

## Definition

**Radiation dermatitis:** A common side effect of radical ionizing radiation treatment. The pathophysiology of a radiation skin reaction is a combination of radiation injury and the subsequent inflammatory response and can occur at both the entrance and exit site of the irradiation. Ionizing radiation damages the mitotic ability of stem cells within the basal layer preventing the process of repopulation and weakening the integrity of the skin. Reactions are evident one to four weeks after beginning treatment and can persist for several weeks post treatment.

## Focused Health Assessment

PHYSICAL ASSESSMENT	SYMPTOM ASSESSMENT
<p><b>Assess dermatitis</b></p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Colour</li> <li>• Size of affected area</li> <li>• Wound base (if present)</li> <li>• Drainage (if present)</li> <li>• Signs of infection</li> <li>• Discomfort (burning, itching, pulling, tenderness)</li> <li>• Discomfort (dryness, itching, scaling, flaking, peeling)</li> </ul> <p><b>Vital Signs</b></p> <ul style="list-style-type: none"> <li>• Include as clinically indicated</li> </ul> <p><b>Functional Status</b></p> <ul style="list-style-type: none"> <li>• Activity level/ECOG or PPS</li> </ul>	<p><b>*Consider <u>contributing factors</u></b></p> <p><b>Normal</b></p> <ul style="list-style-type: none"> <li>• What is the condition of your skin normally?</li> <li>• What are your normal hygiene practices?</li> </ul> <p><b>Onset</b></p> <ul style="list-style-type: none"> <li>• When did the changes in your skin begin?</li> </ul> <p><b>Provoking / Palliating</b></p> <ul style="list-style-type: none"> <li>• What makes it feel better or worse?</li> </ul> <p><b>Quality</b> (in the last 24 hours)</p> <ul style="list-style-type: none"> <li>• Do you have any pain, redness, dry or scaling skin, blisters or drainage?</li> <li>• Do you have any swelling?</li> </ul> <p><b>Region</b></p> <ul style="list-style-type: none"> <li>• What areas are affected?</li> </ul> <p><b>Severity / Other Symptoms</b></p> <ul style="list-style-type: none"> <li>• Since your last visit, how would you rate the discomfort associated with the dermatitis? Scale of 0-10? What is it now? At worst? At best? On average?</li> <li>• Have you been experiencing any other symptoms: fever, discharge, bleeding</li> </ul> <p><b>Treatment</b></p> <ul style="list-style-type: none"> <li>• When was your last cancer treatment (radiation or chemotherapy)?</li> <li>• How have you been managing (cream, ointments, dressings)?</li> <li>• Are you currently using any medications (analgesic, antibiotic, antifungal)? How effective are they? Any side effects?</li> </ul> <p><b>Understanding / Impact on You</b></p> <ul style="list-style-type: none"> <li>• Is your dermatitis and treatment impacting your activities of daily living (ADL)?</li> <li>• Do you require any support to (family, home care nursing) complete your skin care routine?</li> <li>• Are you having any difficulty sleeping? Eating? Drinking?</li> </ul> <p><b>Value</b></p> <ul style="list-style-type: none"> <li>• What is your comfort goal or acceptable level for this symptom?</li> </ul>

## DERMATITIS RADIATION



Adapted NCI CTCAE (Version 4.03)

<u>GRADE 1</u> (Mild)	<u>GRADE 2</u> (Moderate)	<u>GRADE 3</u> (Severe)	<u>GRADE 4</u> (Life - threatening)	GRADE 5
Faint erythema or dry desquamation	Moderate to brisk erythema; patchy moist desquamation, mostly confined to skin folds and creases; moderate edema	Moist desquamation in areas other than skin folds and creases; bleeding induced by minor trauma or abrasion	Life-threatening consequences; skin necrosis or ulceration of full thickness dermis; spontaneous bleeding from involved site; skin graft indicated	Death

**\*Step-Up Approach to Symptom Management:  
Interventions Should Be Based On Current Grade Level and Include Lower Level Grade Interventions As Appropriate**

