Whole Brain Radiotherapy to Palliate Metastatic Cancer Information Sheet

General indications for the proposed procedure/treatment:

Radiotherapy is often used to treat cancer in the brain. Tumors in the brain may have started in brain tissue or may have spread to the brain from some other part of the body. Tumors can be benign or malignant. For purposes of this information sheet, only malignant or cancerous tumors are discussed. Tumors starting from brain tissue are called **primary** brain tumors. Tumors that spread to the brain from some other area or part of the body are called **metastases**. This information sheet deals with metastases to the brain from a cancer that originated in another part of the body.

When there are multiple brain metastases, microscopic deposits that are not visible on scans are likely to be present in other areas of the brain. For this reason, the entire brain is often treated to treat the visible cancers and to prevent other metastases from becoming symptomatic. The intent of whole brain radiation therapy is to relieve symptoms and improve quality of life. Sometimes it increases the duration of life, sometimes not. The radiation oncologist does not expect to eradicate every cancer cell in the brain. The reason for this is 1) high doses of radiation therapy would be needed and can be potentially harmful and 2) cancer can resettle in the area. Many studies have found that doses typically used in treatment are effective, and most patients are not bothered again by brain metastases. If cancer recurs in the brain, there may be several options for management.

Description of the proposed procedure/treatment:

Radiotherapy uses high energy radiation beams focused towards an area of the body. In whole brain treatment, beam fields are delivered from the sides. This allows the radiation to be distributed throughout the brain and allows blocking of the face and eyes.

Before radiation starts, a planning visit (simulation) is first required to deliver accurate, reproducible treatment. At that visit, a treatment planning CAT scan is done with the patient in the exact position that he/she will be treated. A plastic mask is made to prevent movement of the head during treatment that could allow improper delivery of radiation,. The mask is made from plastic webbing that is soft and pliable when warm and rigid and fixed at room temperature. Because the plastic web has many open areas, breathing and vision remain comfortable even though movement is restricted. The CAT scan is then done. The physicians and therapists check the CAT scan and determine where the centers of the fields will be located. Marks are then placed on the mask to reflect these centers, which will help precisely reproduce treatment each day. Photographs are taken of the patient, position, and mask for reference during treatments.

After the patient leaves, the physicians and physicists plan the radiation treatment. Treatment is individualized based on the tumor, the location of the tumor, and the patient. Based on symptoms, the actual treatment may start immediately to several days after the treatment planning sessions.

The course of treatment is variable and dependent on the tumor, patient, and the status of the cancer. Treatment is generally delivered daily, Monday through Friday. It usually takes from two to three weeks, but occasionally can be shorter or longer than this. Starting on a Monday is not essential. Each treatment is scheduled for approximately 15 minutes, but the actual treatment may take as little as 2 minutes. Treatment is scheduled at a particular time daily by agreement between the patient and the therapist.

The first treatment session generally is longer than subsequent sessions. At the first treatment session, the treatment fields are checked for accuracy through the use of Xrays which check the treatment field and the treatment blocks. These are checked by the therapist and physician. Once approved, the treatment is delivered. For each following treatment session, the patient comes to the radiotherapy department at a scheduled time, based on mutual convenience, and is treated. Being treated involves arriving for the appointment, getting into position in the treatment room where the treatment machine (linear accelerator) is located, placement of the mask, occasional xrays to confirm correct position, and the delivery of the treatment.
Although the patient is aware of where he/she is and the presence of medical equipment, when pictures are taken and treatment is given there is no pain or sensation noted. This is similar to the experience of having a chest x-ray or a CAT scan done.

Treatment is regularly monitored. All treatment plans are double checked by the physicists before treatment. To verify accurate delivery of radiation, Xrays of the treatment field are done at least weekly. The patient is monitored by the nurses and physicians at least weekly for symptoms, medications, and other problems.

Material risks and benefits of the procedure:

The **benefit** of radiotherapy is that it kills cancer. This may reduce the size of tumors and thus reduce the irritation and swelling caused by the tumors. Both of these effects may reduce symptoms and improve function. These effects may also reduce the need for steroids which are often used to reduce swelling in brain from brain tumors. Radiotherapy may increase length of survival.

The **risk** of radiotherapy is that treatment can irritate or damage tissue. Dividing treatment into daily treatments over two to three weeks reduces this risk. The radiotherapy can cause swelling which may require steroids. This swelling may result in exacerbation of symptoms, headaches, or nausea and can occur early. Most symptoms are controlled by steroids. A long time after radiotherapy, the patient could have symptoms of mild brain damage, with memory loss, similar to that of a mild dementia. The risk of this happening is related to the patient's health and preexisting conditions such as vascular disease, diabetes, hypertension, and prior problems in the brain and usually takes a long time to develop. These problems do not occur in everyone. The **benefit** of radiotherapy generally outweighs the **risk** of radiotherapy, and the risk from the cancer is often much higher than the risk from the radiotherapy.

Procedure alternatives, if any:

Steroid medication may temporarily reduce swelling around tumors in the brain, but in most cases, they do not actually treat the tumor. In instances where there are only 1-3 favorably positions tumors documented on MRI, they may be surgically removed or treated with focused high doses of radiation therapy (steretactic radiosurgery or SRS). Surgically removed tumors can sometimes recur. A few types of tumors in the brain respond to chemotherapy given by vein. A patient's possible procedure alternatives should be discussed with the medical oncologist

Probable consequences of refusing the recommended procedure:

In situations where external beam radiotherapy is recommended, the other choices are usually not as effective or appropriate. Without treatment, cancers will grow and destroy normal brain tissue.

Person(s) providing the procedure/treatment:

Radiation Oncologists (Attending Doctors)
Radiation Therapists
Radiation Nurses
Radiation Dosimetrists and Physicists

All decisions regarding whether, when, and how to treat with irradiation are made by a Radiation Oncologist who is a member of the medical staff of Rush University Medical Center. In addition, the Radiation Oncologist designs, implements, and supervises all aspects of treatment. Often, a resident physician participates under the supervision of the Radiation Oncologist. Resident physicians are licensed physicians in our approved residency program. Their level of participation varies with their level of training and ability.

The Radiation Oncologists are assisted by Radiation Therapists, Radiation Nurses, Radiation Dosimetrists and Radiation Physicists.

Radiation Therapists are licensed and certified technicians who are trained to assist the patient at the time of treatment and to administer the daily radiation treatments according to the instructions of the Radiation Physicians. Radiation Nurses are licensed nurses with special training and certification in Oncology Nursing. Dosimetrists are master level technicians with special training and certification in designing radiation treatments. Radiation Physicists are Ph.D. level physicists who have taken special training in Medical Physics. Medical Physics is the discipline that supports the use of radiation for treating patients.

In the Radiation Oncology Department all of the senior physicians and staff are fully trained and either Board Certified or in the process of becoming Board Certified. In many cases, certification requires some years of experience after training as well as passing difficult certification exams.