Although cancer is usually referred to as a single disease or condition, it actually consists of more than 100 different diseases. These diseases can begin in virtually all parts of the body and all are characterized by the uncontrolled growth and spread of abnormal cells. As these cells divide too rapidly and grow without order, tumors or other abnormalities begin to form. Once it develops, cancer can spread to areas close to the original site. It can also spread to more distant sites in the body by moving through the blood or lymphatic system.
In most cases, it is very difficult to pinpoint a “cause” for cancer. Cancer researchers believe that cancer can be triggered by many different factors including our genetics, family history, diet, stress, smoking, environment and occupation. At the same time, we know that our chances of developing cancer can be significantly reduced through an overall healthier lifestyle, including a healthy diet, exercise and smoking cessation.

While science has yet to find one magic “cure” for cancer, the breakthroughs in both its detection and treatment mean that the options your medical team can offer for your care are better than ever. Medical research has found ways to identify cancers earlier and provide more targeted therapies and less invasive surgeries to help you get better faster, and with less side-effects.
When a particular sign or symptom may be related to cancer, the first step towards getting better is an accurate diagnosis. Although there are a number of tests and procedures we use, diagnostic imaging – technologies that produce detailed pictures inside the body – is vital in the detection and diagnosis of cancer.

In many cases one or a combination of the medical imaging procedures briefly described below can show the presence, size, shape and location of tumors or abnormalities in your body. In some cases, these tests can help determine if the problem is cancerous (malignant) or non-cancerous (benign).
It should be noted that a final diagnosis of cancer can usually not be made without a biopsy. Imaging can also help your doctor determine the stage, or extent, of the disease, including whether the problem has spread to other parts of the body, known as metastasis. Both of these are essential for developing an effective treatment plan.

For your convenience the location of the Riverside facility at which these diagnostic procedures are available is provided.

**CT (Computerized Tomography)**

Sometimes called a CAT scan, CT is a special type of cross sectional x-ray generated by a computer. The result is a more detailed image than a conventional x-ray. When used in cancer diagnosis, CT scans are typically used to pinpoint a tumor deep in the brain, lungs, liver, pancreas, adrenal glands and bones. Available at Riverside Diagnostic and Breast Center, Oyster Point; Riverside Health Care Center, Williamsburg; Riverside Regional Medical Center; Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.
Mammogram

A mammogram is a specific type of x-ray imaging that uses low-dose radiation to examine the breasts in order to identify breast cancer or abnormalities in individuals with or without symptoms. It plays an important role in the early detection of breast cancer because it can show changes in the breast up to two years before you or your doctor can feel them. After the initial screening mammogram, there are additional types of mammograms that a radiologist can use for more detailed views, including digital mammography. Mammograms are available at Riverside Diagnostic and Breast Center, Oyster Point; Riverside Health Care Center, Williamsburg; Riverside Regional Medical Center; Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.
MRI (Magnetic Resonance Imaging)
Like CT scans, MRI provides a detailed view of the body, but relies on a different technology. MRI uses a strong magnet and radiofrequency waves to produce a computer-generated image of internal organs and structures. In some cases, MRI can be more sensitive than CT and is often used to detect cancer of the brain, spinal cord, head and neck, liver and soft tissues. Available at Riverside Regional Medical Center, Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.

Nuclear Medicine
These tests are used in cancer diagnosis, often in the form of bone, liver and thyroid scans. A small and safe amount of radioactive material is injected into the blood stream where it becomes absorbed in all tissues and bones. Cancerous cells absorb this material at a faster rate than normal, healthy tissue, which helps locate areas of disease. Available at Riverside Diagnostic and Breast Center, Oyster Point; Riverside Health Care Center, Williamsburg; Riverside Regional Medical Center; Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.
PET (Positron Emission Tomography) & PET/CT

Unlike CT and MRI scans that provide images of structures in the body, PET scans show chemical changes related to metabolism or body activity. Before a PET scan, a patient will receive an injection of a small amount of a radioactive drug. All tissues absorb some of this drug – called an isotope – but cancerous cells are hypermetabolic, meaning they absorb greater amounts, which enables them to be seen on the scan. PET is used to locate cancerous tumors and to see if the disease has spread to other parts of the body.

