
Practice Guideline: Symptom Management

Part 5. Management of Long-Term Effects

Part 5 of a 5 Part Series:

*Evidence Based Recommendations for the Assessment and Management of
Radiation-Induced Skin Toxicities in Breast Cancer*

Effective Date: January 2018

Table of Contents

Preface	3
Guideline Recommendations	4
Table 1. Post Treatment Acute Reactions (1 Month Post-Treatment) Promote Cleanliness	4
Table 2. Post Treatment Acute Reactions (1 Month Post-Treatment) Treat the Wound	4
Table 3. Post Treatment Acute Reactions (1 Month Post-Treatment) Prevent Infections	4
Table 4. Post Treatment Acute Reactions (1 Month Post-Treatment) Protect from Trauma	5
Table 5. Post Treatment Acute Reactions (1 Month Post-Treatment) Promote Comfort	5
Table 6. Post Treatment Acute Reactions (1 Month Post-Treatment) Promote Skin Health and Maintain Skin Flexibility	6
Table 7. Post Treatment Acute Reactions (1 Month Post-Treatment) Protect from Environment	6
Table 8. Late Reactions Promote Cleanliness	6
Table 9. Late Reactions Treat the Wound	7
Table 10. Late Reactions Prevent Infection	7
Table 11. Late Reactions Protect from Trauma	8
Table 12. Late Reactions Promote Skin Health and Maintain Skin Flexibility	8
Table 13. Late Reactions Protect from Environment	9
Table 14. Recall Phenomenon Treat the Wound	9
Background	12
Key Evidence	13
Discussion	16
Clinical Considerations	17
Guideline Contacts and Contributors	18
Appendices	21
1. Appendix 1 – Levels of Evidence	
2. Appendix 2 – Basic Skin Care	
3. Appendix 3 – Erythema and Dry Desquamation	
4. Appendix 4 – Moist Desquamation	
5. Appendix 5 – Late Skin Effects	

Preface

At CancerCare Manitoba (CCMB) the Clinical Practice Guidelines Initiative seeks to improve patient outcomes in terms of survival and quality of life through the development, dissemination, implementation, and evaluation of guidelines for the management of common clinical scenarios encountered by cancer patients throughout the province.

This practice guideline was created through the collective efforts of a dedicated group of front-line staff, guideline methodologists, and researchers from: CCMB, University of Manitoba's Faculty of Nursing, Queen's University School of Nursing in Kingston Ontario, and the Canadian Guideline Adaptation Study Group—an initiative of the Canadian Partnership Against Cancer Guidelines Advisory Group.

The content of this guideline was in large part adapted from guidelines produced by: the British Columbia Cancer Agency (2006), the Cancer Care Ontario Program in Evidence-Based Care (2005), and the Winnipeg Regional Health Authority (WRHA, 2005).

The CCMB Department of Nursing and Radiation Oncology Program will review and update this document once every 3 years, unless emerging evidence from scientific research, or practice issues requiring urgent resolution dictate a need for a more immediate change in content.

Purpose

This document is intended as a guide to facilitate a shared, evidence-based approach to the clinical assessment and management of radiation-induced skin toxicities in adults with breast cancer.

For this purpose, it may be used by qualified and licensed healthcare practitioners involved with the care of oncology patients, which may include (but is not limited to): physicians, surgeons, nurses, radiation therapists, pharmacists, dietitians and psychosocial oncology professionals at CancerCare Manitoba's tertiary sites in Winnipeg, the Western Manitoba Cancer Centre in Brandon, and CCMB Community Oncology Program sites throughout the province.

Disclaimer

This guideline document should be viewed as an evidence-based practice tool, and as such, it does not represent an exhaustive text on the subject of radiation-induced skin toxicities. Clinicians are advised to use the guideline in their practice concomitantly with information from other evidence-based sources.

Use of this guideline in any setting should not preclude use of the practitioner's independent judgment, nor should it replace consultation with the appropriate oncology specialty when indicated (e.g. Radiation or medical oncology, nursing, pharmacy, radiation therapy, psychosocial oncology, spiritual care, nutritional therapy). Clinicians are expected to apply the recommendations within the boundaries of professional standards and scope of practice, and according to their personal level of training and experience.

It is the responsibility of the practitioner to develop an individualized disease or symptom management plan for each patient under his/her care, and ideally this should take place within the context of an inter-professional team. The needs and preferences of the patient and the family should always be reflected in the plan of care.

Management of Long-Term Effects – Guideline Recommendations

Recommendations for Post-Treatment Acute Reactions (1 Month Post-Treatment)

**Table 1. Post Treatment Acute Reactions (1 Month Post-Treatment)
Promote Cleanliness**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Short gentle low pressure showers or baths with lukewarm water (avoiding hot or cold). Mild soap may be used gently, if desired. If radiation skin reaction occurs, refer to appropriate section for hygiene practices recommended.	Reduction in severity of skin reactions with washing in breast cancer patients. ^{1,2,3-5}	<i>IIa-IV</i>	One study compares the irritant properties of soaps ⁴ , however, there is no evidence to suggest that one type of mild soap is preferable to another. Level of Evidence IIa Gentle washing involved using lukewarm water and taking care not to scrub skin. ³ Mild soap is defined as a pH-balanced, non-scented product that does not contain lanolin. ³

**Table 2. Post Treatment Acute Reactions (1 Month Post-Treatment)
Treat the Wound**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
If the patient presents with a skin reaction less than 1 month after radiation therapy follow treatment recommendations found in Part IV. Management of Acute Radiation-Induced Skin Toxicities.			