### NORMAL– GRADE 1




<b>NON – URGENT</b>	
Prevention, support, teaching, & follow-up as clinically indicated	
<b>Clinical Presentation</b>	<p><b>Erythema</b></p> <ul style="list-style-type: none"> <li>• Pink to dusky colouration</li> <li>• May be accompanied by mild edema</li> <li>• Burning, itching and mild discomfort</li> </ul> <p><b>Dry desquamation</b></p> <ul style="list-style-type: none"> <li>• Partial loss of the epidermal basal cells</li> <li>• Dryness, itching, scaling, flaking and peeling</li> <li>• Hyperpigmentation</li> </ul> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p><i>Brisk Erythema</i></p>  </div> <div style="text-align: center;"> <p><i>Dry Desquamation</i></p>  </div> </div>
<b>Patient Assessment</b>	<p>Assessment to include:</p> <ul style="list-style-type: none"> <li>• Location</li> <li>• Size of area</li> <li>• Colour</li> <li>• Discomfort (burning, itching, pulling, tenderness) <i>erythema</i></li> <li>• Discomfort (dryness, itching, scaling, flaking, peeling) <i>dry desquamation</i></li> </ul>
<b>Hygiene</b>	<ul style="list-style-type: none"> <li>• Bathe using lukewarm water and palm of hand to gently wash affected skin. Rinse well and pat dry with a soft towel</li> <li>• Wash hair using warm water and mild shampoo (especially for cranial radiation)</li> <li>• Patients receiving RT for perineal/rectal cancer should use a sitz bath daily once RT begins</li> <li>• See <a href="#">Appendix B</a> for general recommendations during treatment</li> </ul>
<b>Infection Prevention</b>	<ul style="list-style-type: none"> <li>• Encourage patients to perform proper hand hygiene prior to coming in contact with any areas of skin breakdown</li> </ul>

<b>Promote Comfort</b>	<ul style="list-style-type: none"> <li>• Apply body lotions or creams on affected area. Gently apply with clean hand, do not rub skin</li> <li>• Avoid petroleum jelly based products (hydrophobic)</li> <li>• Avoid baby powder/ cornstarch (promotes yeast and bacterial migration)</li> <li>• The BC Cancer Agency does not make recommendations regarding specific products</li> <li>• Restrictions on ingredients such as perfumes, chemicals (i.e. AHA, lanolin, sodium laurel sulphate or other compounds) should be secondary to patient preference</li> </ul>
<b>Reduce Inflammation</b>	<ul style="list-style-type: none"> <li>• Pruritus is often a sign of dry skin and moisture should be encouraged</li> <li>• Corticosteroid creams may be used sparingly for inflammation as ordered by the physician</li> </ul>
<b>Prevent Trauma to the Treatment Area</b>	<ul style="list-style-type: none"> <li>• For facial and underarm shaving, use an electric razor</li> <li>• Recommend loose, non-binding, breathable clothing such as cotton</li> <li>• Protect skin from direct sunlight and wind exposure by wearing a wide brimmed hat and protective clothing</li> <li>• Remove wet swimwear, shower and apply moisturizer after swimming in pools and lakes</li> <li>• Avoid extremes of heat and cold, including hot tubs, heating pads and ice packs</li> <li>• Avoid adhesive tape. Extend dressing out of treatment area and adhere to intact skin with paper tape. Secure dressing with cling gauze, net tubing or under clothing</li> </ul>
<b>Treatment Procedures</b>	<ul style="list-style-type: none"> <li>• See <a href="#">Appendix C</a> for specific directions for the use of topical products, normal saline compresses, sitz bath, antibacterial cream, hydrogels and hydrocolloid or silicone dressings</li> </ul>
<b>Follow-Up</b>	<ul style="list-style-type: none"> <li>• Patients to be assessed at each visit. If symptoms are not resolved, provide further information regarding recommended strategies <ul style="list-style-type: none"> <li>- Instruct patient/family to call back if radiation dermatitis worsens</li> <li>- Arrange for nurse initiated telephone follow-up</li> </ul> </li> </ul>

**GRADE 2 – Grade 3**



<b>URGENT:</b> Requires medical attention within 24 hours	
<b>Clinical Presentation</b>	<p><b>Moist Desquamation</b></p> <ul style="list-style-type: none"> <li>• Sloughing of the epidermis and exposure of the dermal layer</li> <li>• Blister or vesicle formation</li> <li>• Serous drainage</li> <li>• Pain</li> </ul> <p><i>Moist Desquamation</i></p> 
<b>Patient Assessment</b>	<p>Assessment to include:</p> <ul style="list-style-type: none"> <li>• Location of moist and dry areas</li> <li>• Size of area</li> <li>• Wound base: Granular tissue, eschar or necrotic tissue</li> <li>• Exudate: type, amount, odour</li> <li>• Discomfort (burning, itching, pulling, tenderness)</li> <li>• Signs of clinical infection <ul style="list-style-type: none"> <li>- fever</li> <li>- foul odour</li> <li>- purulent drainage</li> <li>- pain and swelling extending outside the treatment area</li> </ul> </li> </ul>
<b>Hygiene</b>	<ul style="list-style-type: none"> <li>• Apply room temperature normal saline compresses several times throughout the day</li> <li>• Patients receiving RT for perineal/rectal cancer should use a sitz bath daily once RT begins</li> </ul>

