



INFORMATION AND INSTRUCTIONS FOR PATIENTS RECEIVING RADIATION THERAPY TO THE BRAIN

Your doctors have recommended radiation treatments to the brain. The number and exact locations of these treatments will be determined by your radiation oncologist. This hand out will acquaint you with some the side effects associated with treatment to the brain. Normal tissues included in your treatment fields may be affected by the radiation and therefore undergo some temporary or permanent changes. Some of the information that follows describes how to manage and cope with many side effects that may occur.

The chance that radiation therapy will be effective in treating your tumor depends on a number of factors. Probably the most important two factors are the kind of tumor that you have and the stage, or amount of disease. As with any type of medical treatment, radiation therapy does not always work and there is a chance that these treatments may not help you. Your doctor will discuss these possibilities with you, but, if you have further questions do not hesitate to ask your doctors or nurses.

Again, side effects listed below do not occur in all patients. These are changes that MIGHT happen during radiation therapy and may range from mild to severe. Because each case is unique, there may be some additional short or long-term effects that your doctor will discuss with you. Whenever you have questions or concerns, please bring them up to your physician, radiation therapist or nurse.

APPETITE CHANGES

- Explanation: Sometimes appetite changes occur during radiation therapy or they may already be present due to the disease itself and/or other treatments. Nutrition, however, is an important part of your therapy and we recommend you maintain your present weight.
- ☹ Characteristics: You may notice that you never feel hungry.
You may become full quickly after only a small amount of food.
You may notice foods tasting or smelling different, flat or unpleasant.
You may feel nauseated and/or vomit.
- ☺ Solutions/Resources: The staff will have suggestions and handouts to help you maintain the best possible nutritional status or to help with symptoms.

FATIGUE

- Explanation: Most patients who receive brain radiation develop a decrease in energy levels or actual fatigue from their radiation treatments. This varies from patient to patient. Your body is using energy to fight cancer cells and/or to repair normal cells and tissues. Causes of fatigue are varied and can be due to your cancer, blood counts, nutrition and prior or current treatments.
- ☹ Characteristics: You may experience fatigue that builds up towards the 2nd week of treatment and then stabilizes.
This fatigue may persist for several weeks after you have finished your radiation treatments.
- ☺ Solutions/Resources: Be sure to get adequate rest, balance your activities and try to exercise regularly.
Eat a balanced and nutritious diet.
Take naps, as necessary.
Try to maintain a positive attitude towards your therapy.
Do not expect immediate resolution of your fatigue when treatment stops. It may take weeks or months to return to “your old self.”

SKIN CHANGES

- Explanation: The skin affected by your treatment field may become reddened, itchy or tender after several weeks of treatment. At the end of treatment, your skin may appear tanned and there could be some peeling. The area may feel firmer or fuller than surrounding skin due to temporary fluid accumulation. This fluid accumulation will most likely resolve without any treatment after a few months. Over time, the tissues under the skin may become more firm (fibrosis). Skin reactions are most common around ears, forehead and the back of the head. Therefore, pay special attention if you wear glasses, they may rub against an area of tender skin. If you have had prior chemotherapy, your skin reaction may be more severe.

The skin in the involved area will be more sensitive to sun exposure and should be protected.

- ☺ Solutions/Resources: Avoid lotions or creams to the skin over the treatment field unless approved by the staff.
The nurse may give samples or suggest preparations you can use. Currently, we are recommending AQUAPHOR ointment. Use mild soaps (e.g., Eucerin, Liquid Olay soap, or Dove) if any. Wash gently and pat dry.
DO NOT remove marks made on your body by the physician or radiation therapist, unless specifically told to do so.
Always protect against sunburn. Use products with at least a

SPF of 15, or greater.

Small, blue tattoos (the size of a freckle) will be placed to locate your treatment area once your treatments are underway. These tattoos are small permanent records on your skin as to where you received radiation treatments.

Do not shave in the treated areas, unless you use an electric razor.

Do not use hot water bottles or heating pads in the treated area.

Do not wear tight fitting apparel that may rub or irritate the treated area.

HAIR LOSS

- Explanation: Hair loss related to your radiation treatments occurs only in the areas within the treatment fields. For brain radiation, this means the hair on your head and perhaps, some facial hair such as side burns. If you are uncertain as to where your hair loss will occur, ask your therapist. Hair loss generally begins 2-3 weeks into your treatment course and re-growth usually 3-6 months following the completion of your radiation treatments. Occasionally, the hair does not grow back. This is especially true in the high dose or “boost” areas.

HEARING

- Explanation: Although it happens rarely, some patients described ear “stiffness” or temporary dulling of their hearing while on treatment. This can occur for several reasons, including a build-up of wax or skin in the outer ear or fluid behind the ear.

