Radiation induced complications

Although patients do not feel anything during a radiation treatment, the effects of radiation gradually build up over time. Most patients have very few initial side effects; however, many patients experience fatigue as treatment continues. The vast majority of patients are able to complete radiation therapy without significant difficulty. Side effects and potential complications of radiation therapy are infrequent and, when they do occur, are typically limited to the areas that are receiving treatment with radiation. The chance of experiencing side effects, however, is highly variable. A dose that causes some discomfort in one patient may cause no side effects in other patients. If side effects occur, you should inform the technologists and radiation oncologist, because treatment is almost always available and effective. Side effects are usually temporary and resolve once the radiation is completed. The most common side effect of radiation are: Skin reaction Fatigue Side effects that commonly occur with radiation to the head and neck are: Mucositis Xerostomia Changed sense of taste and/or smell Hypothyroidism Other less common side effects are: Hair loss Nausea/Vomiting Diarrhea Loss of appetite Low blood counts (myelosuppression) While not as common with the advent of modern radiation delivery techniques, side effects that may occur with radiation to the chest are: Lung fibrosis Heart complications In addition to the above temporary side effects, in certain cases, patients may develop long-term side effects, also called “late complications”, such as: Secondary cancers Hypothyroidism These long-term side effects are also less common with the advent of modern radiation techniques. MOST COMMON SIDE EFFECTS OF RADIATION THERAPY

Skin reaction: A common side effect of radiation therapy is skin irritation in the area of the body that is being treated. The skin reaction can range from mild redness and dryness (similar to a sunburn) to severe peeling (desquamation) of the skin in some patients. The majority of skin reactions to radiation therapy go away a few weeks after treatment is completed. In some cases, the treated skin will remain slightly darker than it was before and it may continue to be more sensitive to sun exposure. It is important to notify your nurse or physician when your skin becomes irritated because redness and dryness can eventually progress to peeling with oozing of fluid in the area. They can suggest measures to relieve your discomfort and possibly minimize further irritation. There are effective topical medications for treatment of radiation induced skin irritation, as well as a number of precautions that may minimize skin irritation during radiation therapy, such as: Keep the treated area dry and free from irritation. Cornstarch, gently patted on with a powder puff, will keep the skin dry. Wash the skin in the treatment area only with mild soaps. Use a mild shampoo, such as baby shampoo, if the head is being treated. When using a towel, pat the area dry instead of rubbing. If you must shave in the treated area, use an electric razor to prevent cuts. Avoid using shaving lotions or scented creams. Do not use perfumes, deodorants, or makeup in the treated area. Avoid using heating pads or ice packs on the skin in the treated area. Wear loose-fitting clothing that does not rub on the skin in the treated area. Avoid harsh fabrics over the treatment area, such as wool, corduroy, or starched cloth. Lightweight cotton is recommended. Avoid sun exposure in the treated area. If you expect to be in the sun for more than a few minutes, wear protective clothing (such as a hat with a broad brim and shirt with long sleeves) and use a sunscreen. Ask your doctor or nurse about using sunscreen lotions of SPF 15 or higher. Check with your nurse or physician regarding the use of creams or lotions. Usually, samples of safe topical medications are available in the radiation clinic. Unless necessary, do not use adhesive tape, including band aids and paper tape on the treated area. Breast cancer patients should not use deodorant if the axilla is in the treatment field. Create your own non-irritating deodorant: 1/4 cup baking soda and 1/4 cup of corn starch mixed together and applied with cotton balls. Do not swim in salt water, lakes, pools, or ponds. Always report any discomforts or concerns to your nurse or doctor. Fatigue: Fatigue is a feeling of tiredness, weariness, weakness, exhaustion, or a profound lack of energy. Fatigue is one of the most common side effects of radiation therapy. Patients are not restricted from normal activity during radiation therapy; however, they

should balance normal activity with periods of rest. Fatigue is typically more severe 2-4 hours after treatment. The feeling of fatigue should wear off several weeks after the completion of radiation therapy. The following suggestions may help you manage fatigue resulting from radiation therapy: Limit your activities, if possible. Exercise each day to maintain your strength. Prepare meals ahead of time and freeze them. Use convenience foods that are ready to eat. Accept offers of help from friends and relatives. Drink three quarts of fluid each day to avoid the build-up of cellular waste products. Increase rest by getting more sleep at night and taking naps during the day. Try to eat even when you are tired. Sometimes a little food will increase energy. SIDE EFFECTS ASSOCIATED WITH RADIATION THERAPY TO THE HEAD AND NECK