<b>Maintain Principles of Moist Healing</b>	<ul style="list-style-type: none"> <li>• Can use a moisture retentive protective barrier ointment after each saline soak</li> <li>• Consider the use of hydrogels</li> <li>• Use a non-adherent dressing</li> <li>• Use absorbent dressings over non-adherent dressings. Change as drainage warrants</li> <li>• Control drainage. Consider using hydrocolloid dressings</li> </ul> <p>See <a href="#">Appendix D: Principles of Moist Healing</a></p>
<b>Manage Pain</b>	<ul style="list-style-type: none"> <li>• Prevent trauma to the treatment area</li> <li>• Cover open areas to protect nerve endings</li> <li>• To decrease burning and tenderness use non-adherent or low adherent dressings</li> <li>• Administer analgesics as ordered by the physician</li> </ul>
<b>Prevention of Infection</b>	<ul style="list-style-type: none"> <li>• Regularly assess for signs of infection. Culture wound if infection suspected</li> <li>• Apply antibacterial/antifungal products as ordered by the physician</li> <li>• Patients and staff to perform proper hand hygiene prior to any procedure or application of treatment that comes in contact with wound</li> </ul>
<b>Treatment Procedures</b>	See <a href="#">Appendix C</a> for specific directions for the use of: topical products, normal saline compresses, sitz bath, antibacterial cream, hydrogels and hydrocolloid or silicone dressings as appropriate
<b>Follow-Up</b>	<ul style="list-style-type: none"> <li>• Patients to be assessed at each visit. If symptoms are not resolved, provide further information regarding recommended strategies <ul style="list-style-type: none"> <li>- Instruct patient/family to call back if radiation dermatitis worsens</li> <li>- Arrange for nurse-initiated telephone follow-up</li> </ul> </li> </ul>

**GRADE 4**



<b>EMERGENCY:</b> Requires IMMEDIATE medical attention	
<b>Clinical Presentation</b>	<ul style="list-style-type: none"> <li>• Rarely occurs</li> <li>• Skin necrosis or ulceration of full thickness dermis</li> <li>• May have spontaneous bleeding from the site</li> <li>• Pain</li> </ul>
<b>Patient Assessment</b>	<p>Assessment to include:</p> <ul style="list-style-type: none"> <li>• Location of moist and dry areas</li> <li>• Size of area</li> <li>• Wound base: granular tissue, eschar or necrotic tissue</li> <li>• Exudate: type, amount, odour</li> <li>• Discomfort (burning, itching, pulling, tenderness)</li> <li>• Signs of clinical infection (fever, foul odour, purulent drainage, pain and inflammation extending outside the radiated area)</li> </ul>
<b>Management</b>	<ul style="list-style-type: none"> <li>• Collaborate with physician as patient may require debridement or skin graft</li> <li>• Maintain <a href="#">Principles of Moist Healing (See Appendix D)</a></li> <li>• Promote hygiene</li> <li>• Prevent trauma</li> <li>• Manage pain</li> <li>• Prevent/treat infection as per physicians order</li> </ul>
<b>Follow-Up</b>	<ul style="list-style-type: none"> <li>• Patients to be re-assessed at each visit</li> <li>• Instruct patient/family to contact the Health Care Professional if the dermatitis worsens</li> </ul>

