

# Radiodermatitis

## Clinical summary of the ONS Guidelines™ for cancer treatment–related radiodermatitis

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Approximately 50%–70% of patients with cancer will receive radiation therapy. Radiodermatitis is one of the most common side effects of radiation therapy, with as many as 95% of patients experiencing some degree of skin change. Radiodermatitis can cause pain, itching, and burning and potentially has a significant impact on a patient's quality of life. If radiodermatitis becomes severe, it can cause treatment interruption. The prevalence of radiodermatitis coupled with the effect this side effect can have on quality of life prompts the need for evidence-based recommendations for management.

**THIS DOCUMENT ACTS AS THE CLINICAL SUMMARY** component of the Oncology Nursing Society (ONS) Guidelines™ for cancer treatment–related radiodermatitis (Gosselin et al., 2020) and the systematic review for the synthesis of evidence on the topic (Ginex et al., 2020). The ONS Guidelines are based on a rigorous systematic review of randomized clinical trials designed to establish the evidence-based efficacy of interventions to manage radiodermatitis. The GRADE (Grading of Recommendations Assessment, Development and Evaluation) approach was used to assess the certainty of the evidence and make the radiodermatitis recommendations presented in this clinical summary (Guyatt et al., 2011).

### How the Guideline Was Developed

This guideline was developed by a panel of healthcare providers, a methods expert, and patient representation. The panel prioritized clinical questions related to minimizing and treating radiodermatitis and patient-important outcomes identified as critical for decision making.

### Why the Guideline Matters

Approximately 50%–70% of patients with cancer receive radiation therapy as part of their cancer treatment (American Cancer Society, 2020; Ballas et al., 2006; Wei et al., 2019). Radiation therapy can lead to both acute and late side effects. Radiodermatitis (sometimes referred to as radiation-induced skin reactions, or radiation dermatitis) is one of the most reported side effects of radiation therapy and can affect as many as 95% of patients (Gewandter et al., 2013; Gosselin et al., 2010). Radiodermatitis can have minimal to a significant effect on a patient's quality of life and may also have associated out-of-pocket costs (Schnur et al., 2012).

The ONS Guidelines panel recognized that there is great variability in practice regarding topical interventions for the minimization and treatment of radiodermatitis. The panel decided on questions that they viewed as important to patients and clinicians at this time.

### Clinical Practice Recommendations

#### Assessment and Standard Skin Care

Several grading and assessment tools are used to document skin changes during radiation therapy. Two common tools are the Radiation Therapy Oncology Group grading system (Cox et al., 1995) and the Common

#### KEYWORDS

radiodermatitis; radiation therapy; guidelines; symptom management

Terminology Criteria for Adverse Events (National Cancer Institute, 2017). Both are used in clinical settings, and consistent use of a validated tool is important to accurately document and intervene when skin changes are noted.

Standard skin care for patients receiving radiation therapy includes washing with mild soap and water, gentle patting dry of the area, and using a hydrating lotion of the patient's or physician's choice. Patients should also be taught to avoid scratching the area or any other activity that would cause irritation, such as use of hot tubs and sun exposure. A summary of the recommendations are included in Table 1.

### Interventions to Minimize or Treat Radiodermatitis

The ONS Guidelines panel recognized that patients and clinicians had questions about whether it was safe for patients to use deodorant/antiperspirant during treatment. The ONS Guidelines panel reviewed the evidence for using deodorant or antiperspirant and suggested patients can make this decision based on their personal choice. Wearing deodorant or antiperspirant or not is unlikely to affect radiodermatitis, so patients can follow their normal routine. Patient education and practice policies can support the option of patients to make this choice.

Semipermeable dressings have been studied to minimize the development of radiodermatitis, and the ONS Guidelines panel suggests including these dressings in addition to standard skin care. Implementation of this recommendation should include assessing financial burden and the difficulty of applying these dressings. If cost or complexity of dressing application will reduce use, standard washing/skincare regimens should be encouraged. Some of the dressings help wick away moisture from the skin. Patient education should involve a discussion to clean the skin thoroughly after removing a dressing and before applying another.

Topical steroids have been studied to both minimize the development of radiodermatitis and to treat symptoms such as pain or itching. The ONS Guidelines panel reviewed the evidence and suggests that topical steroids be used in addition to standard washing/skin care. The panel noted that steroids should only be applied to intact skin; therefore, care should be taken in patients with moist desquamation or higher grades of radiodermatitis. Studies included both over-the-counter and prescription steroid creams and found that either are acceptable.

The ONS Guidelines panel recognized that silver sulfadiazine is frequently used for patients who have developed moist desquamation from radiation therapy. Patients who develop moist desquamation and use silver sulfadiazine should be taught to gently clean off as much silver sulfadiazine as possible before applying more, and that the product should be removed prior to treatment.

### Interventions Not Recommended

There are a number of specialty creams, lotions, and ointments available that are marketed to use during radiation therapy. The

**“Radiodermatitis is one of the most reported side effects of radiation therapy.”**

ONS Guidelines panel reviewed the available research and recommended standard washing and skin care rather than adding a specialty cream to standard skin care. These specialty creams are often expensive and did not have clear benefit for patients any more than standard skin care. General moisturizing cream is part of standard skin care and should be included during radiation therapy.

Several interventions have been studied for radiodermatitis, but the evidence available is limited. Topical emu oil and topical calendula were not found to be more effective than standard skin care, and the ONS Guidelines panel suggested against using these agents.

