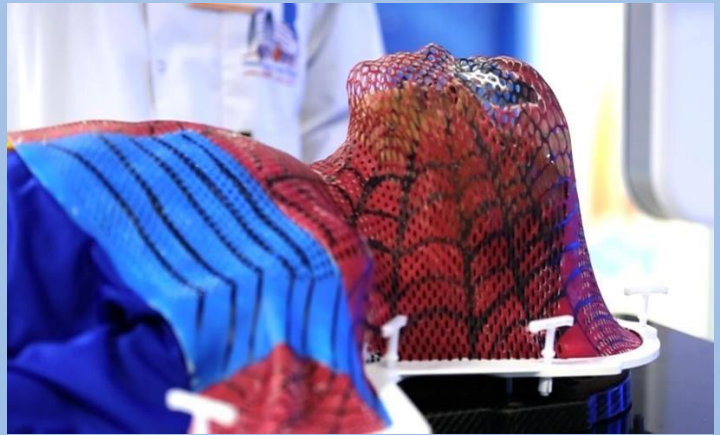




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2021- V1

Guidelines for Nursing staff (Radiotherapy)



Nursing Research Unit

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1. Aim:

- Nursing Guidelines is to provide comprehensive, current, evidence-based nursing care for nursing staff who works with patients undergone or are receiving radiotherapy.

2. Desired Outcome:

1. Reduce variations in nursing care and promote best practice.
2. Develop an evidence-based nursing clinical practice guideline for nursing staff who works with patients undergone or are receiving radiotherapy.

3. Introduction:

Radiation therapy (also called radiotherapy, irradiation, or x-ray therapy) is a cancer treatment using different forms of ionizing radiation.

Radiotherapy is an important method for treating cancer and is usually used in conjunction with other therapies, such as chemotherapy or oncologic surgery. Radiotherapy can be used during different stages of cancer treatment and for different outcomes.

Radiation therapy can play a significant role in the cure or shrinkage of early-stage cancer, stop cancer from coming back (recurring), treat symptoms caused by advanced cancer or treat cancer that has returned (recurred). However, it has also side effects like other treatment modalities. The side effects of radiation therapy can interfere with patient quality of life and daily activities. Severe side effects can lead to delays in treatment, potentially affecting the outcome of treatment.

All patients receiving radiation therapy are at risk of fatigue and skin reactions in the area of the body being treated. Other side effects of radiation therapy are specific to the part of the body being treated. Radiation therapy to the head and neck area may cause oral mucositis, dryness, and nutritional deficiencies. Radiation therapy to the chest or lung area may lead to difficulty in swallowing and eating. Radiation therapy to the pelvis frequently causes diarrhea. There are many nursing interventions available to manage the side effects of treatment based on best available evidence and expert opinion. Nurses in all settings have the major role in helping patients manage the side effects of treatment and maintain their quality of life as high as possible. Side effects of radiation depend on treatment site, daily dose, concurrent chemotherapy, and individual patient characteristics (Table 1).

4. Types of Radiotherapy:

1. External radiation (or external beam radiation)

External-beam radiation therapy delivered in the form of photon beams (either x-rays or gamma rays). A photon is the basic unit of light and other forms of electromagnetic radiation. It can be thought of as a bundle of energy. The amount of energy in a photon can vary.

Many types of external-beam radiation therapy are delivered using a machine called a linear accelerator (also known as a LINAC). A LINAC uses electricity to form a stream of fast-moving subatomic particles. This creates high-energy radiation that may be used to treat cancer.

Patients usually receive external-beam radiation therapy in daily treatment sessions over the course of several weeks. The number of treatment sessions depends on many factors, including the total radiation dose that will be given. One of the most common types of external-beam radiation therapy is called 3-dimensional conformal radiation therapy (3D-CRT). 3D-CRT is an advanced form of conformal radiation therapy delivered on a linear accelerator. Intensity-modulated radiation therapy (IMRT) and Volumetric-modulated arc therapy (VMAT) uses very sophisticated computer softwares and advanced treatment machines to deliver radiation to very precisely shaped target areas. They both target cancer while sparing healthy tissue.