Research indicates that combining the PET images into the images provided through CT scanning provides the best of both technologies. This procedure is particularly effective for diagnosing the original cancer site as well as any spread to nearby lymph nodes or more distant sites in the body. Available at Riverside Regional Medical Center; Riverside Health Care Center, Williamsburg; Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.
Ultrasound

Also called a sonogram, ultrasound works by bouncing high frequency sound waves off tissues in your body to form images. This technology is used to help diagnose cancers in the breast, liver, kidneys, uterus and ovaries. Available at Riverside Diagnostic and Breast Center, Oyster Point; Riverside Health Care Center, Williamsburg; Riverside Regional Medical Center; Riverside Walter Reed Hospital and Riverside Tappahannock Hospital.

It’s important to keep in mind that not all cancers can be seen through diagnostic imaging. A tumor may be too small or in a location that’s difficult to see. In these instances, other tests may prove more useful and may be part of your diagnosis. In all cases, a biopsy—an examination of cells or living tissue from an area suspected to be cancerous—is the most definitive way to test for the presence of a malignant tumor and to determine what kind of cancer exists. Biopsies can be performed through a number of minimally invasive procedures and are always necessary to confirm a cancer diagnosis.
Cancer treatments vary depending on the specific type of cancer you may have and the extent of its development. For most forms of cancer – and for most people – there are three major areas of treatment: surgery, radiation and medical oncology (chemotherapy and/or hormone therapies). These treatments are often used in combination with each other.

**Surgical Treatment**

Surgery is often one of the first steps for many cancer patients. It can be used in obtaining a biopsy as part of the diagnosis, or it can be part of the treatment plan. Unlike radiation and chemotherapy which destroy the cancer cells but leave them in the body, surgery tries to remove the cancerous tumor or tissues from the body. In many cases, lymph nodes found near the tumor are also removed to help determine if the cancer has spread. Depending on the type of cancer and its location in the body, different types of surgeons may be involved in your care. For example, a urologist would perform prostate surgery, while a thoracic surgeon would perform lung cancer surgery.
Surgical Treatment (continued)

The advances in surgical technology in recent years have been significant. While not suited for every patient and every diagnosis, less-invasive approaches to surgery, which help patients recover faster, are used whenever appropriate. Riverside also offers robotic-assisted surgery which brings greater precision, less pain and faster recovery to patients with prostate cancer. This advanced technique is also being used in a growing number of gynecologic cancers.
Radiosurgery is a comparatively new and expanding field which offers “knifeless surgery” for some patients. The Riverside and University of Virginia Radiosurgery Center offers Gamma Knife® treatment for brain tumors and several other diagnoses. The Gamma Knife® uses a highly accurate beam of radiation to destroy cancer but does not involve conventional, open surgery, so it can usually be carried out in a single day. The Synergy S® treatment is also available, offering similar treatments for tumors outside of the brain.
Radiation Therapy

The goal of radiation is to destroy or damage cancer cells in the area being treated while doing as little harm as possible to surrounding, healthy tissue. There are different types of radiation therapy or treatment and different ways to deliver it to the tumor site. These differences are based on the type of cancer, how deeply the beams of radiation need to penetrate, and for how long.

There are two basic forms, external beam radiation and internal beam radiation. External beam radiation enters the body from equipment positioned outside. Internal beam radiation (also called brachytherapy) is less common and consists of placing the radiation source inside the body. For prostate cancer, this treatment is done by placing radioactive “seeds” inside the prostate to directly treat the tumor site. Forms of brachytherapy are also used for some breast cancer patients using the Mammosite® technology and for a number of other cancer diagnoses. Some form of radiation therapy is used by about half of cancer patients, either with other treatments or alone.
Medical Oncology

Medical oncology uses medical interventions to treat the cancer through a systemic approach – meaning that medicine travels throughout the body, unlike radiation and surgery which are directed to a single site. The type of medicine is determined by the particular cancer diagnosis, but it often includes chemotherapy and/or hormone therapy. While some medications are taken at home, most chemotherapy treatments are given by an IV in the physician’s office.
Medical Oncology (continued)

Although chemotherapy drugs are selected for their action against a specific cancer, they can also interrupt normal cell growth and division, especially in fast growing cells, such as those in the hair and the digestive tract. This effect is why some patients lose their hair while taking chemotherapy, or might experience nausea or changes in taste. Your physician will closely monitor your care during treatment, including any side effects. Often side effects can be managed or relieved by additional medication. If necessary, your doctor may change the type of chemotherapy you are receiving or adjust your medication.

Over 50% of all people being treated for cancer receive chemotherapy, which can be given in various ways. Chemotherapy may be used alone, or provided before, after, and in some cases during, cancer surgery, or in combination with radiation therapy.