Guideline Resource Unit
guru@ahs.ca

Literature Review: Management of Acute Radiation Dermatitis

Cancer Care Alberta

Literature Review SUPP-025
www.ahs.ca/guru

Table 1. Summary of Guideline and Delphi Study Recommendations (✓, strong recommendation; +, moderate or weak recommendation) for Management of Acute Radiation Dermatitis (Published Between 2015-01-01 and 2025-09-23)

Category	Recommendation	n	BCC, 2025[1]	CCM[a], 2018[2]	ScoR, 2020[3]	CDN delphi[a], 2025[4]	ESTRO, 2025[5]	MASCC delphi[b], 2023[6]	MD Anderson, 2024[7]	ISNCC, 2020[8]	ONS, 2020[9]
Hygiene	Saline rinse after bathing	1		✓							
	Use sitz bath daily if receiving RT for perineal/rectal cancer	1	✓						✓		
	Saline soaks/cool compresses	2		✓	✓				✓		
	Normal saline compress (repeated several times daily)	2	✓	✓							
	Moisture retentive barrier ointment after saline soak	1	+								
	Clean with 3% hydrogen peroxide and sterile water (1:1)								✓		
Erythema and moist desquamation	Use moisturizers/body lotions/creams	1	✓								
	Avoid baby powder/cornstarch/talcum powder	1		✓							
	Avoid hydrophobic products (petroleum jelly)	1		✓							
	Avoid aloe vera	1								✓	
	Use barrier cream	1	✓								
	Hydrogels/hydro active colloid gel	3	✓				+	+	✓		
	Use non-adherent barrier film or silicone dressing (e.g., Mepitel, Hydrofilm)	5	✓	✓	✓		✓	+	✓		✓
	Use low adherent cover dressing (e.g. Telfa)	1		✓							
	Use absorbent dressings (e.g., Mepilex Lite)	3	✓			✓	✓		✓		
	Use hydrocolloid dressings	1	✓								
	Avoid use of gauze dressings	2		✓				✓			
	Secure dressings with burnet or clothing	1		✓							
	Use Mepitac tape to secure dressings	1		+							
	Cover open areas to protect nerve endings	1	✓								
	Provide analgesics (topical or oral) at physician's discretion	4	✓	✓	✓		✓		✓		
	Use corticosteroid cream or ointment (e.g., mometasone) on intact skin	6	✓	✓	✓	✓	✓		✓	✓	✓
	Provide oral antihistamine	1		+							
	Prescribe doxepin	1						+			
Infection	Regularly assess for signs of infection	1		✓					✓		
	Culture wound if infection is suspected	3	✓	✓	✓				✓		
	Consider topical antibiotics (e.g. Polysporin, Flamazine)	2	✓	+					✓		

	Prescribe oral or topical antibiotics if infection is indicated	3		+	✓		✓				
	Prescribe antibacterial/antifungal products (e.g., sulfadiazine)	1	✓						✓		
Ulceration and necrosis	Surgical intervention (debridement or skin graft) at physician's discretion	3	✓	✓			+		✓		
	Discontinuation of radiation therapy at physician's discretion	2		✓			✓				

[a] Breast cancer; [b] Breast, head and neck cancer

BCC, BC Cancer; CCM, CancerCare Manitoba; CDN, Canada; ESTRO, European Society for Radiotherapy and Oncology; ISNCC, International Society for Nurses in Cancer Care; MASCC, Multinational Association of Supportive Care in Cancer; ONS, Oncology Nursing Forum; SCoR, Society and College of Radiographers

Table 2. White Literature (RCT ≥50 pts) for Management of Acute Radiation Dermatitis (Published Between 2010-01-01 and 2025-09-23)

