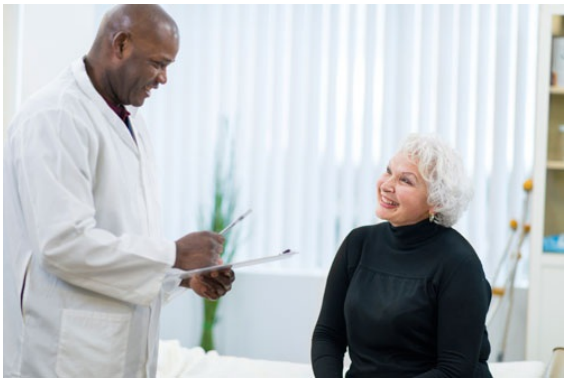
Cervical Cancer



Cervical cancer can arise from abnormal cells located in the cervix. Most cervical cancers are a result of a previous infection with the human papilloma virus (HPV), which is sexually transmitted.

Your doctor or health care provider will perform pap smears to screen for abnormal cells. If abnormalities are seen, your doctor will perform a colposcopy and/or biopsy to provide a diagnosis. If cancer is detected, your doctor may use body CT, body MRI, chest x-ray or PET scan to help determine whether the cancer has spread. Depending on its extent, surgery, radiation therapy, or chemotherapy may be performed.

What is cervical cancer?

Cervical cancer can arise from abnormal cells located in the cervix (http://www.radiologyinfo.org) , the lower part of the uterus (http://www.radiologyinfo.org) that connects the uterus with the vagina (http://www.radiologyinfo.org) . Most cervical cancers are a result of a previous infection with the human papilloma virus (http://www.radiologyinfo.org) , or HPV. HPV is an infectious virus that is sexually transmitted. Infection can be greatly reduced by vaccination prior to viral exposure (see below). HPV can cause pre-cancerous changes in the cells of the cervix and may result in the development of cervical cancer. While cervical cancer is generally a slow-developing disease, if not detected early, it may spread to other parts of the body such as the lining of the abdomen, liver, bladder, or lungs.

Cervical cancer may cause no symptoms or include symptoms such as:

- *Vaginal bleeding (https://www.radiologyinfo.org/en/info/vaginalbleeding)*
- Abnormal periods
- Pelvic pain
- Pain during intercourse
- Bleeding after intercourse
- Abnormal vaginal discharge

There are ways to prevent cervical cancer. For children and young adults, a vaccine against the strains of HPV, most likely to cause cervical cancer, is now available. Ask your doctor if you or your family member should receive this vaccination. The vaccine is not given as a treatment for someone who already has HPV or already has a diagnosis of cervical cancer.

How is cervical cancer diagnosed and evaluated?

In order to diagnose cervical cancer, your doctor may perform:

- Pap smear: This examination is performed by scraping cells from the cervix. The cells are then sent to a lab where they are analyzed in order to detect any abnormalities.
- Colposcopy: This examination uses a low-powered microscope to view the cervix so your doctor can locate any abnormalities and biopsy the area. However, a biopsy may be performed without a colposcopy.
- Biopsy: A sampling of potentially affected tissues with a needle.

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If cancer has been detected, your doctor will evaluate its local extent to determine whether surgical removal is a suitable option. Imaging is often useful to determine if the cancer has spread. The following imaging tests may be performed:

- Body CT scan (https://www.radiologyinfo.org/en/info/bodyct) *:* This procedure combines special x-ray equipment with sophisticated computers to produce multiple images or pictures of the inside of the body. For example, a CT scan of the chest is often used to find out whether the cancer has spread to the lungs.
- Body MRI (https://www.radiologyinfo.org/en/info/bodymr) *:* This imaging exam uses a powerful magnetic field, radio frequency pulses and a computer to produce detailed pictures of the body.
- Chest x-ray (https://www.radiologyinfo.org/en/info/chestrad) : This exam produces plain x-ray images of the lungs.
- PET scan (https://www.radiologyinfo.org/en/info/pet) *:* This nuclear medicine imaging exam uses a small amount of radioactive material to help determine the extent of cervical cancer involvement. PET scans can be superimposed with CT or MRI to produce special views that can lead to more precise or accurate diagnoses.