**Table 3. Post Treatment Acute Reactions (1 Month Post-Treatment)
Prevent Infections**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Good hand washing if open areas. ¹	Basic principle of infection control	<i>IV</i>	
Do not use talcum, baby powder or cornstarch in treatment areas.			
Patients should be educated to recognize the signs and symptoms of infection (i.e. redness, warmth, purulent drainage, and increased pain) and report to nurse if present.	Good basic nursing practice		

**Table 4. Post Treatment Acute Reactions (1 Month Post-Treatment)
Protect from Trauma**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Avoid tape or adhesive bandages in treatment area	Avoid trauma to skin ^{1,2}	IV	
Avoid scratching	Can result in infections ¹	IV	
Avoid wearing jewellery over treatment area for 1 month following treatment	Avoid trauma to skin - radiation reactions can occur up to 2 weeks after treatment ¹ <i>Panel consensus decision</i>	IV	Clinical experience has found that wearing of jewellery over treatment has resulted in skin reactions.
In the event of dry or moist desquamation or skin breakdown, avoid swimming in pools and lakes until 1 month after skin has healed	Chlorinated pools can cause drying and irritation of skin. Lakes and chlorinated pools expose those with skin breakdown to increased risk of infection ^{1,2,6}	IV	
If treated skin is intact, swimming in pools or lakes is permissible 1 month after treatment is completed. Remove swimsuit immediately after swimming. Rinse skin with clean water, pat dry and apply a moisturizing cream to the treated area	To reduce exposure to chlorinated water and chemicals that may have a drying effect on skin and lead to irritation ^{1,2,6}	IV	If erythema, dry desquamation or moist desquamation present, follow directions indicated in those specific sections regarding swimming.
Avoid hot tubs and saunas if skin reaction present	Hot tubs and saunas expose skin to risk of chemical and heat irritation and infection ^{1,2}	IV	
Avoid shaving (or use an electric shaver) in treatment area for 1 month post treatment	To avoid skin irritation from friction and prevent cuts ^{1,2}	IV	
Protect treatment area from temperature extremes (avoid ice packs, heating pads, hot water bottles) in treatment area	Avoid thermal injury to skin ¹	IV	

**Table 5. Post Treatment Acute Reactions (1 Month Post-Treatment)
Promote Comfort**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Oral and topical medications can be used to treat pain (as ordered by oncology doctor or nurse practitioner)			
Wear loose fitting non-binding clothing (e.g. clothing made from a soft breathable fabric, like cotton)			
Can use cool clean cloths or saline compresses 2-3x/day to intact skin for comfort to relieve areas of severe redness, burning, itching and discomfort			

**Table 6. Post Treatment Acute Reactions (1 Month Post-Treatment)
Promote Skin Health and Maintain Skin Flexibility**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
For intact skin use aqueous cream (<i>plain, non-scented, lanolin free, hydrophilic cream</i>) at least 2-3x/day for 1 month following treatment and until skin is healed (e.g. Glaxal Base® cream). After 1 month, apply moisturizing cream to intact skin after bathing or more frequently if skin appears dry. Use moisturizing cream as long as skin is intact, discontinue use if skin becomes open or breaks down	Radiation skin toxicities can continue to occur 2 weeks after radiation treatment has completed. After radiation treatment skin will be thinner and drier ^{1,2,3,7}	IV	
Avoid smoking	Interferes with healing ^{1,8}	IV	

**Table 7. Post Treatment Acute Reactions (1 Month Post-Treatment)
Protect from Environment**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Avoid tanning lamps/salons	Standard skin cancer prevention recommendations for all persons ¹ Skin after radiotherapy is thinner and more prone to trauma ^{1,7}	IV	
If one must expose treatment area to sun, without experiencing a skin reaction, use sunscreen (SPF 30 or higher). Remove sunscreen completely after sun exposure ⁹	Standard skin cancer prevention recommendations for all persons recommend SPF 30 with both UVA and UVB protection. As treated skin is more sun sensitive, recommend SPF 30 or higher to be used ^{1,2}	IV	Apply sunscreen liberally to exposed intact skin 15-30 minutes before going out in the sun and reapply 15-30 minutes after sun exposure begins. Sunscreen should also be reapplied after vigorous activity that could remove product, such as swimming, toweling, excessive sweating and rubbing ¹⁰

Recommendations for Late Reactions

**Table 8. Late Reactions
Promote Cleanliness**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Short, gentle, low pressure showers or baths with lukewarm water (avoiding hot or cold). Mild soap may be used gently, if desired.	Maintains hygiene, skin integrity and protects from trauma ^{1,2,3-5}	Ila-IV	One study compares the irritant properties of soaps ⁴ , however, there is no evidence to suggest that one type of mild soap is preferable to another. Level of Evidence Ila Gentle washing involved using lukewarm water and taking care not to scrub skin. ³ Mild soap is defined as a pH-balanced, non-scented product that does not contain lanolin. ³