## Potential Post-Radiation Skin Reactions: Late Reactions

<b>Definition</b>	Dermatitis occurring six or more months after completion of radiation therapy. The clinical presentation and the degree of late reactions vary.
<b>Clinical Presentation</b>	<ul style="list-style-type: none"> <li>• Pigmentation changes</li> <li>• Permanent hair loss</li> <li>• Telangectasia</li> <li>• Fibrous changes</li> <li>• Atrophy</li> <li>• Ulceration</li> </ul>
<b>Patient Assessment</b>	<ul style="list-style-type: none"> <li>• Location of moist and dry areas</li> <li>• Size of area</li> <li>• Wound base: Granular tissue, eschar or necrotic tissue</li> <li>• Exudate: type, amount, odour</li> <li>• Discomfort (burning, itching, pulling, tenderness)</li> <li>• Signs of infection (fever, foul odour, purulent drainage, pain and swelling extending outside of radiation area)</li> </ul>
<b>Maintain Skin Flexibility</b>	<ul style="list-style-type: none"> <li>• Apply lotions or creams on affected area.</li> <li>• Gently apply with a clean hand, do not rub skin</li> </ul>
<b>Prevent Injury</b>	Avoiding too much sun is part of a healthy lifestyle. Instruct patients that after skin has healed it may be more sun sensitive and therefore requires diligent protection from sunlight by keeping area covered by clothing or the use of sunscreen with a minimum SPF 30. Sunscreen should be reapplied as needed (e.g. every 2 hours, after swimming or perspiration).
<b>Manage Pain</b>	<ul style="list-style-type: none"> <li>• Administer analgesics as ordered by the physician</li> </ul>
<b>Prevention of Infection</b>	<ul style="list-style-type: none"> <li>• Regularly assess for signs of infection</li> <li>• Culture wound if infection suspected</li> <li>• Apply antibacterial/antifungal products as ordered by the physician</li> </ul>
<b>Follow-Up</b>	<ul style="list-style-type: none"> <li>• Patients to be assessed at each visit. If symptoms are not resolved, provide further information regarding recommended strategies             <ul style="list-style-type: none"> <li>- Instruct patient/family to call back if radiation dermatitis worsens</li> <li>- Arrange for nurse initiated telephone follow-up</li> </ul> </li> </ul>

## Potential Post-Radiation Skin Reactions: Recall Phenomenon

<b>Definition</b>	Recall phenomenon occurs when dermatitis manifests very rapidly (following the administration of chemotherapy drugs) within a previously treated radiation field.
<b>Clinical Presentation</b>	<ul style="list-style-type: none"> <li>• Symptoms of moist desquamation</li> <li>• Rapid onset and progression</li> </ul>
<b>Patient Assessment</b>	<ul style="list-style-type: none"> <li>• Location of moist and dry areas</li> <li>• Size of area</li> <li>• Wound base: granular tissue, eschar or necrotic tissue</li> <li>• Exudate: type, amount, odour</li> <li>• Discomfort: burning, itching, pulling, tenderness</li> <li>• Signs of infection: fever, foul odour, purulent drainage, pain and swelling extending outside of radiation area</li> </ul>
<b>Hygiene</b>	<ul style="list-style-type: none"> <li>• Cleanse with warm or room temperature normal saline</li> <li>• Apply normal saline compresses several times throughout the day</li> <li>• Patients receiving RT for perineal/rectal cancer should use a sitz bath daily once RT begins</li> </ul>
<b>Maintain Principles of Moist Healing</b>	<ul style="list-style-type: none"> <li>• Can use a moisture retentive protective barrier product after each saline soak</li> <li>• Consider the use of hydrogels</li> <li>• Use a non-adherent dressing</li> <li>• Use absorbent dressings over low-adherent dressings; change as drainage warrants</li> <li>• Control drainage; consider using hydrocolloid dressings</li> </ul>

	See <a href="#">Appendix D: Principles of Moist Healing</a>
<b>Manage Pain</b>	<ul style="list-style-type: none"> <li>• Cover open areas to protect nerve endings</li> <li>• Use non-adherent or low-adherent dressings</li> <li>• Administer analgesics as ordered by the physician</li> </ul>
<b>Prevention of Infection</b>	<ul style="list-style-type: none"> <li>• Regularly assess for signs of infection</li> <li>• Culture wound if infection suspected</li> <li>• Apply antibacterial/antifungal products as ordered by the physician</li> </ul>
<b>Follow-Up</b>	<ul style="list-style-type: none"> <li>• Patients to be assessed at each visit. If symptoms are not resolved, provide further information regarding recommended strategies <ul style="list-style-type: none"> <li>- Instruct patient/family to call back if radiation dermatitis worsens</li> <li>- Arrange for nurse initiated telephone follow-up</li> </ul> </li> </ul>

