

# Appraising the Evidence for Avoiding Lotions or Topical Agents Prior to Radiation Therapy

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This project aimed to determine whether avoiding the use of lotions or topical agents for four hours prior to radiation therapy is supported by evidence. A comprehensive literature review, interviews with clinical experts, benchmarking with international cancer centers, and consultation with professional nursing organizations were conducted. Results showed limited evidence as well as variation in practice.

Lotion and topical agents often are used by patients receiving radiation therapy to decrease the discomfort of skin reactions, prevent infection, and maintain personal hygiene. The traditional belief has been that the presence of lotions or topical agents in the treatment field can increase the risk for and severity of skin reactions (e.g., erythema, desquamation) by inducing a bolus effect (or increased surface dose) of radiation because of an increase in skin thickness (Aistars, 2006; Burch & Parker, 1997; McQuestion, 2006).

Skin reactions are a general side effect of radiation and can range from erythema to dry desquamation to moist desquamation (see Figure 1). Skin reactions can cause skin breakdown; increase risk for infection, discomfort, pain, and pruritus; and reduce quality of life (Pignol et al., 2008; Theberge, Harel, & Dagnault, 2009). Moderate to severe skin breakdown may necessitate an interruption in the treatment course to allow the skin to heal, prevent infection, and increase comfort. Interruptions can last from days to weeks depending on the severity of the reaction and can result in the undesirable effect of allowing malignant cell repair and repopulation while skin cells are healing.

Many patients express concern and anxiety about how to care for their skin during radiation therapy. If patients forget to avoid lotion or deodorant prior to their treatment, they may become fearful that the radiation therapy will not be effective. In addition, patients may miss opportunities to properly moisturize their skin before or

after treatment to help promote comfort and decrease desquamation depending on the time of the therapy appointment. For example, patients receiving morning treatments avoid applying lotion beforehand because of the four-hour restriction. They often receive treatment and continue with their day and do not use recommended lotion until before bed or not at all.

The practice at the authors' institution prior to this project was to instruct patients to avoid application of lotions or topical agents in the treatment field for at least four hours before radiation therapy. The institution used the time frame based on historical practice, physician preference, and the National Cancer Institute's (NCI's) *Radiation Therapy and You* (2007). This project aimed to determine whether the rationale for avoiding the use of lotions or topical agents for four hours prior to radiation therapy is supported by evidence.

## Methods

A comprehensive literature review was performed to determine the current standards of care related to the use of lotions or topical agents on the skin in the radiation treatment field. Interviews with clinical experts, benchmarking with international cancer centers, and

consultation with professional nursing organizations also were conducted.

## Results

A review of the literature using the search terms *radiation skin reactions, radiation dermatitis, lotions, and topical agents* in articles published from 1992–May 2009 yielded five relevant articles. In a study by Burch and Parker (1997) that used a phantom model measuring surface area dose of radiation to test 15 skin care products, no bolus effect or increased surface dose was seen with normal application of deodorants, creams, or powders. Meegan and Haycocks (1997) also found no statistically significant difference between women who maintained their usual skin care regimen (N = 64) versus women who only used warm water (N = 92) in the radiation field. As a result of the study, Meegan and Haycocks (1997) changed their practice to allow the use of skin care products prior to radiation therapy.

McQuestion (2006) and Aistars (2006) published review articles exploring the evidence behind skin care recommendations in radiation oncology. McQuestion (2006) described a lack of evidence for management of skin reactions; Aistars (2006) also found no evidence to support

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