Author, Year	Study Type, *LOE*	Objective	Patients	Intervention Details	Results
Topical Corticosteroids					
Pasalar, 2022[10] PMID 36103288	Randomized, double-blind, clinical tral ***LOE: II***	Evaluate efficacy of topical steroid cream with Dermolina-Henna cream on RD in BC pts *Primary endpoint: change in RD grade*	106 BC pts (n=94 per protocol) aged 18-70, w grade 1 or 2 RD after receiving RT to the breast. Exclusion: mastectomy; diabetes, anemia, kidney failure, collagen vascular disease, chronic cutaneous disease, thoracic abnormality, hypertension; unhealed scars, ulcers or bacterial cellulitis on breast; concurrent chemo; grade >2 RD; <70% cream usage.	- 46 momethasone cream - 47 henna-containing cream (made in-house) Treatment was initiated once RTOG grade 1 or 2 RD occurred. Products where then applied once daily for 4 weeks. RT: average dose of 4.9Gy.	Steroid was inferior to henna cream in improving burning sensation (p<0.001) and itchiness (p=0.041), but no difference in number of lesions (p=0.339), erythema (p=0.220), RTOG grade (p=0.451) and pain (p=0.361). No difference in time to RD onset (14.0 vs 14.4 days). *Analysis from Grok: Differences emerge by Week 3-4 in erythema, burning, and itchiness, all favoring henna with milder symptom distributions. Lesions, grade, and pain show no differences*
Yokota, 2021[11] PMID 34102298	Randomized, phase III, double-blind, clinical trial ***LOE: II***	Evaluate efficacy and safety of topical steroids on RD in pts w advanced HNC. *Primary endpoint: incidence of progression to grade ≥2 RD*	203 HNC pts aged 20-80 w ECOG 0-1, w grade 1 RD after receiving CRT (bilateral neck RT w concurrent cisplatin) definitive or postoperative Exclusion: topical steroid use for the head and neck region, systemic steroid use, severe mental disorder, allergy to products.	- Difluprednate 0.05% (n=101) - Vaseline (n=102) Treatment was initiated when grade 1 RD occurred, itching was reported, or total radiation dose reached 30Gy; until 2 weeks post-RT. If RD worsened to grade 2, entire area was covered with absorbent dressing while product application continued. RT: ≥66 Gy, at 2Gy per fraction Chemo: ≥200 mg/m^2 cisplatin	Steroid reduced incidence of CTCAE v4 grade ≥3 RD (13.9 vs 25.5%, p=0.034; adjusted risk difference -11.8%) compared to placebo. No impact on incidence of grade ≥2 RD (73.3 vs 80.4%, p=0.23), median time till grade ≥2 (49 vs 46 days, p=0.15), and recovery to grade <2 (81.3 vs 78.0%, p=0.15). No differences in adverse events, including local infection and compliance, and between subgroups.

Author, Year	Study Type, *LOE*	Objective	Patients	Intervention Details	Results
Ansari, 2013[12] PMC 3838980	Randomized clinical trial ***LOE: II***	Compare efficacy between henna ointment and topical steroids in healing of RD in BC pts *Primary endpoint: healing speed (complete re-epithelialization of moist desquamation)*	60 BC pts w grade 2-3 RD after receiving RT to chest wall (post mastectomy) Exclusion: history of collagen vascular diseases, diabetes mellitus, taking any drugs interfering with wound healing, prior chest wall RT, concurrent chemo	- Hydrocortisone 1% cream (n=30) - Henna-containing ointment (n=30) Treatment was initiated when total radiation dose reached 45-50Gy. Product was applied twice daily, beginning at last RT day till 3-week post RT. RT: 45-50.4Gy (median 49Gy), at 1.8-2Gy per fraction.	Steroid had arm had larger mean area of RD compared to henna arm in the second week, both for grade 2 (p=0.027) and grade 3 RD (p=0.004). Steroid arm had less reduction in mean area of RD between week 2 and 3 compared to henna arm, both for grade 2 (59 vs 89%) and grade 3 RD (64 vs 97%). Pts in steroid arm reported less pain relief (p<0.001), less pruritus relief (p=0.013) and less discharge relief (p=0.025) in the third week. No differences in burning sensation (p=0.078). No adverse events reported.
Absorbent Dressings					
Zhong, 2013[13] PMID 24186620	Randomized controlled clinical trial ***LOE: II***	Compare effectiveness of Mepilex Lite dressings with SOC in healing of RD in HNC pts. *Primary endpoint: healing speed (return of complete skin integrity of all wounds)*	88 nasopharyngeal carcinoma pts (n=83 per protocol) w moist desquamation after CRT. Exclusion: prior RT to head and neck, tumour on the skin, diabetes mellitus, clinical wound infection.	- 41 Mepilex Lite - 42 SOC Wounds were cleaned with 0.9% saline and then either Mepilex Lite was applied or SOC. RT: 2.0-2.27 Gy per fraction, totaling 66->70Gy to primary tumor and 60-66Gy to involved neck area. Either 2DRT, 3DCRT or IMRT. Chemo: weekly 40 mg/m^2 cisplatin	Mepilex arm had shorter healing time (16 vs 23 days, p-0.009) and better sleep (p=0.005) compared to SOC arm. No differences for heck mobility and appearance disturbance. Mepilex arm had lower average RISRAS score for moist desquamation over time (p=0.009) Multivariable analysis: Initial wound size (>10cm^2), AJCC overall stage, and N stage were associated with of prolonged