<b>RESOURCES &amp; REFERRALS</b>	
<b>Referrals</b>	<ul style="list-style-type: none"> <li>• Patient Support Centre, Patient Review</li> <li>• Telephone Care for follow-up</li> <li>• Home Health Nursing</li> <li>• Pain and Symptom Management/Palliative Care</li> </ul>
<b>Patient Education</b>	<ul style="list-style-type: none"> <li>• Managing Symptoms &amp; Side Effects – <a href="#">Skin &amp; Wounds</a></li> <li>• NCI – <a href="#">Radiation Therapy Side Effects</a></li> <li>• Cancer Drug Manual – <a href="#">Sun Sensitivity and Sunscreens</a></li> <li>• <a href="#">Sun Safety</a></li> </ul>
<b>Symptom Management Guideline</b>	<ul style="list-style-type: none"> <li>• Care of Malignant Wounds: <a href="http://www.bccancer.bc.ca/health-professionals/professional-resources/nursing/symptom-management">http://www.bccancer.bc.ca/health-professionals/professional-resources/nursing/symptom-management</a></li> </ul>
<b>Health Professional resources</b>	<ul style="list-style-type: none"> <li>• Skin and wound care resources <a href="https://www.clwk.ca/communities-of-practice/skin-wound-community-of-practice/buddydrive/">https://www.clwk.ca/communities-of-practice/skin-wound-community-of-practice/buddydrive/</a></li> <li>• Cancer Care Ontario: The Prevention and Management of Acute Skin Reactions Related to Radiation Therapy <a href="https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/846">https://www.cancercareontario.ca/en/guidelines-advice/types-of-cancer/846</a></li> <li>• NCI: Radiation Therapy Side Effects <a href="https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/side-effects">https://www.cancer.gov/about-cancer/treatment/types/radiation-therapy/side-effects</a></li> </ul>
<b>Bibliography List</b>	<ul style="list-style-type: none"> <li>• <a href="http://www.bccancer.bc.ca/health-professionals/clinical-resources/nursing/symptom-management">http://www.bccancer.bc.ca/health-professionals/clinical-resources/nursing/symptom-management</a></li> </ul>

## Appendix A: Contributing Factors

Contributing Factors	
<b>Type of Radiation and Energy</b>	<ul style="list-style-type: none"> <li>• A source of radiation used in cancer treatment is a linear accelerator. This high voltage machine generates ionizing radiation from electricity to deliver external beam radiation therapy in the form of photons or electrons</li> <li>• Radiation treatments delivered by external beam vary in depth depending on the energy of the beam produced</li> <li>• Photons penetrate more deeply with increasing energy and also partially spare the skin from the effect of radiation; while electrons have shallow depth and high skin dose</li> </ul>
<b>Treatment Technique</b>	<ul style="list-style-type: none"> <li>• There is evidence to suggest that specific treatment techniques such as Intensity Modulated Radiation Therapy (IMRT) are associated with a decreased severity of acute radiation dermatitis</li> </ul>
<b>Location of the Treatment Field</b>	<ul style="list-style-type: none"> <li>• The radiation dermatitis may be more severe depending on the location of the treatment field i.e. sites where two skin surfaces are in contact such as the breast or buttocks</li> </ul>
<b>Volume of Treated Tissue</b>	<ul style="list-style-type: none"> <li>• The total volume of the area treated is considered when the dose is prescribed, if larger areas of body surface will be irradiated it may result in increased skin toxicity</li> </ul>
<b>Dose, Time and Fractionation Parameters</b>	<ul style="list-style-type: none"> <li>• Radiation treatments are prescribed in units of measurement known as Gy (Gray) or cGy (centiGray) with 1 Gy equaling 100 cGy</li> <li>• In order to manage the toxicities associated with radiation therapy, the total dose is divided into multiple daily doses called fractions</li> </ul>
<b>Chemotherapeutic Agents</b>	<ul style="list-style-type: none"> <li>• Doxorubicin</li> <li>• 5-fluorouracil</li> <li>• Bleomycin</li> <li>• Cisplatin</li> <li>• Temozolomide</li> <li>• Any radio-sensitizers or drugs that cause immune suppression</li> </ul>
<b>Co-existing Chronic Illnesses</b>	<ul style="list-style-type: none"> <li>• Anemia</li> <li>• Diabetes mellitus</li> <li>• Cardiovascular disease</li> <li>• Suppression of the immune system</li> </ul>
<b>Other</b>	<ul style="list-style-type: none"> <li>• Tobacco use</li> <li>• Advanced age</li> <li>• Skin folds</li> <li>• Previous sun exposure</li> <li>• Nutrition and hydration status</li> <li>• Mobility</li> </ul>
Consequences	
<p>Radiation dermatitis can progress from erythema to dry desquamation to moist desquamation and rarely to ulceration. Additionally, with current technology and treatment delivery, necrosis is now also a rare occurrence. Patients may complain of tenderness, discomfort, pain or burning in the treated skin. Some patients note a change in activities of daily living as a consequence of radiation dermatitis.</p>	