**Table 9. Late Reactions
Treat the Wound**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
If skin presents with scaling, use an aqueous/hydrophilic cream (<i>plain, non-scented, lanolin free, hydrophilic cream</i>) at least 2-3x/day until skin is healed (e.g. Glaxal Base® cream). Use moisturizing cream as long as skin is intact, discontinue use if skin becomes open or breaks down	Moisturizes skin ^{9,11,12}	IV	
If patient presents with telangiectasia consider: <ul style="list-style-type: none"> Referral for Intense Pulsed Light (IPL) or Long Pulsed Dye Laser Treatment (LPDL)¹³ Referral for hyfrecator-based treatment¹ 	Decreases telangiectasias ^{13,14}	IIb	Manitoba Health does not cover the cost of these treatments. Therefore the patient may be charged. Expert opinion suggests that laser treatment is more effective than hyfrecator treatment due to the pain associated with hyfrecator treatment. Refer to Dermatology specialist at CCMB
If patient presents with severe or functionally limiting fibrosis or atrophy consider: <ul style="list-style-type: none"> Referral to plastic surgeon Referral to physiotherapy (WRHA Breast Health Centre) to address functional limitations Referral to WRHA Breast Health Centre for LPG massage and lymphedema therapy¹⁵ Pentoxifylline 400mg orally twice per day (up to 1200mg/day) plus Vitamin E 1000 IU orally daily. Rebound effects have occurred after discontinuation of therapy, therefore long-term use of at least three years is recommended^{12,16-19} Consider referral for hyperbaric oxygen therapy (HBO) - fibroncrosis^{16,17} 	Surgical release or reconstruction may be necessary LPG technique is a technique of mechanical massage that allows mobilization by folding and unfolding. ¹⁵ The WRHA Breast Health Centre offers similar treatment	IV Ib	
If patient presents with hyper- or hypopigmentation consider use of hypoallergenic makeup		IV	
If skin presents with necrosis or ulceration refer to WRHA Wound Care guideline for management recommendations			Consider referral to WRHA or CCMB wound care specialist

**Table 10. Late Reactions
Prevent Infection**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Good hand washing if open areas ¹	Basic principle of infection control	IV	
Patients should be educated to recognize the signs and symptoms of infection (redness, warmth, purulent drainage, and increased pain) and report to nurse if present	Good basic nursing practice		

**Table 11. Late Reactions
Protect from Trauma**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Avoid tape or adhesive bandages in treatment area	Avoid trauma to skin ^{1,2}	IV	
Avoid scratching	Can result in infections ¹	IV	
Avoid wearing jewellery over irritated areas	Avoid trauma to skin	IV	
In the event of dry desquamation or skin breakdown, patient are recommended to avoid swimming in pools and lakes until 1 month after skin has healed	Chlorinated pools can cause drying and irritation of skin. Lakes and chlorinated pools expose those with skin breakdown to increased risk of infection ^{1,2,6}	IV	
If treated skin is intact, swimming in pools or lakes is permissible 1 month after treatment is completed. Remove swimsuit immediately after swimming. Rinse skin with clean water, pat dry and apply a moisturizing cream to the treated area	To reduce exposure to chlorinated water and chemicals that may have a drying effect on skin and lead to irritation ^{1,2,6}	IV	If erythema, dry desquamation or moist desquamation present, follow directions indicated in those specific sections regarding swimming.
Avoid hot tubs and saunas if skin reaction present	Hot tubs and saunas expose skin to risk of chemical and heat irritation and infection ^{1,2}	IV	
Care should be taken when shaving to avoid cuts or trauma to radiation treated area. Do not shave if an open wound is present ^{1,2}	Skin after radiotherapy is thinner and more prone to trauma ⁷	IV	

**Table 12. Late Reactions
Promote Skin Health and Maintain Skin Flexibility**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
For intact skin use aqueous/hydrophilic cream (<i>plain, non-scented, lanolin free, hydrophilic cream</i>) at least 2-3x/day in the treatment area. Moisturizing cream can be applied to intact skin after bathing or more frequently if skin appears dry or scaling is present. Use moisturizing cream as long as skin is intact, discontinue use if skin becomes open or breaks down	After radiation treatment skin will be thinner and drier ^{1,2,3,7}	IV	
Avoid smoking	Interferes with healing ^{8,13}	IV	

**Table 13. Late Reactions
Protect from Environment**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Avoid tanning lamps/salons	Standard skin cancer prevention recommendations for all persons. ¹⁴ Skin after radiotherapy is thinner and more prone to trauma ^{1,7}	IV	
If exposure to the sun cannot be prevented, use sunscreen (SPF 30 or higher). Remove sunscreen completely after sun exposure ⁹	Standard skin cancer prevention recommendations for all persons recommend SPF 30 with both UVA and UVB protection. As treated skin is more sun sensitive, recommend SPF 30 or higher to be used ^{1,2,20}	IV	Apply sunscreen liberally to exposed skin 15-30 minutes before going out in the sun and reapply 15-30 minutes after sun exposure begins. Sunscreen should also be reapplied after vigorous activity that could remove product, such as swimming, towelling, excessive sweating and rubbing. ¹⁰