Author, Year	Study Type, *LOE*	Objective	Patients	Intervention Details	Results
					time-to-wound healing; type of dressing was not.
Paterson, 2012[14] Link	Randomized, intra-patient controlled clinical trial ***LOE: II***	Determine effect of Mepilex Lite on RD in BC pts. *Primary endpoints: severity, incidence moist desquamation and time to healing*	74 BC pts w erythema after receiving RT to the chest wall (post mastectomy) Exclusion: prior RT to chest wall, metastatic disease, breast reconstruction, impaired mobility, Karnofski <70	- 74 intra-patient randomized to Mepilex Lite and SOC (aqueous cream) Treatment was initiated at first sign of erythema. Products were applied on half of the area with erythema. Mepilex Lite was applied by research team. Patients applied cream twice daily. Hydrocortisone cream (1%) was prescribed sometimes to reduce excessive itching. At moist desquamation, SOC areas received SOC dressings (Mepilex Lite, hydrogel + contact layer, silver sulfadiazine + cotton gauze). RT: Majority (92%) received 5Gy in 25 fractions. 3 pts received 40 Gy in 15 fractions. Bolus in 68% of pts, 1 pt had boost.	Mepilex Lite arm had decrease in RISRAS skin reaction severity ($p<0.001$) compared to SOC arm. Mepilex Lite arm had lower average moist desquamation related RISRAS scores ($p=0.043$). No difference for moist desquamation incidence (15 vs 19%, $p>0.05$), time till moist desquamation onset, or average time till healing. 80% of pts preferred Mepilex Lite over the SOC cream, commenting that they are easy to apply (71%) and comfortable to wear (56%). However, 50% of women reported that the Mepilex Lite did not stick well in axilla, during the night, or during perspiration.

2DRT, 2D radiation therapy; 3DCRT, 3D conformal radiation therapy; AJCC, American Joint Committee on Cancer; BC, breast cancer; CRT, chemoradiotherapy; CTCAE, Common Terminology Criteria for Adverse Events; Gy, Gray; HNC, head and neck cancer; IMRT, intensity-modulated radiation therapy; RD, radiation dermatitis; RISRAS, radiation-induced skin reaction assessment scale; RT, radiation therapy; RTOG, Radiation Therapy Oncology Group; SOC, standard of care.

References

1. BC Cancer. Symptom Management Guidelines: Radiation Dermatitis. Accessed May 15, 2025. http://www.bccancer.bc.ca/nursing-site/Documents/Radiation%20Dermatitis%20NCI%20v.5%20Update.pdf
2. Cancer Care Manitoba. Practice Guideline: Symptom Management. Part 4. Management of Acute Radiation-Induced Skin Toxicities. Accessed May 20, 2025. https://www.cancercare.mb.ca/export/sites/default/For-Health-Professionals/.galleries/files/treatment-guidelines-rro-files/practice-guidelines/supportive-care/Part_4_Management_of_Acute_Radiation-Induced_Skin_Toxicities.pdf
3. Society and College of Radiographers. Practice Guideline Document. Radiation Dermatitis Guidelines for Radiotherapy Healthcare Professionals. Accessed May 15, 2025. https://www.sor.org/getmedia/6cc80174-4478-4cd2-b501-35b41aae820d/2020_version_4_final_practice_guideline_radiotherapy_skin_care_llv1.pdf_2
4. Cao J, Yassa M, Bolivar C, Dahn H, Kong I, Logie N, et al. Modified Delphi Consensus on Interventions for Acute Radiation Dermatitis in Breast Cancer: A Canadian Expert Perspective. *International Journal of Radiation Oncology, Biology, Physics*. 2025;122(2)
5. Forde E, Van den Berghe L, Buijs M, Cardone A, J D, Franco P, et al. Practical recommendations for the management of radiodermatitis: on behalf of the ESTRO RTT committee. *Radiation Oncology*. 2025;20(1)
6. Behroozian T, Bonomo P, Patel P, Kanee L, Finkelstein S, van den Hurk C, et al. Multinational Association of Supportive Care in Cancer (MASCC) clinical practice guidelines for the prevention and management of acute radiation dermatitis: international Delphi consensus-based recommendations. *The Lancet Oncology*. 2023;24(4)
7. University of Texas MD Anderson Cancer Centre. Skin Management - Radiation Therapy. Accessed November 14, 2025. https://www.mdanderson.org/content/dam/mdanderson/documents/for-physicians/algorithms/clinical-management/clin-management-skin-management-radiation-therapy-web-algorithm.pdf
8. International Society of Nurses in Cancer Care. Evidenced-Based Guidelines for the Prevention and Management of Radiation Dermatitis. Accessed May 20, 2025. https://isncc.org/resources/Documents/Resources/Practice%20Guidelines/Report_RDguidelines_CFVersion_2021_FINALs.pdf
9. Gosselin T, Ginex PK, Backler C, Bruce SD, Hutton A, Marquez CM, et al. ONS Guidelines™ for Cancer Treatment-Related Radiodermatitis. *Oncol Nurs Forum*. Nov 1 2020;47(6):654-670.
10. Pasalar M, Ahadi B, Mirzaei HR, Buentzel J, Mehri Ardestani M, Kamian S, Heydarirad G. Comparing Dermolina-Henna Cream with Mometasone Cream in Improving Radiodermatitis Among Patients with Breast Cancer: A Randomized Active-Control Double-Blind Clinical Trial. *Journal of Integrative and Complementary Medicine*. 2022/11/01 2022;28(11):895-903.
11. Yokota T, Zenda S, Ota I, Yamazaki T, Yamaguchi T, Ogawa T, et al. Phase 3 Randomized Trial of Topical Steroid Versus Placebo for Prevention of Radiation Dermatitis in Patients With Head and Neck Cancer Receiving Chemoradiation. *International journal of radiation oncology, biology, physics*. 2021;111(3):794-803.
12. Ansari M, Farzin D, Mosalaei A, Omidvari S, Ahmadloo N, Mohammadianpanah M. Efficacy of topical alpha ointment (containing natural henna) compared to topical hydrocortisone (1%) in the healing of radiation-induced dermatitis in patients with breast cancer: a randomized controlled clinical trial. *Iran J Med Sci*. Dec 2013;38(4):293-300.
13. Zhong WH, Tang QF, Hu LY, Feng HX. Mepilex Lite dressings for managing acute radiation dermatitis in nasopharyngeal carcinoma patients: a systematic controlled clinical trial. *Med Oncol*. Dec 2013;30(4):761.
14. Paterson DB, Poonam P, Bennett NC, Peszynski RI, Van Beekhuizen MJ, Jasperse ML, Herst PM. Randomized Intra-patient Controlled Trial of Mepilex Lite Dressings versus Aqueous Cream in Managing Radiation-Induced Skin Reactions Postmastectomy. *Journal of cancer science & therapy*. 2012;4(11):347-356.

