

# Radiation Dermatitis

## A prevention protocol for patients with breast cancer

Anna S. Lucas, DNP, MSN, FNP-BC, DNC®, CWON-AP®, Mario Lacouture, MD, Julie Thompson, PhD, and Susan M. Schneider, PhD, RN, AOCN®, ACNS-BC, FAAN

**BACKGROUND:** Patients with breast cancer undergoing radiation therapy can experience dermatologic adverse events. Oncology nurses can advocate for radiation dermatitis (RD) prophylaxis to minimize dermatologic adverse events.

**OBJECTIVES:** This quality improvement project was conducted to evaluate the effect of implementing an RD prevention protocol. The objectives of this study were to (a) improve clinicians' knowledge of screening, assessment, and prevention of RD in patients with breast cancer and (b) decrease the incidence of RD by 10% at a tertiary care cancer center.

**METHODS:** Center-wide standards of care were created and implemented. A retrospective chart analysis was performed before and after protocol implementation. An education session was used to analyze protocol effectiveness.

**FINDINGS:** Surveys completed by nurses (N = 11) before and after the education session demonstrated a significant increase in overall confidence in assessing RD. Statistically significant increases were noted in using topical steroids for prophylaxis.

### KEYWORDS

prevention; radiation dermatitis; prophylaxis; pruritus; patient education

### DIGITAL OBJECT IDENTIFIER

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**DERMATOLOGIC ADVERSE EVENTS ARE COMMONLY SEEN** in individuals receiving cancer treatment. An estimated 50% of patients with cancer will be treated with radiation therapy and about 95% of patients who undergo radiation therapy experience radiation dermatitis (RD) (Brown, & Rzucidlo, 2011; Gosselin, Schneider, Plambeck, & Rowe, 2010; Hickok et al., 2005; Hymes, Strom, & Fife, 2006; McQuestion, 2011; Ryan, 2012; Tyldesley et al., 2011). In addition, RD incidence is higher in patients being treated for breast, head and neck, and lung cancers (Wolf & Ling, 2018). Lacouture et al. (2011) reported that patients who experience dermatologic adverse events often require a decrease in dosage by about 36% and cessation of therapy by 72%, respectively.

Acute RD lasts about three months after initial treatment; however, tissue injury ensues hours to weeks after treatment. Clinical presentation of moderate to severe RD occurs in 85%–95% of patients with breast cancer (Hymes et al., 2006; Spalek, 2016).

Radiation therapy may cause skin sensitization, skin integrity alterations, and inflammatory-mediated responses. Patients may experience an onset of an edematous response, skin breakdown, erythema, and discoloration one to four weeks after treatment. The microvasculature is particularly vulnerable to thrombus formation, increasing the likelihood for wound development in the radiation therapy field. Epidermal loss reaches severity most often one or two weeks after the final radiation therapy treatment. One of the primary skin reactions after radiation therapy is faint erythema (Bray, Simmons, Wolfson, & Nouri, 2016). In addition, patients can experience desquamation (dry and moist), skin hemorrhage, edema, and skin breakdown, which can lead to local and systemic infections. Radiation therapy skin toxicities have cumulative effects that negatively impact DNA repair (Bray et al., 2016). Patients who are on combination therapies, such as epidermal growth factor inhibitors and radiation therapy, develop higher grade RD (Burtness et al., 2009; Lacouture et al., 2011); therefore, heightened awareness is required to tailor patient-specific assessments for early detection of skin toxicities related to radiation therapy.

Pruritus with discomfort is a commonly underassessed, misdiagnosed, and inadequately managed dermatologic adverse event. Pruritus is documented to have negative impact on quality of life (QOL) and can lead to dose reductions of cancer treatment (Erturk, Arican, Omurlu, & Sut, 2012;