Recommendations Recall Phenomenon

**Table 14. Recall Phenomenon
Treat the Wound**

Recommendations	Rationale	Level of Evidence	Clinical Considerations/Comments
Continue to follow treatment recommendations found in Part IV. Management of Acute Radiation-Induced Skin Toxicities			

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Level of Evidence IV

CancerCare Manitoba

Symptom Management Recommendations

Management of Long-Term Effects

I. Background

The post-treatment skin reactions can happen immediately after completion of radiation treatment or up to several years post treatment. Recommendations for post-treatment radiation reactions in this section have been divided into acute reactions, late reactions and recall phenomenon.

Definitions

Acute Reactions	Acute reactions occur up to 1 month post treatment and can present in the form of erythema, pruritus, dry desquamation, or moist desquamation
Late Reactions	Late reactions can occur several months to years after treatment and include scaling, atrophy, telangiectasias, fibrosis, tissue necrosis or ulceration, hyperpigmentation, and hypopigmentation
Recall Phenomenon	Recall phenomenon is a skin reaction that can present very rapidly within a previously treated radiation field following the administration of chemotherapy

Clinical Questions

- What are optimal interventions for the management of acute skin reactions in adult breast cancer patients following completion of radiation therapy?
- What are optimal interventions for management of late radiation-induced skin reactions in adult breast cancer patients?
- What is the optimal management of radiation recall in adult breast cancer patients?

II. Key Evidence

Follow-up Care for Acute Reactions

Follow-up care for acute reactions following radiation treatment is similar to interventions in Part IV: Management of Acute Radiation-Induced Skin Reactions. Acute reactions typically occur less than 2 weeks post-treatment, but have been seen in patients 1 month after treatment. Presentation includes erythema, pruritus, dry desquamation and moist desquamation. Educating patients about the possibility of post-treatment reactions is important. Patients need to be aware of what these acute skin reactions are and how to manage them should they occur, to minimize distress and enhance healing. Patients treated with Intensity Modulated Radiation Therapy (IMRT) are more prone to reactions post treatment.

None of the adapted guidelines addressed follow up care. It was decided by the guideline group that patients should follow recommendations found in Part IV: Management of Acute Radiation-Induced Skin Reactions if a skin reaction occurred less than 1 month *post*-treatment.

Standard skin cancer prevention recommendations for all persons include the use of SPF 30 with both UVA and UVB protection.¹ Skin that has been exposed to radiation treatment is known to be more sensitive to sun exposure, and for this reason the panel felt that a SPF of 30 or higher should be recommended post treatment if skin is intact.²

Late Reactions

Late reactions involve both structural and functional skin changes that occur several months to years after the completion of radiation treatment.³ These changes vary in severity and may be permanent or may gradually improve over time.³ Late reactions include scaling, atrophy, telangiectasias, fibrosis, tissue necrosis or ulceration, hyperpigmentation, and hypopigmentation.^{2,4}

- Scaling is due to damage of sebaceous glands which result in skin dryness
- Atrophy occurs following epidermal regrowth resulting in a thin and fragile epidermis that thickens over time but never regains its pre-radiation condition²
- Telangiectasia can occur up to 8 years following radiation therapy. It appears as purple-red spider-like blood vessels in the skin surface, and is caused by damage to small vessels^{2,4}
- Fibrosis can appear 4-6 months after treatment. Typically the skin is hard, dense, with an uneven skin texture. Fibrosis can lead to restricted range of motion, induration, and pain²
- Tissue necrosis or ulceration is rare, but can occur up to 20 years after treatment. Tissue necrosis or ulceration often results due to inflammation and trauma to previously irradiated skin²
- Hyperpigmentation often resolves in 3 months to a year after completion of radiation but may be chronic. Increased melanin in the skin during radiation causes cells to become darker. People with darker pigmentation have more melanin and thus, more hyperpigmentation.² Destruction of melanocytes during radiation results in skin not being able to form pigment which can result in hypopigmentation. Hypopigmentation can be a permanent change that occurs following resolution of hyperpigmentation^{2,4}

These late changes produced by radiation can be functionally limiting if neuropathy, arthropathy, contraction, and necrosis are present.² Emotional distress can result due to cosmetic changes and impact self-image. Radiation treated skin will gradually thicken but may never regain its former thickness and is therefore vulnerable to trauma.²

The only clinical practice guideline to address late reactions is from BC Cancer Agency; however, it contains minimal information on specific management strategies for scaling, atrophy, telangiectasias, fibrosis, tissue necrosis or ulceration, hyperpigmentation, and hypopigmentation. Therefore a supplementary literature search was conducted with results as follows:

- Literature related to the combined use of Pentoxifylline and Vitamin E in the management of radiation-induced fibrosis is mixed. Four studies have shown the combination to be safe and effective thus supporting that it should be recommended as a treatment option.⁵⁻⁸ However, one double-blind placebo-controlled trial appeared to show no benefit in breast cancer patients with fibrosis and lymphedema.⁹ The combination of Pentoxifylline and Vitamin E tends to be well tolerated by patients and has minimal toxicity. Optimum doses for Pentoxifylline and Vitamin E need to be determined. Available data suggests that the best dosage may be 400mg of Pentoxifylline orally twice per day (up to 1200mg/day) plus Vitamin E 1000 IU orally daily.⁵ Rebound effects have occurred after discontinuation of therapy suggesting that long-term use may be more appropriate.^{3,7}
- Hyfrecator is a surgical diathermy unit which uses an electrical discharge to coagulate the dilated small blood vessels presented as telangiectasias. One small study of 15 patients found this treatment to be effective for radiation-induced telangiectasias in breast cancer patients.¹⁰ In personal communication with CCMB Oncology Dermatology, it was indicated that this treatment may be helpful, but is very painful and not nearly as effective as laser treatment.
- Intense pulsed light (IPL) and long pulsed light laser treatment (LPDL) are proven to be effective for treatment of telangiectasia. Research shows LPDL to be advantageous compared with IPL due to increased vessel clearance and less pain.¹¹

Recall Phenomenon

Unfortunately, further chemotherapy may be required if breast cancer patients experience disease recurrence or only partial response to radiation treatment.¹² Recall phenomenon is a rapidly developing skin reaction that can occur in a previously treated radiation field as a result of chemotherapy treatment.¹³ Radiation recall most often occurs with the first chemotherapy dose, but can occur with later cycles.¹⁴ This phenomenon is very rare and can vary in severity. Possible skin reactions include erythema, maculopapular eruptions, vesicle formation, and desquamation of affected areas.² Moist desquamation can lead to patient discomfort, impaired skin integrity, and infection. Certain chemotherapeutic agents have been shown to increase the risk of radiation recall including anthracyclines, taxanes, antimetabolites, nucleoside analogs, and alkylating agents.^{2,14} Literature suggests other agents responsible for episodes of radiation recall include tamoxifen, simvastatin, antimicrobials, and anti-tuberculosis drugs.¹⁴ It is unclear from the literature whether or not to re-challenge with offending or similar chemotherapy agents.

Only the BC Cancer Agency guideline discusses management of recall phenomenon. The panel agreed to accept all the recommendations for Recall Phenomenon listed within this clinical practice guideline.¹³

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III. Discussion

Despite conducting a supplementary literature search for management of long term effects, little conclusive information was found. Therefore the panel was unable to make strong recommendation for choosing any one therapy over another; these are presented below as information and options that might be considered on a case by case basis. The panel felt that overall the best practice approach is to follow the recommendations for skin health promotion outlined in Section IV, CCMB Guideline, Management of Acute Radiation-Induced Skin Toxicities.

Acute and Late Reactions

- Lymphedema management is beyond the scope of this guideline. Refer to WRHA Breast Health Center for Lymphedema therapy.
- Physiotherapy and massage therapy can be used effectively for fibrosis. LPG® technique is a technique of mechanical massage that allows mobilization by folding and unfolding.¹ The WRHA Breast Health Centre offers similar treatment; refer to WRHA Breast Health Centre for physiotherapy.
- Hyperbaric oxygen therapy (HBO) can be offered as a treatment for late radiation-induced fibronecrosis based on its ability to improve blood supply (angiogenesis) to tissues and the formation of collagen matrix.^{2,3} Treatment effectiveness for radiation fibrosis has not been established in research.^{2,3}

Recall Phenomenon

- Management of radiation recall typically follows the same management recommendations as for acute skin reaction.

References

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3. Haddad P, Kalaghchi B, Amouzegar-Hashemi F. Pentoxifylline and vitamin E combination for superficial radiation-induced fibrosis: A phase II clinical trial. *Radiother Oncol* 2005;77(3):324-6. **Level of Evidence IIb**

IV. Clinical Considerations

Follow-up Care for Acute and Late Reactions

The patient information sheet on follow-up care and late reactions should be provided by the clinic nurse or radiation therapist at a patient's last clinic visit before treatment ends (see Appendix 9).

Recall Phenomenon

Information sheet on recall phenomenon can be given to patient if patient receiving chemotherapy after radiation treatment or experiences recall phenomenon (*See Patient Education Sheets – Appendices 2 to 5*).