2. Internal or near radiation therapy:

Internal or near radiation therapy (brachytherapy) is radiation delivered from radiation sources (radioactive materials) placed inside or on the body. Several brachytherapy techniques used in cancer treatment. Interstitial brachytherapy uses a radiation source positioned within tumor tissue. Intracavitary brachytherapy uses a source placed within a surgical cavity or a body cavity, such as the chest cavity, near a tumor. Episcleral brachytherapy, which is used to treat melanoma inside the eye, uses a source that is attached to the eye. In brachytherapy, radioactive isotopes are sealed in tiny pellets or “seeds.” These seeds are placed in patients using delivery devices, such as needles, catheters, or some other type of carrier. As the isotopes decay naturally, they give off radiation that damages nearby cancer cells.

If left in place, after a few weeks or months, the isotopes decay completely and no longer give off radiation. The seeds will not cause harm if they are left in the body.

3. Systemic radiation therapy:

In systemic radiation therapy, a patient swallows or receives an injection of a radioactive substance, such as radioactive iodine or a dangerous substance bound to a monoclonal antibody. Radioactive iodine: is a type of systemic radiation therapy commonly used to help treat some types of thyroid cancer. Thyroid cells naturally take up radioactive iodine.



5. Side effects of radiation therapy by Treatment Site (Table 1):

Items	Brain	Head and neck	Breast	Chest	Abdomen or pelvis
Hair loss(in area of body being treated)	√	√		√	√
Skin changes (in part of body being treated)	√	√	√	√	√
Fatigue	√	√	√	√	√
Diarrhea					√
Nausea and vomiting					√
Mouth changes, mucositis, xerostomia	√	√			
esophagitis				√	
Urinary and bladder changes					√
Headache , blurry vision	√				
Tast changes		√			
Tenderness or swelling			√		
Coughing , Shortness of breath				√	

6. Nursing interventions for common side effects of radiation therapy (Table 2):


Note:

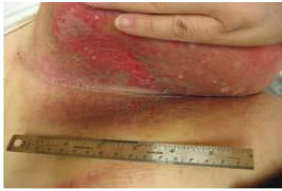
- ✓ Any medical side effects should be reported to the doctor.
- ✓ Any medication should be given as doctor recommendations.


<i>Side effect</i>	<i>Definition</i>	<i>Nursing intervention</i>
General side effects		
<p>1. Fatigue</p> 	<p>Fatigue is a significant symptom and acute effects associated with radiotherapy.</p> <ul style="list-style-type: none"> - Common during and in the first few weeks post treatment. 	<ul style="list-style-type: none"> - Limit daily activities, if possible, balancing activities and rest especially before and after radiotherapy session. - Assess any signs and symptoms and report to the doctor. -- Promote a restful environment. - Keeping to a sleep schedule and creating a comfortable sleep environment can lead to improved sleep and less fatigue. - Increase rest by getting more sleep at night, taking naps during the day. - Eat and drink well, with foods high in protein and calories. - Keep lights and noise to a minimum overnight to encourage patients to sleep and reduce feelings of fatigue. 
<p>2. Nausea and Vomiting</p>	<ul style="list-style-type: none"> - Nausea is the feeling of sickness or discomfort that a person associates with the urge to vomit. - Vomiting, or throwing up, occurs due to the action of the diaphragm and 	<ul style="list-style-type: none"> -- Teach patient to sit upright after vomiting. -- Eat small snacks and meals. -- Eat and drink slowly. -- Avoid having liquids with meals. -- Avoid spicy, acidic, or rich foods.