## Appendix B: General Recommendations

	GENERAL SKIN CARE RECOMMENDATIONS DURING TREATMENT
<b>Washing</b>	<ul style="list-style-type: none"> <li>• Encourage to wash the irradiated skin daily using lukewarm water and</li> <li>• Use gentle, fragrance free, pH balanced soap</li> <li>• Wash cloths may cause friction and are therefore discouraged</li> <li>• A soft towel to pat skin dry is recommended</li> </ul>
<b>Use of Deodorants</b>	<ul style="list-style-type: none"> <li>• May continue to use antiperspirants or deodorants during radiation therapy on dry intact skin</li> </ul>
<b>Other Skin Products</b>	<ul style="list-style-type: none"> <li>• Avoid perfumed products which may possess chemical irritants and induce discomfort</li> <li>• Products such as gels or creams should be applied at room temperature</li> </ul>
<b>Hair Removal</b>	<ul style="list-style-type: none"> <li>• Electric shavers are recommended</li> <li>• Wax or other depilatory creams are discouraged</li> <li>• Patients are asked not to shave the axilla if it is within the treatment field</li> <li>• Avoid pre-shave liquids and aftershave</li> </ul>
<b>Swimming</b>	<ul style="list-style-type: none"> <li>• May continue to swim in chlorinated pools but should rinse afterwards and apply a moisturizing lotion</li> <li>• If radiation dermatitis has progressed beyond dry desquamation swimming should be avoided</li> </ul>
<b>Heat and Cold</b>	<ul style="list-style-type: none"> <li>• Avoid direct application of heat or cold to the irradiated area i.e. ice or electric heating pads</li> </ul>
<b>Adhesive Bandages and Tape</b>	<ul style="list-style-type: none"> <li>• Rubbing, scratching and massaging the skin within the treatment area causes friction and should be discouraged</li> <li>• Avoid adhesive bandages or tape to treatment area</li> </ul>
<b>Clothing</b>	<ul style="list-style-type: none"> <li>• Wearing loose fitting cotton clothing may help avoid traumatic shearing and friction injuries</li> </ul>
<b>Moisture</b>	<ul style="list-style-type: none"> <li>• Encourage patients to keep skin moisturized using gentle products to prevent pruritus and xerosis (dry skin)</li> </ul>
<b>Nutrition</b>	<ul style="list-style-type: none"> <li>• A healthy diet and consumption of fluids can help keep skin moist and healthy</li> <li>• Adequate nutrition aids in wound healing</li> </ul>
<b>Sun Exposure</b>	<ul style="list-style-type: none"> <li>• Avoiding too much sun is part of a healthy lifestyle</li> <li>• During the course of radiation and while skin is healing keep treatment field out of direct sunlight</li> <li>• After skin has healed it may be more sun sensitive and therefore requires diligent protection from sunlight or use of sunscreen with a minimum SPF 30. Sunscreen should be reapplied as needed (e.g. every 2 hours and after swimming or perspiration)</li> <li>• Avoid tanning beds</li> </ul>



## Appendix C: Treatment Procedures

### Application of Topical Products

<b>Moisturizing Products</b>	<ul style="list-style-type: none"> <li>Instruct patient to gently apply a thin layer of product using clean hands 2 to 4 times daily to the skin in the treatment area</li> </ul>
<b>Corticosteroid Creams</b>	<ul style="list-style-type: none"> <li>Prescription or over-the-counter topical steroids may be encouraged at the discretion of the physician</li> <li>Instruct patient to gently apply a very thin layer of topical steroid cream using their clean hand as prescribed by the physician</li> <li>Instruct patient to apply to skin in the treatment area until discomfort decreases and to wash hands after application</li> </ul> <p><b>Note:</b></p> <ul style="list-style-type: none"> <li>Do not use topical steroids if a skin infection is suspected as it may mask signs of infection and increase severity of radiation dermatitis</li> <li>Do not use topical steroids on a long-term basis as it may cause problems resulting from reduced blood flow to the skin</li> <li>Discontinue use of topical steroids if there is any exudate from the affected area</li> </ul>
<b>Barrier Creams</b>	<ul style="list-style-type: none"> <li>Instruct patient to apply a thin layer of (water soluble) barrier cream to the treatment area</li> <li>Non-adhesive dressings may be applied, depending on the location of the dermatitis</li> </ul>