Guideline Contacts and Contributors

Contact

Pam Johnston, RN, MN, NP, CONC
Radiation Oncology, Pain & Symptom Management

Panel Members

Pam Johnston, RN, MN, NP, CONC <i>Radiation Oncology, Pain & Symptom Management</i>	Bob Moroz, RT <i>Radiation Therapist</i>
Cathy Coates, RN <i>CCMB Staff Nurse</i>	Michele Morton, RN <i>CCMB Staff Nurse</i>
Linda Davidson, RN <i>CCMB Staff Nurse</i>	Rebecca Pritchard, RN <i>CCMB Staff Nurse</i>
Gina Kowaski, RT <i>Clinical Resource Educator</i>	Deb Scott, RN <i>CCMB Staff Nurse</i>
Michelle Lobchuk, RN, PhD <i>Expert Methodologist</i>	Tamara Szajewski, RN <i>CCMB Staff Nurse</i>
Erin Mattson, RN <i>CCMB Staff Nurse</i>	Danica Wasney, BSc (Pharm), ACPR, BCOP <i>Clinical Pharmacist</i>

Clinical Practice Guidelines Initiative

Pamela Johnston, RN, BA <i>Senior Coordinator</i>	Jaymie Walker, MSc <i>Guidelines Analyst (2015-2016)</i>
Daile Unruh-Peters, MA <i>Implementation Facilitator</i>	Morgan Murray, MSc <i>Guidelines Analyst (2014-2015)</i>
Susan Friedenberger <i>Research Assistant</i>	Carrie O'Conaill, MPH <i>Research Assistant (2013-2014)</i>
	Sonia E Tsutsumi, BA <i>Administrative Assistant (2009 – 2011)</i>

Other Contributors

Kristi Hofer, BSc (Pharm) <i>CCMB Pharmacy</i>	Catherine Russell, BPT <i>WRHA Breast Health Centre</i>
Dr. Sarvesh Logsetty, MD, FRCS(C), FACS <i>Burn Unit, Health Sciences Centre</i>	Beth Szuck, BA, HEc, CACE <i>WRHA</i>
Angela Martens, RD <i>CCMB Patient and Family Support Services</i>	Dr. Marni Wiseman, MD, FRCPC <i>CCMB Department of Medical Oncology/Hematology</i>
Ruth Holmberg <i>CCMB Medical Librarian</i>	Steve Jones, Language Specialist <i>St. Boniface Hospital Research</i>
Kathleen Klassen, RN, MN, GNC(C), IIWCC <i>WRHA</i>	

Reviewers

Dr. Rashmi Koul, Radiation Oncologist, CancerCare Manitoba
Dr. William Hunter, Radiation Oncologist, Western Manitoba Cancer Centre
Jordana Jones, RT Nurse, Western Manitoba Cancer Centre
Tamara Wells, Clinical Nurse Specialist Palliative Care, Winnipeg Regional Health Authority
Kathleen Klassen, Acting Director of Centralized Operations, WRHA Home Care Program, Winnipeg Regional Health Authority

Approved By

Rashmi Koul, MBBS, DNB, MD, FRCPC, CCPE

Head, Department of Radiation Oncology, Medical Director, Radiation Oncology Program, CCMB

Pam Johnston, RN, MN, NP, CONC

Nurse Practitioner, Radiation Oncology, and Pain and Symptom Management, CCMB

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Margaret B. Harrison RN, PhD
Community Health and Epidemiology
Director, Queen's Joanna Briggs Collaboration
Senior Scientist Practice and Research in Nursing (PRN) Group Queen's University

Joan Van den Hoek BNSc
Practice and Research in Nursing (PRN) Group
Queen's University Kingston

Elizabeth J. Dogherty PhD
Queen's University, School of Nursing

Meg Carley BA
Data Manager, Queen's University, School of Nursing
Data Manager, Canadian Partnership Against Cancer

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V. Appendices

Appendix 1 – Levels of Evidence

Levels of Evidence	
Ia	Evidence obtained from meta-analysis of randomised controlled trials
Ib	Evidence obtained from at least one randomised controlled trial
IIa	Evidence obtained from at least one well-designed controlled study without randomisation
IIb	Evidence obtained from at least one other type of well-designed, quasi- experimental study
III	Evidence obtained from well-designed, non-experimental descriptive studies, such as comparative studies, correlation studies and case studies
IV	Evidence obtained from expert committee reports or opinions and/or clinical experience of respected authorities

British Committee for Standards in Haematology 2007 <http://www.bcshguidelines.com>

References

1. Shekelle PG, Woolf SH, Eccles M, et al. Clinical guidelines: Developing guidelines. *Brit Med J* 1999;318(7183):593

Appendix 2 – Basic Skin Care

Radiation Therapy Breast or Chestwall — Basic Skin Care



There are things you can do every day to take care of your skin during radiation.

You should start the following recommendations on the first day of your treatment and continue them until you are finished radiation and completely healed.

Promote Skin Hygiene — keep radiated skin clean

- Short, gentle, low pressure showers or baths with lukewarm Water.
- Mild soap may be used gently, if desired.
- Do not scrub the skin in the treatment area.
- Pat skin dry. Do not rub.
- Do not use a wash cloth in treatment areas.
- Deodorants and antiperspirants can be used on intact skin. Patients may continue to use deodorants and antiperspirants (includes aluminum based) if they wish. There is no evidence that skin reactions will be any worse. **Stop use if a skin reaction develops.**
- Do not freshly apply deodorant/antiperspirant on the day of your treatment until after treatment.

Promote Comfort

- Wear loose fitting non-binding clothing (e.g. soft breathable fabric like cotton; sports bra with wide band).

Prevent Infections

- Good hand washing.
- Do not use talcum, baby powder or cornstarch in treatment areas.

