORLN
Jane Utech, BSN, RN, OCN
Brandon Veld, MA, CCC-SLP

Organizational Priority
Both requests were combined into one project submitted to the Clinical Administrative Council (a council of nurse leaders in the organization) for approval.

The Iowa Model (continued)

Evidence Based Practice to Promote Quality Care

Assemble Relevant Research & Related Literature
Critique & Synthesize Research for Use in Practice
Pilot the Change in Practice
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Base Practice on Other Types of Evidence
1. Case Reports
2. Expert Opinion
3. Scientific Principles
4. Theory

Conduct Research

Yes No
Literature Search

Inpatient and Ambulatory Care patients – What is the same?

- Adult and Pediatric patients – What is different?

What is the same?

Inpatient and Ambulatory Care patients – What is different?

Health Science librarian

Is There a Sufficient Research Base?

- Assemble Relevant Research & Related Literature
- Critique & Synthesize Research for Use in Practice
- Pilot the Change in Practice

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- Case Reports
- Expert Opinion
- Scientific Principles
- Theory

Conduct Research

Yes No

The Iowa Model

Synthesis of Evidence (cont.)

Standardized oral health assessment is the first step in a comprehensive program with prevention and treatment (Eilers, 2004; Eilers, et al., 2004; Jaroneski, 2006; Quinn, et al., 2008)

40% of oncology patients develop oral mucositis resulting from both chemotherapy & radiation therapy (Avritscher, et al., 2006; Brown & Wingard, 2004)

70-100% of head and neck cancer patients will experience oral mucositis (Elting, et al., 2007; Murphy, 2007)

Oral mucositis is problematic and results in: delayed treatments, reduced treatment dosages, reduced nutrition, dehydration, infections, xerostomia, pain, and increased healthcare costs (Brown & Wingard, 2004; Sonis, et al., 2004)

Patients report that oral mucositis is the most distressing side effect from cancer treatment (Jaroneski, 2006)

Oral mucositis potentially increases the risk of a local and/or systemic infection (Eilers, 2004; van der Velden, et al., 2009)

Oral mucositis costs $1,700-$12,600/patient (or higher) depending on the severity (Elting, et al., 2007; Jones, et al., 2008; Nonsee, et al., 2008)

Choosing a Tool

4 tools reviewed:
- WHO tool (Stokman, et al., 2006; Quinn, et al., 2007)
- Beck (Beck, et al., 2007)
- OAG (Eilers, 2004; Eilers & Epstein, 2004; Eilers, et al., 1988)
- NCI (Cella, et al., 2003)

Evaluation criteria included: repeatability of reassessment; ease of scoring; sensitivity to changes; evidence-based; feasibility; reliability and validity; and includes objective and subjective manifestations
Tool Selection

Oral Assessment Guide (OAG)

- Best reliability and validity
- Widely used in clinical practice
- Feasible
- Sensitive to changes

Components of the Oral Assessment Guide include: voice, swallow, lips, tongue, saliva, mucous membrane, gingiva, and teeth or dentures (Eilers, 2004; Eilers, et al., 1988)

Adapted Oral Assessment Guide

ORAL ASSESSMENT: ONCOLOGY
University of Iowa Hospitals and Clinics
Department of Nursing Services and Patient Care

<table>
<thead>
<tr>
<th>Category</th>
<th>Voice/Cry</th>
<th>Swallow</th>
<th>Lips</th>
<th>Tongue</th>
<th>Saliva</th>
<th>Mucous Membrane</th>
<th>Gingiva</th>
<th>Teeth</th>
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</thead>
<tbody>
<tr>
<td>Tools for Assessment</td>
<td>Auditory Observation</td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
<td>Observation</td>
</tr>
<tr>
<td>Methods of Measurement</td>
<td>Converse with patient</td>
<td>Ask patient to swallow</td>
<td>Observe appearance of tissue</td>
<td>Visually assess tongue and floor of mouth for secretions</td>
<td>Observe tissue appearance of oral cavity</td>
<td>Visually assess gingiva/tissue of the upper and lower jaws that surrounds the base of the teeth (gums)</td>
<td>Observe appearance of teeth or denture bearing area</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>Normal or Unable to assess</td>
<td>Smooth/pink/moist</td>
<td>Pink/moist</td>
<td>Normal</td>
<td>Pink/firm</td>
<td>Clean/no debris or Not applicable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>Deeper or raspy</td>
<td>Pain/hard to swallow</td>
<td>Dry or cracked</td>
<td>Redness; Shiny; Coated; Patches; or Swollen</td>
<td>Thick; Ropy; or Excessive</td>
<td>Red; Coated; or Patches</td>
<td>Edema with or without redness</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>Problem talking/pain</td>
<td>Unable/severe pain</td>
<td>Ulcers or bleeding</td>
<td>Blistered/cracked or Swollen/serrated</td>
<td>Absent</td>
<td>Ulcers with or without bleeding</td>
<td>Bleeding</td>
</tr>
</tbody>
</table>

Assemble Relevant Research & Related Literature
- Critique & Synthesize Research for Use in Practice

Pilot the Change in Practice
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Base Practice on Other Types of Evidence
1. Case Reports
2. Expert Opinion
3. Scientific Principles
4. Theory

Conduct Research
- Yes
- No

Pilot (cont.)