### Normal Saline Compresses

<b>Indications</b>	<ul style="list-style-type: none"> <li>To reduce discomfort due to inflammation or skin irritation</li> <li>To cleanse open areas</li> <li>To loosen dressings</li> </ul>
<b>Contraindication</b>	<ul style="list-style-type: none"> <li>If causes increased discomfort during procedure</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>Moisten gauze with warm or room temperature saline solution</li> <li>Wring out excess moisture (ensure that gauze will not dry out and adhere to open area)</li> <li>Apply moist gauze to open areas for 10-15 minutes. Cover compress with abdominal pad or disposable under-pad to retain warmth and moisture</li> <li>Remove gauze and gently irrigate wound with normal saline if required to remove any debris</li> <li>Gently dry surrounding skin</li> <li>Apply dressing/other treatments as indicated</li> <li>Can repeat several times throughout the day</li> </ul>
<b>Note</b>	<ul style="list-style-type: none"> <li>Continuous moist saline compresses may be indicated for short term use (24-48hrs) for a necrotic wound or a wound with heavy exudate. It is critical that the compress is replaced frequently enough that it does not dry out and adhere to the area. Moist gauze is applied only to the wound area to avoid maceration of intact skin</li> </ul>

### Sitz Baths

<b>Indication</b>	<ul style="list-style-type: none"> <li>Perineal hygiene during and post RT when the area is tender and inflamed</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>Use at onset of treatment for comfort and cleanliness</li> <li>Use at any time for any dermatitis in the perineal/peri-rectal area</li> <li>Discomfort with defecation</li> <li>Continuous discomfort due to perineal inflammation, hemorrhoids, radiation-induced diarrhea</li> </ul>
<b>Contraindication</b>	<ul style="list-style-type: none"> <li>Discomfort during procedure</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>Water should be warm (40-43°C)</li> <li>Hot water can cause increased drying of skin</li> <li>Warm water will increase vasoconstriction and may decrease the itching</li> <li>Do not add bath oils, salts or other products to water</li> <li>A hand held shower with a gentle spray or bathtub may be appropriate alternatives</li> </ul>

- Maximum 10-15 minutes, repeat up to 4 times daily and/or after each bowel movement
- Gently pat area dry with a soft towel or expose area to room air
- If indicated follow with application of water based lotion

### Topical Antibiotics (Silver Sulfadiazine Cream, Polysporin)

<b>Indications</b>	<ul style="list-style-type: none"> <li>• The treatment of infection in open wounds</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• Treatment of wound sepsis</li> </ul>
<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Allergy to sulfa</li> <li>• Patients with history of severe renal or hepatic disease</li> <li>• Pregnancy</li> <li>• Infection prophylaxis</li> </ul> <p><b>Note:</b> Flamazine may delay wound healing and is unnecessary in cases where no infection is present. Flamazine should not be routinely recommended unless there is evidence of infection.</p>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Gently cleanse wound area with normal saline if area is small and dressing is easily removed</li> <li>• Cleanse with tap water (sink, bathtub, shower or sitz bath) if area is large, difficult to cleanse or adherence of dressing is a problem</li> <li>• It is important to gently remove all residual cream from previous applications (saline compresses may be required)</li> <li>• Apply a thin layer of cream only to affected skin</li> <li>• Apply appropriate secondary dressing</li> <li>• Change dressing at least once daily</li> </ul>

### Hydrogels

Hydrogels are sterile wound gels that help create or maintain a moist environment. Some hydrogels provide absorption, desloughing and debriding of necrotic and fibrotic tissue. Hydrogel sheets are cross-linked polymer gels in sheet form.