Protect from the Skin from Injury

- Do not use tape or bandages in treatment field.
- Do not scratch (e.g. keep your nails short).
- Do not wear jewelry over treatment area.
- Avoid using ice packs, heating pads and hot water bottles on the treatment area. You may not be able to feel extreme temperature changes in the radiated areas and you may cause an injury.
- Do not swim in lakes or pools if you have a radiation skin reaction. If the treatment area is intact, swimming in pools or lakes is permissible. After swimming immediately remove swimsuit and rinse the skin.
- Do not use hot tubs and saunas.
- Do not shave in treatment area (if necessary use an electric shaver instead).
- Do not use products containing alcohol, alpha hydroxyl acids, perfumes or other drying agents in treatment areas.
- Do not use petroleum based products.
- Do not freshly apply moisturizers within a two hour period before treatment.
- Do not use tanning lamps/salons.
- Avoid vigorous rubbing in the treatment area.

Reminder!

Do not freshly apply moisturizer within a two hour period before treatment.

Do not freshly apply deodorant/antiperspirant on the day of your treatment until after treatment.

Appendix 3 – Erythema and Dry Desquamation

Radiation Therapy Breast or Chestwall — Skin Changes/Reactions: Erythema and Dry Desquamation



Erythema — the radiated skin becomes pink to red in colour. There may also be mild swelling, burning, itching and pain. Usually occurs 2—3 weeks after starting treatment.

Dry Desquamation — dryness of the radiated skin, itching, scaling, flaking and peeling. These skin changes cause a break in the skin. Open skin can increase the risk of infection.

Continue to follow the guidelines laid out on the Radiation Therapy Breast or Chestwall — Basic Skin Care sheet that you were given. In addition:

Promote Skin Hygiene — *keep radiated skin clean*

- Continue to bath or shower if possible using recommended soaps, as tolerated.
- If you take baths, do not soak the open skin under the water. This water is dirty and can cause an infection.

Reminder!

Only use deodorants and antiperspirants on intact skin.

STOP use if you develop a skin reaction.

Do not freshly apply deodorant/antiperspirant on the day of your treatment until after treatment.

- Deodorants and antiperspirants can be used on intact skin. Patients may continue to use deodorants and/or antiperspirants if they wish. There is no evidence that skin reactions will be any worse. **Stop use if a skin reaction develops.**
- Do not freshly apply deodorant/antiperspirant on the day of your treatment until after treatment.

Itchy Skin

- Talk to your Radiation Oncology Team about hydrocortisone cream and/or an oral antihistamine to relieve itchiness.

Promote Comfort

- Medications are available to treat pain. Talk to your Radiation Oncology Team.

Prevent Infections

- Every day check for signs of infection (fever, odour, discharge, swelling or pain). Contact your Radiation Oncology Team if you have any signs of infection.

Protect the Skin from Injury

- Open skin is vulnerable to infection. Do not swim in pools or lakes. Chlorine can irritate and dry the skin. Lakes can contribute to skin infections.
- Do not freshly apply moisturizers within a two hour period before treatment.

Protect from Environment

- Continue to follow basic skin care guidelines.

Keep Your Skin Healthy

- Continue to follow basic skin care guidelines.

Important

If you notice that you have Erythema or Dry Desquamation talk to a member of your Radiation Oncology Team.

Reminder!

Do not freshly apply moisturizer within a two hour period before treatment.

Appendix 4 – Moist Desquamation

Radiation Therapy Breast or Chestwall — Skin Changes: Moist Desquamation



Moist Desquamation is when the skin peels, blisters and has clear yellow drainage. Open skin can be painful because the nerves in the skin are not protected. This can be worse in areas where the skin touches other skin. For example: in the armpit and side of chest being rubbed by the arm with movement.



If you notice that you have moist desquamation talk to a member of your Radiation Oncology Team. The area usually needs to have a dressing put on to keep it clean and prevent infection.

Continue to follow the guidelines laid out on the Radiation Therapy Breast or Chestwall — Basic Skin Care and Radiation Therapy Breast or Chestwall — Skin Changes: Erythema, Itch and Dry Desquamation sheets that you were given. In addition:

Promote Skin Hygiene — *keep radiated skin clean*

- Do not use soap on open skin.
- Do not use deodorants and antiperspirants on open skin.

Promote Comfort

- Medications are available to treat pain. Talk to your oncology doctor or nurse.
- Talk to your radiation nurse who will help you with dressings if needed.

Prevent Infections

- Every day check for signs of infection (fever, odour, discharge, swelling or pain). Contact your Radiation Oncology Team if you have any signs of infection.

Protect the Skin from Injury

- Continue to follow basic skin care guidelines.
- Open skin is vulnerable to infection. Do not swim in pools or lakes. Chlorine can irritate and dry the skin. Lakes can contribute to skin infections.

Protect from Environment

- Continue to follow basic skin care guidelines.

Keep Your Skin Healthy

- Continue to follow basic skin care guidelines.
- Do not use moisturizer on open skin.



You should check daily for infections.