If cancer is detected, your doctor may also order a cystoscopy (http://www.radiologyinfo.org) (visual examination of the bladder) or proctoscopy (http://www.radiologyinfo.org) (visual examination of the tail end of the bowel) to make sure those organs are not affected by the disease. A cystoscopy uses a special camera at the end of a tube that allows the doctor to see inside the bladder. A proctoscopy uses a special camera at the end of a tube that allows the doctor to see inside the rectum.

How is cervical cancer treated?

Depending on the stage (extent) of cancer, one or more of the following treatments may be performed:

- Cone biopsy: For the earliest stage of cervical cancer, a cone biopsy with wide margins can be performed. This is a fertility preserving surgery. This surgery removes the ectocervix and endocervical canal using a scalpel or cautery. Cone biopsy is preferred over a loop electrosurgical excision procedure.
- Trachelectomy: This is a surgery that preserves fertility. It removes the cervix, upper vagina and surrounding tissue. It is an appropriate treatment for early stage disease that cannot be treated with a cone biopsy. It is generally appropriate for early stage cancer. Sampling of the regional lymph nodes (pelvic and/or paraaortic lymph nodes) can be performed at the same time.
- Surgery: For early-stage cervical cancer, a radical hysterectomy with lymph node sampling (pelvic and/or paraaortic lymph nodes) is the preferred surgical procedure. This is the most common way to cure cervical cancer in its earliest stages. The cervix, uterus , tissues adjacent to the cervix/uterus, and upper third of the vagina are removed and the local lymph nodes are sampled. Once the uterus is removed, a woman is no longer able to become pregnant. There are several types of hysterectomies that can be performed. The choice of procedure is based on how extensive the cancer is and which tissues or organs need to be removed to get rid of the cancer.
- Radiation therapy (http://www.radiologyinfo.org) : Radiation may be given after surgery or instead of surgery and is the preferred treatment for any but the earliest stages of disease.
    - External Beam Radiation Therapy: This involves external beam radiation (EBRT), which delivers therapy from outside the body. Conformal radiotherapy is the preferred approach with either three-dimensional conformal radiation or intensity modulated radiotherapy (IMRT) (https://www.radiologyinfo.org/en/info/imrt) . IMRT is more commonly used when lymph nodes or other nearby organs are involved with cancer.
    - Brachytherapy (internal or intracavitary radiation): EBRT is often combined with brachytherapy, or internal radiation, which involves placing a radioactive material directly inside or next to the tumor using ultrasound, CT or MRI guidance. It also allows a physician to use a higher total dose of radiation to treat a smaller area and in a shorter time than is possible with external beam radiation treatment alone. Applicators are commonly used to deliver the radiation to the tumor. Common applicators include a "Tandem and Ring" or a "Tandem and Ovoids" or a "Vaginal Cylinder." For more advanced disease, radioactive needles (interstitial needles) may be inserted.
- Chemotherapy: In most cases, chemotherapy may be used as supplemental treatment, usually combined with radiation. Chemotherapy is often given to improve the results compared to radiation alone, as it may improve the chances of successful

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treatment and decrease the chance of the tumor returning elsewhere in the body. Pembrolizumab is a type of immunotherapy and can be given with chemotherapy and radiation in more advanced cases of cervix cancer. They may also be used to decrease the disease burden elsewhere in the body if it cannot be removed surgically or to treat disease that has recurred. They are usually given over time and alternated with periods of no treatment. The most commonly used chemotherapy drug for cervix cancer is cisplatin. Carboplatin can be used in selected cases as an alternative if a person cannot tolerate cisplatin.

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