

# Oral Cryotherapy

## Prevention of oral mucositis and pain among patients with colorectal cancer undergoing chemotherapy

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**BACKGROUND:** Evidence remains mixed on the benefits of oral cryotherapy in the prevention of oral mucositis and pain associated with fluorouracil-based chemotherapy.

**OBJECTIVES:** The intent of this article is to evaluate the effect of oral cryotherapy on the prevention of oral mucositis and pain among patients with colorectal cancer undergoing fluorouracil-based chemotherapy.

**METHODS:** Using an experimental study design, the authors randomly assigned 80 patients to either the intervention ( $n = 40$ ) or usual care group ( $n = 40$ ). Intervention group participants received oral cryotherapy in the form of ice chips held in their mouths during chemotherapy infusion. Both groups used sodium bicarbonate mouthwash postchemotherapy until the next cycle.

**FINDINGS:** In the usual care group, most participants reported grade 2 (moderate to life-threatening) or greater mucositis. Pain associated with mucositis was lower using oral cryotherapy, with the majority of participants in the intervention group reporting no pain.

### KEYWORDS

chemotherapy; oral cryotherapy; mucositis; pain; cancer; oral care; ice chips

### DIGITAL OBJECT IDENTIFIER

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**CHEMOTHERAPY HAS SIGNIFICANTLY IMPROVED OVERALL SURVIVAL RATES** for patients with colorectal cancer, but oral mucositis remains one of the most common side effects (Alvariño-Martín & Sarrión-Pérez, 2014). Oral mucositis, which is characterized by inflammatory and ulcerative reactions in the oral cavity, often results from the cytotoxic effects of chemotherapy on the epithelial cells of the oral mucosa (Wang et al., 2015). Patients with oral mucositis experience varying degrees of pain and changes in function, including difficulty speaking and swallowing (Abdel-Qader, 2014; Eilers, Harris, Henry, & Johnson, 2014). Complications arising from mucositis can place immunocompromised patients at increased risk for septicemia; mucositis also been associated with an increased length of hospital stay and delays in cancer treatment (Alvariño-Martín & Sarrión-Pérez, 2014).

Addressing oral mucositis and pain associated with its adverse effects is important not only because it can be debilitating in and of itself and affect patient quality of life, but also because severe cases of mucositis often are tied to chemotherapy dose reductions and delays in treatment. Therefore, prevention of oral mucositis can help patients adhere to optimal chemotherapy dosages and reap the full benefits of therapy with minimal discomfort.

The Multinational Association of Supportive Care in Cancer and International Society of Oral Oncology (MASCC/ISOO) mucositis guidelines were developed to facilitate the evidence-based management of mucositis (Lalla et al., 2014). The management of oral mucositis is mainly based on supportive therapies, such as oral hygiene, application of mouthwash, and consumption of adequate liquids (Worthington et al., 2011). Sodium bicarbonate mouthwashes offer deodorizing and buffering properties. They can effectively neutralize the production of acid in the mouth and also can act as an antiseptic to help prevent infections from occurring (Majdaeen, Babaei, & Rahimi, 2015). Oral cryotherapy, or the use of ice chips, is another method that is gaining popularity for the prevention and management of oral mucositis. The MASCC/ISOO mucositis guidelines support the use of cryotherapy for the prevention of oral mucositis in patients receiving bolus dosing of 5-fluorouracil (Lalla et al., 2014), and ice chips are a readily applicable and cost-effective prophylaxis (Wang et al., 2015). Cryotherapy has been demonstrated to be safe, with very low rates of minor adverse effects, such as headaches, chills, numbness or taste disturbance, and tooth pain (Spivakovsky, 2016). Ice chips have been found to significantly minimize the incidence and severity of oral mucositis and decrease secondary oral mucositis complications, such as pain (Abdel-Qader, 2014). However,