	<p>abdominal muscles. These muscles contract and push stomach contents up the esophagus and out the mouth</p>	<p>--Eat in a place that does not have strong smells. --Allow the child to choose like and dislike food. --Keep a record of symptoms. =Write down when nausea occurs, what makes it worse, what makes it better, and any other symptoms such as pain, loss of appetite, diarrhea, or constipation. --Do not offer favorite foods when child is nauseous. --Avoid lying down flat after meals. --Make sure to rinse the mouth after vomiting, stomach acid can cause mouth irritation and tooth decay. --Sip liquids slowly throughout the day. --Relax and take slow, deep breaths. --Avoid unpleasant sights, odors & taste --Administer antiemetic to prevent or minimize nausea as doctor order. --Monitor fluid and electrolyte status as doctor order.</p>
Specific side effects		
<p>1. Radiation dermatitis</p> <p><i>Radiation Dermatitis</i></p> <p>Grades</p> <p>Normal- No changes in skin</p> <p>Grade 1 – Faint erythema or desquamation.</p>	<p>- Is a common side effect of radical ionizing radiation treatment.</p> <p><u>Grade 1</u> <u>Clinical Presentation</u></p> <p>Erythema</p> <ul style="list-style-type: none"> • Pink to dusky coloration • May be accompanied by mild edema • Burning, itching and mild discomfort <p>Dry desquamation</p> <ul style="list-style-type: none"> • Partial loss of the epidermal basal cells • Dryness, itching, scaling, flaking and peeling • Hyperpigmentation <p><u>Brisk Erythema</u></p>	<p><u>- Nursing Intervention for Grade 1</u></p> <p>-Patient assessment to include location, size of area and color and report to the doctor.</p> <p>-Assess any signs and symptoms and report to the doctor.</p> <p>- Give patients medication as doctor order to reduce inflammation.</p> <p>Avoid adhesive tape. Extend dressing out of treatment area and adhere to intact skin with paper tape. Secure dressing with cling gauze, net</p>

<p>Grade 2 – Moderate to brisk erythema or patchy, moist desquamation confined to skin folds and creases. Moderate edema.</p> <p>Grade 3 – Moist desquamation in areas other than skin folds and creases; bleeding induced by minor trauma or abrasion</p> <p>Grade 4 – Life-threatening consequences; skin necrosis or ulceration of full ,thickness dermis; spontaneous , bleeding from involved site; skin. graft indicated.</p>	 <p><u>Dry Desquamation</u></p>	<p>tubing or under clothin as doctor order.</p> <ul style="list-style-type: none"> - Keeping the skin clean and moisturized and protecting skin from irritation, injury, and infection. -Avoid scratching the skin in the treated area. It could increase the chance of infection. -Check to make sure that clothes, shoes, and medical devices do not rub or chafe the skin. -Teach patient to Bathe using warm water and palm of hand to gently wash affected skin. Rinse well and pat dry with a soft towel. -Wash hair using warm water and mild, non-medicated shampoo such as baby shampoo as doctor order. -Do not rub skin and avoid irritant products -Protect skin from direct sunlight and wind exposure by wearing a wide brimmed hat and protective clothing -Avoid extremes of heat and cold, including hot tubs, heating pads and ice packs - Wash skin gently. -Avoid rubbing, scrubbing, or scratching irritated skin. -Don't use moisturizers within one hour before or after a radiation treatment. -Wear cotton soft, loose fitting clothes avoid tight clothes in the area being treated and keep fingernails trimmed to avoid injury.
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	<p>Grade 2 – Grade 3 Moist Desquamation</p> <ul style="list-style-type: none"> • Sloughing of the epidermis and exposure of the dermal layer • Blister or vesicle formation • Serous drainage • Pain <p>Moist Desquamation</p> 	<p><u>Nursing Intervention for Grade 2 – Grade 3</u></p> <ul style="list-style-type: none"> -Patient assessment to include location of moist and dry areas, size of area, wound base: Granular tissue, eschar or necrotic tissue, exudate: Type, amount, odor and report to the doctor. -Assess any signs and symptoms of discomfort as burning, itching, pulling, tenderness and report to the doctor. - assess level of pain and swelling extending outside the treatment area and report to the doctor. -Manage Pain by Prevent trauma to the treatment area, cover open areas to protect nerve endings • To decrease burning and tenderness use non-adherent or low adherent dressings as order. • Administer analgesics as ordered by the physician • Assess any Signs of clinical infection as fever, foul odor, purulent drainage • Apply antibacterial/antifungal products as ordered by the physician.
	<p>Grade4 Rarely occurs</p> <ul style="list-style-type: none"> • Skin necrosis or ulceration of full thickness dermis • May have spontaneous bleeding from the site • Pain <p>Skin necrosis</p>	<p><u>Nursing Intervention for Grade4</u></p> <ul style="list-style-type: none"> -Patient Assessment see above in grade 2 and 3 -Assess any signs or symptom of bleeding and report to the doctor. - Promote hygiene to prevent spread of infection. -Prevent/treat infection as physicians order. -Prevent trauma