- Adult Leukemia and Bone Marrow Transplant

Results (n=23):
- 87% had an abnormal assessment
- 65% had a change in oral mucositis (improved or deteriorating)
- Abnormal findings crossed all variables within the scale (e.g., mucous membrane-83%; tongue-67%; saliva-50%; lips-42%; etc.)

September 2006

Pilot (cont.)

- Policy
- Paper Form
- Education
- In-Services
- Unit Reference Binder
- Policy
- Research articles
- Educational material (PowerPoint Presentation)

Frequency of Assessment

Inpatient Units

- Initial assessment admission
- Ongoing assessment
  - Completed by RN/LPN within 24 hours of admission
  - AT LEAST twice a day and as needed

The Iowa Model (continued)
Ambulatory Care – Oncology patients will be screened for problems with the oral mucosa by a nursing assistant or medical assistant.

Knowledge Assessment: Pilot Unit

<table>
<thead>
<tr>
<th>Score</th>
<th>Number</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>4.0</td>
<td>10</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>3.0</td>
<td>10</td>
<td>Agree</td>
</tr>
<tr>
<td>2.0</td>
<td>10</td>
<td>Neither Agree nor Disagree</td>
</tr>
<tr>
<td>1.0</td>
<td>10</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

Response Rate: 34.8% (n=8/23) May 2007

Institute the Change in Practice

- Environment
- Staff
- Cost
- Patient and Family

Disseminate Results

- Project Integration
- Policy & Staff Education Development
- Informatics
- Professional Nursing Practice
- Staff Education Committee
- Professional Nursing Practice Committee
- Committee Intranet Site

Policy & Staff Education Development

- Policy
- Approved by the Professional Nursing Practice Committee (Sept. 2007)
- Staff Education Committee
- Approved by the Staff Education Committee (Sept. 2007)

Informatics

- Updated documentation systems (Inpatient units, ICUs, and Ambulatory areas)
- New electronic documentation system (May 2009)

The Iowa Model (continued)
Implementation

October 2007 – Site visit by June Eilers, PhD, APRN-BC – PowerPoint™ presentation on hospital computer education system – Live in-services – Creative prompt – Team logo

Dissemination

Evaluation of Assessment Integration

Oral Presentations – Internal – External

Poster Presentations – Internal – External

Publication

Ongoing Evaluation: Inpatient Units

Evaluation of Assessment Integration

Oral assessments of oral mucositis in adult and pediatric patients

- 71% of oral mucositis assessments had no assessment
- 97% developed oral mucositis
- 100% of adults and pediatric MWT patients
- 87% of adult and pediatric inpatients
- Completed oral mucositis assessments:

July 2008

The Iowa Model (continued)

The Iowa Model (continued)

Dissemination

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The Iowa Model (continued)

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July 2008
Oral mucositis is a frequent complication of cancer treatment. Evidence-based oral health assessment is the first step in a comprehensive program with prevention and treatment.

**Purpose: Oral Health**

Promote oral health and minimize the risk of developing oral mucositis for oncology patients in the inpatient and ambulatory care settings.

**Synthesis of Evidence**

Effective strategies are available to prevent and treat oral mucositis (MasCC; ONS; Worthington et al., 2007) and oral mucositis (MasCC; ONS; Worthington et al., 2007).

- Cryotherapy for 5-Fluorouracil, Melphalan, and Edatrexate (Keefe et al., 2007; Mori et al., 2006; Worthington et al., 2011)
- Oral care/rinses (Brennan et al., 2010; Glenny et al., 2010; Harris et al., 2009; Hogan 2009; Hogan et al., 2010; Kinney et al., 2010; Worthington et al., 2011)

**Synthesis of Evidence (cont.)**

Clinician's knowledge of evidence-based oral care is limited (Barker et al., 2005; Binkley et al., 2004; Potting et al., 2008).

Nurse's skill with oral care needs improvement (Potting et al., 2006).

