

Oral Mucositis (Pediatrics): Prevention and Management

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Question

What is the best available evidence regarding the prevention and management of oral mucositis in pediatric patients?

Clinical Bottom Line

Oral mucositis is inflammation of the oral mucosa, which presents as erythema or ulcerations in the oral cavity. Oral mucositis is a common adverse effect associated with intensive cancer therapies, including chemotherapy, radiotherapy and hematopoietic stem cell transplantation (HSCT).^{1,2} The primary complications arising from oral mucositis are pain and difficulty eating and drinking, which can have a substantial impact on a patient's quality of life.^{1,2} Furthermore, oral mucositis can increase the risk for systemic infections.^{1,2} There is substantial evidence regarding prevention and management of oral mucositis in adults, however pediatric patients present unique considerations.²

- Clinical practice guidelines developed evidence-based recommendations for prevention of oral mucositis in pediatric patients with cancer or undergoing HSCT.¹ (Level 1)
 - Severe mucositis was found to be significantly reduced with cryotherapy (51% reduction), palifermin (19% reduction), and photobiomodulation therapy (60% reduction).
 - Cryotherapy involves cooling the patient's mouth during treatment infusion using ice, cold water or frozen foods. Cryotherapy was determined by the guideline panel to not be feasible for young children (studies suggested compliance was worse in younger patients, specifically < 7 years), but was recommended for older, cooperative pediatric patients receiving treatment for cancer or undergoing HSCT. Cryotherapy was especially recommended for patients receiving short (< 1h) infusions of melphalan or 5-fluorouracil and was also recommended for other chemotherapies associated with mucositis.
 - Palifermin, a human keratinocyte growth factor, had a modest effect at reducing mucositis; however, the guideline panel reported that it has known short-term adverse effects, potential negative effects on cancer outcomes, as well as high costs and restricted availability. A strong recommendation was made against routine use of palifermin.
 - Intraoral photobiomodulation therapy in the red-light spectrum (620-750 nm) was recommended for pediatric patients undergoing HSCT and patients receiving radiotherapy for head and neck cancers.
 - Granulocyte colony-stimulating factor (GCSF) was not recommended for mucositis prevention due to absence of benefit, adverse effects and costs; however, GCSF may be used for other indications, such as shortening duration of neutropenia.
- Clinical practice guidelines were developed for the management of oral mucositis in pediatric cancer

patients. Many different interventions were investigated; however, for the majority of interventions there was limited or conflicting evidence. The only intervention for which a recommendation could be made was for chewing gum, which was found to be ineffective for mucositis prevention and was not recommended. Promising evidence was reported for photobiomodulation therapy and honey, however there was insufficient evidence for the guideline panel to make recommendations regarding these interventions. Despite absence of high-level evidence on the effectiveness of oral care, it was reported that implementation of a basic oral care protocol was very appropriate and is advised.² (Level 1)

- A systematic review investigated the effect of oral health education on the incidence and severity of oral mucositis in pediatric patients with cancer. The reviewers reported there was heterogeneity across studies, but that the implementation of oral health education strategies did reduce the incidence and severity of oral mucositis. Meta-analysis of four studies showed a significantly reduced incidence of oral mucositis (45% reduced risk) with oral health education. The reviewers concluded that the available evidence supports the benefit of oral health education; however, it is not possible to establish a standardized education protocol due to heterogeneity of studies.³ (Level 2)

Characteristics of the Evidence

This summary is based on a structured search of the literature and selected evidence-based health care databases. The evidence included in this summary is from:

- Clinical practice guidelines based on seven systematic reviews, which included randomized controlled trials (RCTs) and other study designs.¹
- Clinical practice guidelines from the Multinational Association of Supportive Care in Cancer/International Society of Oral Oncology (MASCC/ISSO), based on a systematic review including 45 studies (21 RCTs).²
- A systematic review including seven quasi-experimental studies, with sample sizes ranging from 14 to 42 participants.³

Best Practice Recommendations

1. Oral cryotherapy is recommended for older, cooperative pediatric patients receiving short infusions of chemotherapy that are associated with oral mucositis. (Grade B)
2. Routine administration of palifermin is not recommended for oral mucositis prevention in pediatric patients. (Grade A)
3. Intraoral photobiomodulation therapy is recommended for pediatric patients undergoing HSCT and for patients receiving radiotherapy for head and neck cancers. (Grade B)
4. Implementation of a basic oral care protocol is recommended for oral mucositis prevention and management. (Grade B)
5. Oral health education is recommended for pediatric patients receiving cancer therapies (and their parents/guardians). (Grade B)

References

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For details on the method for development see Munn Z, Lockwood C, Moola S. The development and use of evidence summaries for point of care information systems: A streamlined rapid review approach. *Worldviews Evid Based Nurs.* 2015;12(3):131-8.

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