Mucositis (sore mouth or throat): Radiation therapy that is delivered to the head and neck area may cause mucositis. Mucositis is inflammation of the lining of the mouth and throat, called the mucus membranes. When radiation is administered directly to or near the head and neck region, chest, abdomen, or anal-rectal regions, it may cause damage to the mucosal lining of the entire gastrointestinal tract. This results in inflammation and sloughing of the mucosal cells, causing pain and increasing the risk of infection. Patients who have a sore mouth or gums need to take special care of their teeth, as they are a primary site for infection and pain. These patients may need to utilize frequent oral hygienic measures and antiseptic mouthwashes. In addition, some patients find it helpful to rinse the mouth with water frequently in order to remove food and bacteria and promote healing. Patients with mucositis should also select foods that will not further irritate an already tender mouth, for example: Choose soft foods that are easy to chew and swallow. Avoid foods that irritate the mouth such as citrus fruits and foods that are spicy, salty, rough, coarse, or dry. Cook foods until they are soft and tender. Cut foods into small pieces. Mix food with butter, thin gravies or sauces to make it easier to swallow. Puree food in a blender or food processor. Use a straw to drink liquids. Eat foods cold or at room temperature, as hot food can irritate a tender mouth. Use anesthetic lozenges and sprays to numb the mouth and throat long enough to eat meals. Xerostomia (dry mouth): Radiation therapy that is delivered to the head and neck area may also result in xerostomia. Xerostomia is a chronic dry-mouth condition, which is caused by damage to the salivary glands as a result of radiation therapy. Xerostomia can have a negative effect on quality of life by greatly impairing a patient’s ability to speak, chew, swallow, and taste. Coping with a dry mouth can be difficult, but the following tips may help. Try consuming sweet or tart foods or beverages, such as lemonade, to help your mouth produce saliva. (Avoid these, however, when experiencing a sore mouth or throat.) Suck on sugar-free, hard candy or popsicles or chew sugar-free gum; this may also help to produce more saliva. Eat soft and pureed foods that are easier to swallow. Keep lips moist with lip salves. Eat foods with sauces, gravies, and salad dressings to make them moist and easier to swallow. Sip water every few minutes to make swallowing and talking easier. If the dry mouth problem is severe, ask your physician or dentist about products that coat and protect the mouth and throat. Changed sense of taste and/or smell: Radiation therapy or cancer itself may cause a change of taste or smell that typically goes away once treatment is complete. Foods may have a bitter or metallic taste, or simply less taste. The following is a list of suggestions that may help to make food taste better. Stop eating foods that cause an unpleasant taste and choose foods that look and smell good to you. Serve foods at room temperature. Try using small amounts of flavorful seasonings. Try tart foods such as oranges or lemons that may have more taste (unless you are experiencing a sore mouth or throat). Marinate meat, chicken, or fish in sweet sauces. If red meat tastes or smells strange, switch to chicken, turkey, eggs, or dairy products. LESS COMMON SIDE EFFECTS OF RADIATION THERAPY

Hair loss: Radiation therapy only causes hair loss in the area being treated. Hair loss typically begins 2-4 weeks after the initiation of treatments. Some individuals experience thinning of the hair, while others experience complete hair loss. Hair loss caused by radiation is temporary. Typically, regrowth of hair begins 6-8 weeks after completion of radiation therapy. The best way to deal with hair loss is