Signs of infection are:

- Fever
- Odor
- Discharge
- Swelling or pain

Appendix 5 – Late Skin Effects

Caring For Yourself After Radiation



It is important to continue to follow the instructions given to you on the Radiation Therapy Breast or Chestwall — Basic Skin Care Information sheet; and any other additional sheets you may have been given (Radiation Therapy Breast or Chestwall — Skin Changes: Erythema, Itch, Dry Desquamation and/or Radiation Therapy Breast or Chestwall — Skin Changes: Moist Desquamation) until your side effects have gone away — usually within 6—8 weeks.

Skin Care

- Skin reactions (redness, itchiness, peeling and/or blistering) in the treated area may continue to increase for up to 7—10 days following the completion of your treatment. The reactions should then slowly start to improve. It may take up to 6—8 weeks before your skin is fully healed.
- Some patients have been given permanent tattoos, while others may have had marks drawn on their skin. Do not scrub off any skin marks—marks will disappear on their own.
- If your skin is peeling or blistering it is important that you follow the specific washing/cleaning instructions given to you by the nurse or therapist.
- Wait until the tenderness/redness and itchiness has gone away before resuming use of cosmetics or perfumes, and/or shaving in the treated area.
- Over time you may notice changes in the treated skin; it may appear slightly darker or tanned, or you might notice more freckles.
- The treated skin may always be more sensitive to the sun and cold. Keep treated areas well protected by covering up when outside. Use a sun block product with a SPF of at least 30; put it

on 30 minutes before going out. Re-apply at least every two hours or after swimming or sweating. It is recommended to use sunscreen on sunny days in the winter. Remember to check sunscreen bottles for best before date—old sunscreen will not protect you.

- Do not use tanning beds.

Fatigue

- Tiredness and fatigue will continue while your body heals. Your energy levels will return with time, usually within 8—12 weeks after your last day of treatment. If fatigue persists see your physician. Follow *Canada's Food Guide* for recommendations of the amount and type of foods required to meet your nutritional and physical needs.

Reminder!

You may experience fatigue for some time after the completion of treatment. Consider adjusting your life style for a few months (i.e. only return to work part-time).

Follow Up Care

After your treatment is completed, a follow-up appointment will be scheduled. At this appointment you will be provided with a personalized follow-up care plan which will outline a follow-up schedule including necessary tests and appointments, what symptoms to watch for, and a summary of the treatments you received to treat your breast cancer. A copy of this follow-up plan will be provided to your family physician or nurse practitioner.

Additional information about available cancer and post treatment programs can be found by calling the **Breast & Gyne Cancer Centre of Hope** at 204-788-8014 or 1-888-660-4866 (toll free) or in a booklet entitled *Moving Forward after Cancer Treatment* is available online at movingforwardaftercancer.ca.

Important

If you do not receive a treatment summary/follow-up care plan from your Radiation Oncology Team please contact your clinic nurse @

Late Effects

You may experience late effects from your radiation treatment. Late effects are side effects from radiation that may show up several months to years after the treatment has ended. Not everyone will have late effects, but it is important to know what to look for.

Within the treated area, the way your skin looks, feels and moves can change. It may be more severe for some people than others. These effects may be permanent or improve gradually over time. Late radiation skin changes may include:

- **Scaling** is when the skin peels and flakes. This dryness is caused by damage to the sweat/oil glands.
- **Atrophy** is when the radiated skin becomes thin and fragile. Skin may recover over time but it will never get back to the way it was before radiation.
- **Telangiectasia** is purplish-red spots on the skin surface that look like little spiders. This is caused by damage to tiny blood vessels in the skin. This can occur up to 8 years following radiation therapy.
- **Fibrosis** is when the skin feels hard, thick and uneven. This can cause tightness that limits movement of the area. Soft tissue under the skin can become hard and painful. Fibrosis can occur 4-6 months after treatment.
- An **ulcer** is an open sore that does not heal easily. An injury to the radiated area can cause the skin to become red, hot and painful. The skin may break open and cause an ulcer.
- **Hyperpigmentation** is a darkening of the skin. This often resolves in 3 months to a year after completion of radiation but may not go away. People with darker skin have more melanin and may experience more hyperpigmentation.
- **Hypopigmentation** is a lightening of the skin. This can be a permanent change that occurs following the resolution of hyperpigmentation.
- **Lymphedema** is a collection of fluids that causes swelling in the arms.

Please contact the **Breast and Gynecology Cancer Centre of Hope** at 204-788-8014 or 1-888-660-4866 and ask to speak to the Breast Cancer Patient and Family Educator **as soon as possible** if you notice:



- Telangiectasia
- Severe fibrosis causing pain or which limits the ability to move the area and nearby limbs
- Tissue breakdown or ulceration
- Severe scaling
- Lymphedema

Additional Notes:

CancerCare Manitoba
675 McDermot Avenue
Winnipeg, Manitoba, Canada
R3E 0V9

www.cancercare.mb.ca

CCMB Clinical Practice Guideline: **Symptom Management**

Management of Long-Term Effects of Radiation-Induced Skin Toxicities in Breast Cancer –
A 5 Part Series
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