In addition to short-term loss, patients can occasionally experience long-term loss, or even loss of certain frequencies. In some cases, imbalance problems or tinnitus (ringing of the ears) can occur.

☺ Solutions/Resources: Please mention this to the staff.

- ❖ Never attempt to clean or dislodge debris inside the ear canal without medical supervision.

OTHER CHANGES

- Explanation: Other changes may occur while you are receiving radiation treatments to the brain.
 - ⊗ Characteristics: You may notice changes with your vision.
 You may notice changes in your gait and balance.
 You may notice changes in your muscle strength, coordination or even muscle tremors.
 You may have seizures.
 You may notice a loss of sensation or abnormal sensation.
 You may have headaches.
 You may experience nausea and vomiting.
 You may experience changes in your intellectual status.
 You may experience personality or other mental changes.
- ❖ Report to the Physician or Nurse: Any changes in the above mentioned categories.

INCREASED INTRACRANIAL PRESSURE (pressure or swelling inside the skull)

- Explanation: Increased intracranial pressure can occur during radiation treatments due to brain swelling (cerebral edema) around an area of tumor breakdown. This also occurs from tumor presence or growth.
- ⊙ Solutions/Resources: Often, medication of the corticosteroids (cortisone) type is given to prevent or reduce this problem. These medications can be dexamethasone, Decadron or Prednisone.

Report to the Physician or Nurse: Any changes in your medication schedules. It is very important you pay close attention to the dose schedule of this medication since abrupt withdrawal can result in worsening of the pressure or swelling.

LONG-TERM SIDE EFFECTS/PERMANENT COMPLICATIONS

- Explanation: Any type of cancer treatment can result in complications that occur weeks, months or years following completion of treatment. Generally, late complications occur in less than 10% of patients receiving standard treatments.

Endocrine side effects mean possible hormone problems that can occur months or years after your radiation therapy treatments. The pituitary gland can be thought of as a master control for many hormones in our systems. The pituitary gland can occasionally be affected by radiation therapy treatment, and this can affect hormones such as thyroid, cortisol and sexual hormones. Growth hormone may also be affected, but usually this is only a problem in children or young adults who have not yet achieved their full height. We would recommend a yearly hormone profile with the physician who is following

you after your radiation, which should include thyroid function tests, gonadotropin and corticotropin.

As with most short-term side effects, many long-term effects affect body structures included in or adjacent to the radiation treatment fields. Organs that may be treated with brain fields include the bone, brain, spinal cord, eyes, ears and pituitary gland. Skin, skin color changes and connecting tissues may be affected. General effects of suppression of the immune system, endocrine system and psychosocial complications and fertility problems may occur. Since there is usually loss of hair from the skin in the area treated, there is a chance that this may be permanent and can result in baldness when the scalp is treated.

Any organ or tissues that is in the treatment area will be affected to a varying degree. The number of treatments, dose per day, total dose and technique are calculated to try and reduce the risk of long-term damage. Your cancer may require treatment that may permanently affect tissues or organs. Your physician will discuss this with you.

Radiation therapy has been reported to increase the occurrence of new cancer. This is very unlikely and if it happens, it is usually after many years.

- ❖ If there is **any** possibility that you are pregnant, it is important to inform your physician, nurse or radiation therapist immediately. If you or your spouse are considering pregnancy in the next year, please discuss this with your physician as soon as possible.
- ☺ The possibility that long-term consequences may occur following cancer treatment is a major reason that regular, life-long medical follow-up is essential. Your physician will discuss any problems that may be associated with your particular cancer or type of treatment.

FERTILITY

Both chemotherapy and radiation therapy can potentially affect fertility. If you are getting chemotherapy, you should talk to your medical oncology doctor (chemotherapy doctor) about any potential impact on fertility and their recommendations.

As for radiation therapy, we generally recommend that while on radiation therapy, patients should take appropriate steps for birth control. This is true for both men and women, as both sperm and eggs can be affected by radiation therapy. Therefore, it is very important that you take measures to prevent starting a pregnancy.

As for long-term fertility issues, this varies dramatically depending on the type of radiation therapy. With many treatments, there is no long-term impact to fertility from radiation therapy. However, for patients that receive radiation therapy to the

pelvis or upper thighs, there can be impact on fertility. If that is the case, your radiation oncologist will talk to you about infertility risks, and give you information, if you are male patient, on sperm banking if you wish to preserve fertility. For female patients that wish to preserve fertility, information will be given on oocyte, egg or ovarian tissue banking prior to treatment.

On a long-term basis, even though there may be some impact on fertility, you cannot assume that you are sterile in the future. Therefore, it is generally recommended that if you do not to have a pregnancy in the future, that you apply any necessary birth control measures.

If you have questions regarding this, do not hesitate to talk to your physicians.