to prepare for it before it happens. Your physician will inform you of your chances for hair loss before your treatments begin. Consider the following tips for coping with hair loss: Get a short, stylish haircut prior to beginning radiation in order to prepare yourself for the change in your appearance. If considering a wig, see a wig stylist before radiation treatment begins so that the stylist can match a wig to your natural hair color and texture. Ask your doctor for a prescription for a wig, as some insurance companies will cover this cost. Once radiation treatments begin, use a mild shampoo, pat the hair dry, and comb the hair carefully, without tugging. Only use a hairdryer if necessary and keep it on a low heat setting. Avoid hair dyes, rollers, curling irons, or perms. Sleep on a satin pillowcase to avoid friction between hair and scalp. Consider scarves, turbans, or wigs. Some patients feel more in control if they shave their head completely, rather than dealing with the hair falling out. Nausea/vomiting: Sometimes radiation therapy causes nausea (feeling queasy or sick to your stomach) and/or vomiting (throwing up), especially when the radiation is delivered to the abdominal area. Nausea/vomiting can happen immediately after radiation, can be delayed, or can occur in anticipation of receiving treatment. Several drugs, called antiemetics, are FDA approved for the prevention of nausea and vomiting. If you do experience nausea immediately after radiation, you may find it helpful to refrain from eating several hours prior to the treatment and for 1-2 hours afterward. In contrast, if you experience anticipatory nausea, it might be helpful to eat a bland snack, such as toast or crackers, before treatment. The following is a list of suggestions for coping with nausea: Eat small meals. Eat and drink slowly. Eat often. Avoid foods that are fried or high in fat. Drink cool liquids between meals. Eat foods that have only a mild aroma and that can be served cool or at room temperature. Stick to any special diet that your doctor or dietician gives you. For a severely upset stomach, try a clear liquid diet (broth and juices) or bland foods that are easy to digest, such as dry toast and gelatin. If nausea/vomiting persists, your physician can prescribe an antiemetic to prevent nausea. Diarrhea: Radiation treatment that is delivered to the abdominal area can cause diarrhea, which usually begins in the third or fourth week of radiation therapy. Your physician may recommend that you change your diet and/or prescribe medicine to help with the diarrhea. The following may help you manage diarrhea: As soon as diarrhea starts, switch to a clear liquid diet. Avoid foods that are high in fiber or can cause cramps or a gassy feeling (raw vegetables, coffee, beans, cabbage, spicy food). Eat small, frequent meals. Avoid dairy products. Eat foods that are high in potassium, such as bananas, potatoes, and apricots, because diarrhea causes potassium loss. Loss of appetite: Loss of appetite is a common factor with cancer and its treatment. Nausea, vomiting, and depression can contribute to a loss of appetite. While you may not want to eat, it is important to maintain proper nutrition throughout treatment. The following suggestions may help you maintain your nutritional intake: Eat whenever you are hungry. Several smaller meals throughout the day might be more appropriate than three larger meals. Eat often. Taking just a few bites of food every hour can ensure that you get more protein and calories. Have a calm, relaxed mealtime. Add variety to your menu. Create a calm and appealing ambiance with music, candles, and friends. Low blood counts (myelosuppression): Blood counts, or the number of blood cells in circulation, can be affected by radiation therapy. Many radiation therapy institutions make it a policy to check the blood counts at least once during the radiation treatments. Low blood counts may cause changes in sleep or rest patterns during the radiation therapy period and some patients describe a sense of tiredness and fatigue. Notify your nurse or doctor if you experience any of these symptoms because treatment is available for low blood counts. Other less common side effects may occur in certain situations and will be discussed with you as appropriate. POSSIBLE SIDE EFFECTS WITH RADIATION TO THE CHEST

Lung fibrosis: Lung fibrosis is scarring of the lung tissue and causes difficulty breathing. Fibrosis can be a significant long-term (late) complication following radiation treatment for Hodgkin’s disease and other cancers requiring radiation to the lungs. However, this decrease in lung function appears to improve over time and is thought to be reversible. Heart complications: Heart disease is also a late complication of radiation to the middle portion of the torso, called the mediastinum. The risk of heart disease increases with higher radiation doses and larger field sizes. POSSIBLE LONG-TERM SIDE

EFFECTS OF RADIATION THERAPY

Secondary cancers: A second cancer can be induced by cancer treatment, including radiation, chemotherapy, or the combination of radiation and chemotherapy. Treatment for Hodgkin's lymphoma at a young age will ultimately result in a higher incidence of second cancers. Hypothyroidism: Hypothyroidism (abnormally low levels of thyroid hormone) is one of the more frequently encountered late complications of radiation therapy in patients where the radiation field includes the neck. This may occur in up to one-third of patients receiving radiation therapy. It is important for patients who have received radiation therapy to be tested on a regular basis because signs and symptoms of hypothyroidism occur very late and are subtle.