		<p>- Assess level of pain and manage pain as physicians order.</p>
<p>2. Alopecia</p>	<p>-Hair loss (alopecia) is a common side effect of some cancer treatments including chemotherapy and radiation therapy.</p>	<p>-Explain hair loss is temporary, and hair will grow when drug is stopped.</p> <p>-Avoid excessive brushing and combing of the air.</p> <p>- use a hairbrush with soft bristles or a wide-tooth comb.</p> <p>-Do not use hair dryers, irons, or products such as gels or clips that may hurt your scalp.</p> <p>-Wash the hair very gentle and dry it with a soft towel.</p> <p>-Select wig, cap, scarf or turban before hair loss occurs.</p> <p>-Use sunscreen or wear a hat when you are outside and keep head covered in summer to prevent sunburn and in winter to prevent heat loss.</p> <p>-Be Gentle When the hair starts to grow back and avoid too much brushing, curling, and blow-drying</p> <p>-Do not use vitamins, supplements, or topical hair growth products without talking to a doctor</p>
<p>3. Diarrhea</p>	<p>It is a condition where stools become loose or watery and occur more often</p>	<p>--Monitor number, frequency and consistency of diarrhea stools.</p> <p>--Assess patient's weight, dietary preferences, the pattern of bowel elimination.</p>



		<p>-- Give antidiarrheal medication as doctor order.</p> <p>--Avoid eating high roughage, greasy and spicy food.</p> <p>--Encourage High-calorie, high-protein, low-residue diet in small, frequent meals (cottage cheese, yogurt, broth, fish, custard, cooked cereals, cooked vegetables, peeled apples, and macaroni), and liquid diet if diarrhea is severe as doctor order.</p> <p>-- Assess perianal skin for integrity and signs and symptoms of irritation.</p> <p>-- Assess any signs and symptoms as Cramping or lose control of bowel movements and report to the doctor.</p> <p>-Monitor intake/output, daily weight and report to the doctor.</p> <p>- Monitor hydration status and report to the doctor.</p>
<p>4. Mouth changes as mucositis ,xerostomia,tast changes</p>	<p>- Mucositis is a swelling of the mucous membrane, the moist, inner lining of some body organs.</p> <p>- Xerostomia : it is a sensation of oral dryness along with an objective decrease in the production of saliva.</p> <p><u>Fungal infection (Oral candidiasis)</u> is a condition in which the fungus Candida albicans accumulates on the lining of the mouth.</p>	<p>-Assess any signs and symptoms of oral mucositis as pain, redness, inflammation or bleeding and report to the doctor.</p> <p>- Frequent oral rinsing, sipping on ice water or ice chips as doctor order.</p> <p>-Assess any signs and symptoms of fungal infection (Oral candidiasis) as white patches on the inner cheeks, tongue, roof of the mouth, and throat, redness or soreness, cotton-like feeling in the mouth, loss of taste, pain while eating or</p>



swallowing and report to the doctor.