<b>Indications</b>	<ul style="list-style-type: none"> <li>• Moist desquamation with minimal exudate</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• To increase comfort (cooling effect on skin)</li> <li>• To increase moisture content</li> <li>• To absorb small amounts of exudate</li> </ul>
<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Infected wounds</li> <li>• Wounds with moderate to heavy exudate</li> <li>• Areas that need to be kept dry</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Cleanse area with normal saline soaks or sitz baths</li> <li>• Pat surrounding skin dry</li> <li>• Either apply a thin layer of hydrogel directly onto the area of moist desquamation or apply with a tongue depressor</li> <li>• Cover with non-adhesive dressing (may be secured by clothing if patient is ambulatory)</li> <li>• May be used in combination with transparent films, foams, hydrocolloids or other non-adherents</li> <li>• Reapply at least daily and always following normal saline soaks/sitz baths</li> </ul>

### Hydrocolloid Dressings

Hydrocolloids are occlusive and adhesive water dressing which combine absorbent colloidal material with adhesive elastomeres to manage light to moderate amount of wound exudate. Most hydrocolloids react with wound exudate to form a gel-like covering which protect the wound bed and maintain a moist wound environment.

<b>Indications</b>	<ul style="list-style-type: none"> <li>• Moist desquamation with moderate exudate</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• Maintain moist wound bed</li> <li>• To increase comfort</li> <li>• Support autolytic debridement by keeping wound exudate in contact with necrotic tissue</li> </ul>
<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Infected wounds</li> <li>• Wounds with heavy exudate</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Cleanse area with normal saline soaks or sitz baths</li> </ul>

- Pat dry surrounding skin
- Choose a dressing that extends beyond the wound
- Remove backing and apply to wound
- Change dressing as required depending on causative factors, contributing factors and amount of exudate

### Silicone Dressings

Silicone dressings are coated with soft silicone and help to minimize pain and trauma during dressing changes, to protect the skin and to promote comfort. The different types of soft silicone dressings meet different clinical needs

<b>Indications</b>	<ul style="list-style-type: none"> <li>• Moist desquamation</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>• To prevent/reduce trauma</li> <li>• To increase comfort</li> </ul>
<b>Contraindications</b>	<ul style="list-style-type: none"> <li>• Known allergy to silicone</li> <li>• Bleeding wounds</li> </ul>
<b>Procedure</b>	<ul style="list-style-type: none"> <li>• Cleanse area with normal saline soaks</li> <li>• Pat dry surrounding skin</li> <li>• Choose a dressing that extends beyond the wound</li> <li>• Remove backing and apply to wound</li> <li>• Change dressing as required depending on causative factors, contributing factors and amount of exudate</li> </ul>

## Appendix D: Principles of Moist Healing

### Principles of Moist Healing

Cell growth requires moisture and the principle aim of moist wound therapy is to create and maintain optimal healing conditions. Cells can grow, divide and migrate at an increased rate to optimize the formation of new tissue. During this phase of wound healing an aqueous medium with several nutrients and vitamins is essential for cell metabolism and growth.

The wound exudate serves as a transport medium for a variety of bioactive molecules such as enzymes, growth factors and hormones. The different cells in the wound area communicate with each other via these mediators, making sure that the healing processes proceed in a coordinated manner.

Wound exudate also provides the different cells of the immune system with ideal conditions to destroy invading pathogens such as bacteria, foreign bodies and necrotic tissues, diminishing the rate of infection. Moist wound treatment is known to prevent formation of a scab, allowing epithelial cells to spread horizontally outwards through the thin layer of wound exudate to rapidly close the wound.

#### Date of Print:

Revised: October, 2018, March, 2017

Created: July, 2012

#### Contributing Authors:

Revised by: Michelle Post, RN, MSN (2018), Anne Hughes, RN, BSN, MN; Alison Mitchell, RTT, BSc.

Created by: Anne Hughes, RN, BSN, MN; Alison Mitchell, RTT, BSc.; June Bianchini, RN; Frankie Goodwin, RN, BSN; Normita Guidote, RN; Rachelle Gunderson, RN; Ann Hulstyn, RN, BSN; Susan Kishore, RTT; Krista Kuncewicz, RTT; Sheri Lomas, RTT; Gillian Long, RTT; Heather Montgomery, RN; Dawn Robertson, RN; Jenny Soo, RT, M.Ed; Stacey Tanaka, RN; Victoria van le Leest, RTT; Wendy Vanhoerden, RN; Tara Volpatti, RTT; Dr. Frances Wong, Radiation Oncologist; Karen Yendley, RTT

**Reviewed by:** BC Cancer Agency Provincial Radiation Therapy Skin Care Committee; Dr. Hosam Kader, Radiation Oncologist VIC; Dr. Jonn Wu, Radiation Oncologist FVC; BCCA Nursing Practice Committee