**Institute the Change in Practice**

- Monitor and analyze structure, process, and outcome data
  - Environment
  - Staff
  - Cost
  - Patient and family

**Disseminate Results**

**Continue to Evaluate Quality of Care and New Knowledge**

**Is Change Appropriate for Adoption in Practice?**

- No
- Yes

**Conclusion**

Program with prevention and treatment is the first step in a comprehensive evidence-based oral health assessment. Oral mucositis is a frequent complication.
Patient/Family Education

/ nonmarkingreturn

Evaluate patient and/or family’s current oral care practices:
- Frequency
- Products
- Brush, Floss, and/or Rinse

Discuss patient and family’s barriers to good oral health:
- Cost of Products
- Frequency
- Products
- Reasonable oral care practices
- Education Points:

Patient/Family Education (cont.)

Brushing

Brush twice daily:
- Even babies (use moist gauze until 1st tooth erupts, then use toothbrush)
- Use a pea-size amount of toothpaste (or
- Only a pea-size amount of toothpaste (or
- Soft toothbrushes every 3 months or

Rinse the toothbrush with warm water until
- Bristles are wet
- Cover toothbrush with bristles up
- Allow toothbrush to air dry between uses
- Only cap toothbrushes briefly during travel
- Covered/capped toothbrushes promote microbial growth
- Have patients keep their toothbrush out of the bathroom when hospitalized
- Patients who are unable to spit may still use
- Patients with higher risk of fungal or other infections

Rationale:
- Oral care products
- Most critical element when brushing
- Importance of good oral care
- No isolation for oral care

Education Points:

Brushing (cont.)
**Diet/Health Considerations**

- Avoid smoking
- Avoid alcohol
- Avoid sugary foods/drinks
- Avoid foods that are very spicy or sour
- Avoid foods that are too hot
- Choose soft, easy-to-chew foods

**Flossing**

- Avoid any areas with bleeding or that are sore
- Avoid areas with swelling or tenderness

**Oral Rinses**

- Avoid mouthwashes that contain alcohol
- Rinse for 15-30 seconds before spitting out the rinse

**Lip Care**

- Avoid smoking
- Avoid sugary foods/drinks
- Avoid foods that are very spicy or sour
- Choose soft, easy-to-chew foods

**Oral Care Concepts**

- Avoid any areas with bleeding or that are sore
- Avoid areas with swelling or tenderness

**Oral Rinses (cont.)**

- Avoid mouthwashes that contain alcohol
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**Algorithm: Oral Care Concepts**

- Avoid any areas with bleeding or that are sore
- Avoid areas with swelling or tenderness

**Precautions may be in place for platelet count <50,000 or WBC <1.0**

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**Avoid mouthwashes that contain alcohol**

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- Choose soft, easy-to-chew foods

**Oral Care at least BID**

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New Products/Cost Savings

Pediatric and adult soft toothbrushes – Old products rarely used and had covers

Waxed floss – Changing toothbrushes, floss, and decreasing the use of toothettes provided 4.4% savings or approximately $900 for 2009

Policy & Staff Education Development

Policy – Approved by the Professional Nursing Practice Committee (Spring 2009)

Staff Education – Approved by the Staff Education Committee (Spring 2009)

Informatics – Updated electronic documentation system (January 2010, March 2012, and June 2012)

Implementation

Policy – Powerpoint™ presentation on hospital computer education system

Live in-services – Presented by Oral Mucositis Committee

Oral Care Kits

Funding Sources – Adults
• DAISY Grant
• Volunteer Services

– Pediatrics
• Aiming for a Cure Foundation
• University of Iowa Dance Marathon

– Volunteer Services
• Daisy Gram
• Gifts

Nursing Knowledge Assessment

Developed by Oral Mucositis Committee
Disseminated through WebSurveyor
Completed by 116 nurses
Located in the University of Iowa Library

Nursing Knowledge Assessment (cont.)

Oral Assessment
BID
Soft Toothbrush Biotene
Toothpaste
Floss Daily Waxed Floss Lip Care
BID Lanolin for Lip Care
Salt and Soda Rinses

2009

4.4% savings or approximately $900 for decreasing the use of toothettes provided
Changing toothbrushes, floss, and
Waxed floss
Pediatric and adult soft toothbrushes

0%
20%
40%
60%
80%
100%

Oral
Assessment

BID
Soft Toothbrush Biotene
Toothpaste
Floss Daily Waxed Floss Lip Care
BID Lanolin for Lip Care
Salt and Soda Rinses

BID
Soft Toothbrush Biotene
Toothpaste
Floss Daily Waxed Floss Lip Care
BID Lanolin for Lip Care
Salt and Soda Rinses
Ongoing Evaluation: Inpatient Units

Questions

Conclusion

Next Steps

Manuscript publication

■ Incorporate the policy in the ICUs
■ Units
■ Oral saline and soda rinses on applicable
■ Continue to receive feedback from
■ Pharmacy regarding ordering of lanolin
■ Continue chart audits on at least a
guarterly basis to evaluate
■ Documentation compliance

Given patient discomfort and cost of oral mucositis, prevention is particularly important and must start with evidence-based oral care practices.

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