-Monitor pain level and give patients medication to relieve pain according to doctor order.

-Give antifungal medicines if to reduce and treat infection according to doctor order.

-Encourage a diet high in protein and vitamins and soft foods.

-Encourage the patients to take small frequent meals or snacks spaced throughout the day.

-Teach the patients to:

-brush teeth after each meal to prevents organisms being trapped on gums, or teeth.

- Use a soft toothbrush to avoid scraping the lesions.

-Rinse the mouth after eating or taking medicine.

- To Follow oral mucositis guidelines for assessment & management from hospital policy.

Please click on the link below:

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5. Esophagitis

It is inflammation that may damage tissues of the esophagus, the muscular tube that delivers food from the mouth to the stomach.

-Assess any signs and symptoms as difficult swallowing, painful swallowing or chest pain and report to the doctor.

- Assess Level of pain and report to the doctor.

-Give patients medication according to doctor



		<p>order.</p> <ul style="list-style-type: none"> -Assess and manage pain level and give patients medication as order. -Teach the patients to sit or stand for minimum of 30 minutes after eating.
<p>6. Urinary and Bladder Changes</p>	<ul style="list-style-type: none"> -Burning or pain when urinating (oliguria, unuria, dysuria) -Blood in your urine(hematuria) 	<ul style="list-style-type: none"> -Monitor intake and output and report to the doctor. -Encourage child to go to bath room and ask mother to observe any changes in urine color and document to the doctor. -Encourage patient to urinate before going to bed for the night to empty the bladder. -Assess any signs and symptoms as blood in the urine, pink or red urine, Frequent urination or urge to urinate, trouble urinating, incomplete emptying of bladder or pain during urination and report to the doctor. -Urinalysis is also a recommendation to evaluate for the presence of hematuria, proteinuria, or bacterial infections as order. -Encourage patients to drink plenty of liquids as order.
<p>7. Coughing</p>	<p><i>It</i> is a sudden expulsion of air through the large breathing passages that can help clear them of fluids, irritants, foreign particles and microbes.</p>	<ul style="list-style-type: none"> -Monitor patient's vital signs (temperature, pulse, heart rate and respiration and report to the doctor for any abnormality. -Assess the amount of sputum, or mucus and color and report to the doctor.



		<ul style="list-style-type: none"> -Assess any signs and symptoms as dry and tickly or cough up blood report to the doctor. -Teach patients to cough and breathing exercise.
8. Shortness of breath (SOB)	also known as dyspnea is a feeling of not being able to breathe well enough.	<ul style="list-style-type: none"> -Give patients oxygen as doctor order. - Remove or loosen tight clothing. -Sit up the patient in a resting position to feels comfortable. -Remind the patients to breathe in slowly and deeply, then exhale slowly breathing exercises. - Give patient medication as doctor order to help for reduce breathlessness.
9. Headache and blurry vision	It is a pain in any region of the head.	<ul style="list-style-type: none"> -Assess onset, location, frequency, duration, severity, and character. -Assess any changes or loss in vision or increase tearing and report to the doctor. -Assess eye symptoms as Conjunctivitis or Keratitis and report to the doctor. -give the patient medication as doctor order. -Monitor vital signs and report any changes in heart rate / breathing, blood pressure to the doctor. -Observe for nonverbal signs of pain, are like: facial expression, posture, restlessness, crying and report to the doctor. - Note the influence of pain such as: loss of interest in life, decreased activity, weight loss. - Suggest to rest in a quiet room. - Observe for nausea / vomiting and report to the doctor.
10. Tenderness or		<ul style="list-style-type: none"> -Assess sites for redness, edema or any signs of



swelling		inflammation and report to the doctor. -Assess if swelling increase or any signs of inflammation and report to the doctor.
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