Appendix A: Search Strategy

Database	Date	Search Terms	Results
Medline ***Note:*** Rows 1-16 are replica of MASCC 2023 systematic review	5/22/2024 (update 9/23/2025)	1. exp Neoplasms/rt [Radiotherapy]	203395
		2. exp Neoplasms/	4120612
		3. (cancer* or neoplasm* or carcinoma*).mp.	4442742
		4. exp Radiotherapy/	217922
		5. (radiotherap* or radiation therap*).mp.	443727
		6. 1 or ((2 or 3) and (4 or 5))	391809
		7. exp Radiodermatitis/	2723
		8. (radiation dermatitis or radiodermatitis or dermatitis).mp.	115093
		9. ((skin or dermatol*) adj3 (toxic* or react* or burn* or rash* or damage* or injur* or irritat*)).mp.	55451
		10. or/7-9	164562
		11. th.xs.	8641221
		12. pc.fs.	1545775
		13. ((manag* or treat* or alleviat* or avoid* or lessen* or prevent* or prophyla* or control*) adj5 (skin or dermatol* or dermatitis or radiodermatitis)).mp.	81145
		14. or/11-13	8681271
		15. 6 and 10 and 14	4465
		16. limit 15 to english language	3989
		17. limit 16 to ed=20230120-20250522	399
		18. limit 17 to (english language and humans and (clinical trial, all or comparative study or controlled clinical trial or guideline or meta analysis or multicenter study or network meta-analysis or observational study or practice guideline or randomized controlled trial or "systematic review"))	157
		19. remove duplicates from 18	156
Oncology-Based Health Organizations and Guideline Developers	5/22/2024	Search terms: “radiation dermatitis”, “dermatitis”, “radiodermatitis”	ASTRO (0) BCC (1) CCM (1) CCO (0) EANM (0) ESTRO (1) ISNCC (1) NCCN (0) NICE (0) ScoR (1)

ASTRO, American Society for Radiation Oncology; BCC, BC Cancer; CCM, CancerCare Manitoba; CCO, Cancer Care Ontario; EANM, European Association of Nuclear Medicine; ESTRO, European Society for Radiotherapy and Oncology; ISNCC, International Society for Nurses in Cancer Care; NCCN, National Comprehensive Cancer Network; NICE, National Institute for Health and Care Excellence; SCoR, Society and College of Radiographers

Appendix B: Levels of Evidence

- Level I – evidence from at least one large randomized controlled trial (RCT) of good methodological quality with low potential for bias or meta-analyses of RCTs without heterogeneity
- Level II – small RCTs, large RCTs with potential bias, meta-analyses including such trials, or RCTs with heterogeneity
- Level III – prospective cohort studies
- Level IV – retrospective cohort studies or case-control studies
- Level V – studies without a control group, case reports, or expert opinions