

therefore, the local control of the therapy is a huge benefit with no long-term effects to organs surrounding the target area (Hill-Kayser, Tochner, Both, et al, 2013). For example, some brain tumor patients receive radiation to the spine. With traditional forms of radiotherapy, long-term effects to nearby vital organs like the heart and lungs are possible; however, with proton therapy the heart and lungs would not be affected, greatly reducing long-term effects.

**TABLE 25-1**  
**Early Side Effects of Radiotherapy**

Site	Effects	Nursing Interventions
Gastrointestinal tract	Nausea and vomiting	Give antiemetic on schedule around the clock. Measure amount of emesis to assess for dehydration.
	Anorexia	Encourage fluids and foods best tolerated, usually light, soft diet and small, frequent meals. Monitor weight.
	Mucosal ulceration	Use frequent mouth rinses and oral hygiene to prevent mucositis.
	Diarrhea	Control with antispasmodics and kaolin pectin preparations. Observe for signs of dehydration.
Skin	Alopecia (within 2 weeks; hair may regrow by 3 to 6 months)	Introduce idea of wig. Stress necessity of scalp hygiene and need for head covering in sun and cold weather.
	Dry or moist desquamation	Do not refer to skin change as a “burn” (implies use of too much radiation). Avoid lotions and other creams to skin. Wash daily, using soap (e.g., Dove) sparingly. Do not remove skin marking for radiation fields. Avoid exposure to sun. For desquamation, consult practitioner for skin hygiene and care.
Head	Nausea and vomiting (from stimulation of vomiting center in brain)	Same as for gastrointestinal tract.
	Alopecia	Same as for skin.
	Mucositis	Encourage regular dental care, fluoride treatments.
	Potential effects: • Parotitis • Sore throat • Loss of taste	Provide analgesics as needed to relieve discomfort.
	Xerostomia (dry mouth)	Combat severe dryness of mouth with oral hygiene and liquid diet.
Urinary	Rarely cystitis	Encourage liberal fluid intake and frequent