### Knowledge Gap

Aloe vera has been studied for the management of radiodermatitis with mixed results. Many different combinations and formulations of aloe vera have been studied. The ONS Guidelines panel noted the challenge of different formulations and combinations of ingredients and recommended aloe vera and aloe vera formulations only in the context of a clinical trial. Oral curcumin has also been studied for the management of radiodermatitis, but evidence was lacking, and the ONS Guidelines panel recommended oral curcumin only in the context of a clinical trial.

### Implications for Nursing

All patients who receive radiation therapy are at risk for skin changes, and the severity can vary based on patient and treatment-related factors. Nurses are often the first line of contact for patients during radiation therapy and are in an ideal position to guide evidence-based recommendations for interventions to minimize or treat radiodermatitis. Clinicians should review their practice to include what works and to eliminate practice that is not evidence-based.

The ONS Guidelines panel recognized that, despite the volume of research on this side effect, clinicians remain uncertain on best practice, and great variability remains in how skin care is managed during radiation therapy (Lucas et al., 2018). The panel made recommendations based on the evidence that is currently available. For example, silver sulfadiazine is frequently used in the United States for the treatment of moist desquamation but

research is lacking, and additional research is needed to identify evidence-based interventions for patients who develop moist desquamation. Future research should identify gaps based on rigorous systematic reviews and address relevant underlying biologic mechanisms while considering patient burden in cost and comfort (Chan, 2019).

## Conclusion

Radiodermatitis is a common side effect of radiation therapy that has the potential to lead to complications, such as pain, discomfort, treatment delays, and diminished quality of life.

The ONS Guidelines summarized here provide clinicians with evidence-based interventions to minimize and treat radiodermatitis. Healthcare provider education is important to establish evidence-based care routines, including education, assessment and early intervention, and nurses are in a key position to lead this change.

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**TABLE 1.**  
SUMMARY OF RECOMMENDATIONS: ONS GUIDELINES™ FOR RADIODERMATITIS  
IN PATIENTS WITH CANCER

RECOMMENDATION	STRENGTH OF RECOMMENDATION	CERTAINTY OF EVIDENCE
<p><b>Recommendation 1:</b> Among individuals receiving radiation therapy to the truncal/chest region, the ONS Guidelines panel suggests either deodorant/antiperspirant use plus standard washing/skincare regimen or standard washing/skincare regimen alone.</p> <p><b>Remarks:</b> This decision will be driven by the values and preferences of the patient. Education should include that antiperspirants/deodorant do not seem to cause harm, sweating is decreased, and the risk of grade 2 or 3 radiodermatitis is not increased.</p>	Conditional for either	Very low
<p><b>Recommendation 2:</b> Among individuals receiving radiation therapy for cancer, the ONS Guidelines panel recommends aloe vera and aloe vera formulations only in the context of a clinical trial.</p>	No recommendation; knowledge gap	–
<p><b>Recommendation 3:</b> Among individuals receiving radiation therapy for cancer, the ONS Guidelines panel suggests against emu oil in addition to standard washing/skincare regimen.</p>	Conditional	Very low
<p><b>Recommendation 4:</b> Among individuals receiving radiation therapy for cancer, the ONS Guidelines panel recommends oral curcumin only in the context of a clinical trial.</p>	No recommendation; knowledge gap	–
<p><b>Recommendation 5:</b> Among individuals with cancer receiving radiation therapy who have not yet presented with symptoms of radiodermatitis, the ONS Guidelines panel recommends standard washing and skincare regimen rather than topical nonsteroidal interventions to minimize or treat radiodermatitis.</p> <p><b>Remarks:</b> The evidence for this recommendation evaluated specialty topical interventions. General emollient creams and lotions are part of a standard washing and skincare regimen.</p>	Strong	Moderate
<p><b>Recommendation 6:</b> Among individuals receiving radiation therapy for cancer, the ONS Guidelines panel suggests against calendula in addition to a standard washing/skincare regimen to minimize the development of radiodermatitis.</p>	Conditional	Low
<p><b>Recommendation 7:</b> Among individuals receiving radiation therapy, the ONS Guidelines panel suggests semipermeable dressings plus standard washing/skincare regimen rather than standard washing/skincare regimen alone to minimize the development of radiodermatitis.</p>	Conditional	Low
<p><b>Recommendation 8a (minimize development):</b> Among individuals with cancer receiving radiation therapy, the ONS Guidelines panel suggests topical steroids plus standard washing/skincare regimen rather than standard washing/skincare regimen alone for the minimization of radiodermatitis.</p>	Conditional	Low
<p><b>Recommendation 8b (treatment of symptoms):</b> Among individuals with radiodermatitis symptoms (e.g., pain, itching), the ONS Guidelines panel suggests the addition of topical steroids to intact skin plus standard washing/skincare regimen rather than standard washing/skincare regimen alone.</p> <p><b>Remarks:</b> Studies reported on topical steroid creams, both prescription and over-the-counter. If cost is a concern, the over-the-counter option is feasible. If coverage or availability are a concern, then available steroid cream is acceptable.</p>	Conditional	Low

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**IMPLICATIONS FOR PRACTICE**

- Use evidence-based interventions to minimize and treat radiodermatitis in patients receiving radiation therapy for cancer.
- Explain to patients that the use of deodorant or antiperspirant has no effect on the development of radiodermatitis, and individual preference and values can guide the use of deodorant or antiperspirant during radiation therapy.
- Incorporate these evidence-based guidelines for the management of radiodermatitis into clinical care to help improve patient outcomes.

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