

### **What is radiation therapy?**

Radiation therapy, or radiotherapy, uses ionizing radiation produced by a linear accelerator to kill cancer cells and shrink tumors. The radiation passes through the body and delivers dose to the affected area while minimizing dose to the skin and tissue it passes through.

Although the radiation affects both cancer and normal cells, it has a greater effect on the cancer cells, damaging their genetic material and making it impossible for these cells to continue to grow and divide.

Radiation therapy is used to both cure disease and alleviate the symptoms of cancer. Treatment aimed at a cure will give the highest possible dose of radiation to the cancer area (within safe limits) to attempt to kill all the cancer cells. Sometimes smaller doses are used, where the aim is to reduce the size of a tumor and/or relieve symptoms.

Electrons are used to treat skin cancers and other superficial lesions, as they are absorbed by the first few centimeters of skin, leaving very little dose to pass into the body. There are also a number of non-malignant conditions that are treated using radiation therapy.

### **What happens during radiation therapy?**

Here are the steps you can expect at Altoona Regional's Center for Cancer Care:

#### **1. Visit to hospital consultant**

The radiation oncologist may ask for diagnostic procedures, either in the radiation therapy department or at a general hospital. These can include X-rays, computed tomography (CT), magnetic resonance imaging (MRI), positron emission tomography (PET) scans, biopsies and blood tests. Once the nature of the disease has been established, a treatment regimen will be planned and prescribed.

#### **2. Imaging**

MRI, CT or PET scanning is required to determine the exact size, shape and position of the area to be treated within the body, known as the treatment site. These images are then used to plan the treatment.

#### **3. Treatment planning**

Once your images have been taken, your physician develops a treatment plan. The treatment plan is created using treatment planning software, which calculates the position, dose and frequency of the treatment. Before treatment commences, the treatment may be simulated (performed on a non-treating machine) to ensure the correct treatment will be delivered later.

**4. Treatment**

Treatment may be given on an outpatient or inpatient basis. It is imperative that the prescription and treatment plan are adhered to as any missed treatment caused through sickness or equipment breakdown may affect its success. Patients usually receive the same treatment each day for a course of treatment, which can last up to six weeks. Treatment is monitored regularly and may be adjusted if the patient suffers adverse side effects or loses weight.

To receive the radiation therapy, you will lie on a couch under the machine and be asked to remain still during the actual treatment. The treatment is completely painless. Radiation cannot be seen or felt while it is being given.

**5. Verification**

During treatment, a process of verification takes place. Images are taken of the treatment site. These images are used to verify both the patient position and the accuracy of the treatment beam.

**6. Follow-up**

When your treatment is completed, you will attend follow-up clinics for up to five years. These are held to assist you in managing any post-treatment side effects and to monitor the disease regression or progression. Initially, you will attend the center where you were treated. Annual follow-ups may then be conducted at a hospital closer to you if you live at a distance from Altoona.