

# The Pathogenesis and Characterization of Oral Mucositis Associated With Cancer Therapy

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**Purpose/Objectives:** To describe the current knowledge about the pathogenesis of oral mucositis associated with cancer therapy and oral mucositis.

**Data Sources:** Published research and literature review articles, books, and posters of findings that have been selected for presentation at research conferences.

**Data Synthesis:** Aggressive cancer treatment yields gains in cure or sustained control but also in oral complications, including oral mucositis. Recent work suggests that oral mucositis involves a series of biologically and physiologically complex cellular and tissue interactions that vary in accordance with treatment type and characteristics.

**Conclusions:** The impact of treatment-related oral mucositis in patients is multifaceted and can significantly affect patients' experiences in terms of morbidity and treatment course. The creation of effective, targeted management strategies ultimately relies on a better understanding of the biologic processes underlying oral mucositis development coupled with systematic use of assessment tools.

**Implications for Nursing:** Incorporating current knowledge about the pathogenesis of oral mucositis with regular use of available assessment instruments can help to ensure prompt recognition of oral manifestations and facilitate better treatment strategies.

Oral mucositis is an acute, painful, and often dose-limiting toxicity experienced by the majority of patients who receive stomatotoxic chemotherapy or head and neck radiation therapy or undergo blood and marrow stem cell transplant (BMSCT). Its incidence, which varies by patient diagnosis, age, level of oral health, and type, dose, and frequency of drug administration (Pico, Avila-Garavito, & Naccache, 1998) ranges from 40% among patients receiving chemotherapy to 100% among patients undergoing head and neck therapy to fields involving the oral cavity (National Cancer Institute [NCI], 2003). The impact of oral mucositis is multifaceted and substantial, ranging from interference with activities of daily living, interruptions in therapy, and increased risk for subsequent treatment failure to systemic infections, hospitalizations, and, rarely, death. Yet, despite its high prevalence and clinical significance, the pathogenesis of oral mucositis still is not understood completely (Kostler, Hejna, Wenzel, & Zielinski, 2001), and data that fully characterize the impact of oral mucositis on clinical outcomes are surprisingly scarce (Trotti et al., 2003).

Cancer management, which increasingly involves the use of advanced therapeutics and aggressive antineoplastic regimens, has consequences that are favorable and unfavorable. Substantial improvements in tumor control are gained at the expense of dramatic and costly increases in oral complications, includ-

## Key Points . . .

- ▶ Oral mucositis affects the majority of patients with cancer who receive stomatotoxic chemotherapy or head and neck radiation therapy or undergo blood and marrow stem cell transplant. Despite its high prevalence, the pathogenesis of oral mucositis is not completely understood.
- ▶ Recent data suggest that oral mucositis involves sequential interactions among various cells and tissue types within the oral mucosa.
- ▶ Regular use of a valid assessment tool prior to and throughout treatment can facilitate the accurate characterization of the objective and subjective manifestations of oral mucositis.
- ▶ Ultimately, the development of effective management strategies depends on a better understanding of the mechanisms that underlie the development of oral mucositis.

ing pain, ulcerations, bleeding, xerostomia (dry mouth), hypogeusia and ageusia (partial or absent taste sensations, respectively), and dysphagia (Kaplow, 2001). A multicenter study of 92 patients undergoing BMSCT found that patients having any evidence of ulceration remained in the hospital approximately 3.4 days longer and had hospital charges nearly \$43,000 higher than patients without ulceration (Sonis et al., 2001). A one-point increase in oral mucositis severity as measured by the Oral Mucositis Assessment Scale (OMAS) was associated with a \$25,000 increase in hospital charges. Other data suggest that the average cost associated with grade 3 or 4 mucositis is \$4,500, compared to \$913 for grade 1 or 2 (Smith, 2001).

Although oral mucositis clearly affects patients' experiences as well as treatment course, the paucity of outcomes data supports the viewpoint that this toxicity is an inevitable rather than a preventable complication (Trotti et al., 2003). The development of effective management strategies ultimately relies on a better understanding of the mechanisms that

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