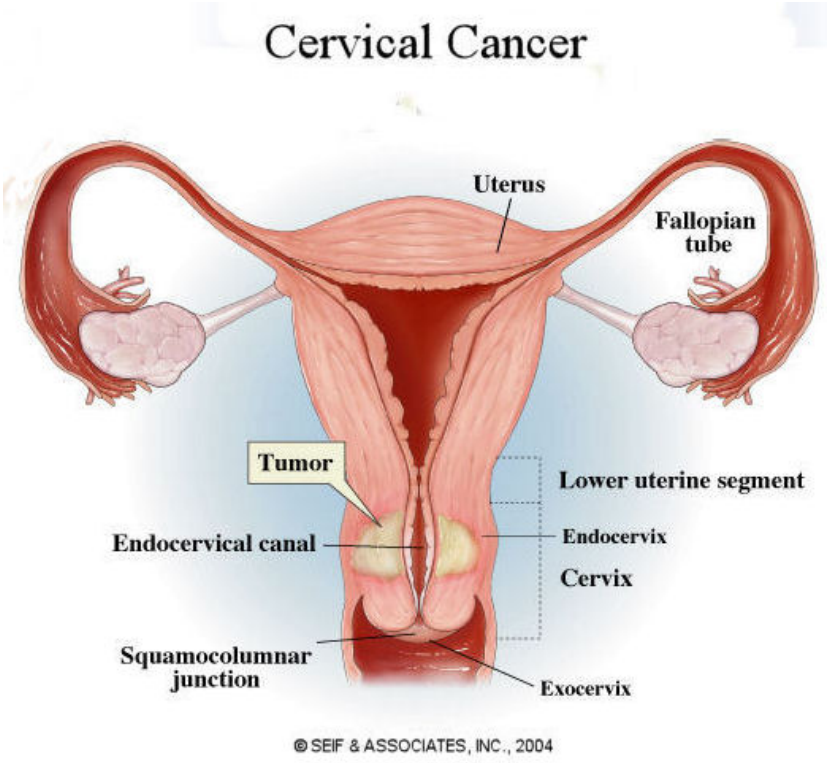
Cervical Cancer (Causes and Treatment)

The cervix is the opening and bottom part of the uterus between the birth canal (*vagina*) and the uterus (*womb*). Precancerous changes in the cells on the top layer of the cervix are an early sign that cervical cancer may develop. Cervical cancer is a fairly common cancer. It occurs most often in women ages 40 to 55. Cells of the cervix act very much like skin cells. These cells are exposed to toxins, viruses, and germs *(bacteria)* that may cause abnormal changes *(cervical dysplasia*).



Cervical dysplasia (*abnormal growth*) is judged by the thickness of the layer of abnormal cells. The earliest change that can be seen with a microscope is called mild dysplasia. If not treated, these precancerous changes may become moderate to severe, to cancer cells on the surface of the cervix (*carcinoma in situ*), to invasive cancer (*cancer cells below the surface of the cervix*).

There are two kinds of cancers of the cervix:

- Squamous (*scale-like*) cell carcinoma, starts in the flat or scale-like cells that line the cervix. This type of cancer is a sexually transmitted infection caused by the human papilloma virus (HPV).
- Adenocarcinoma (*starts on the surface of a gland*) starts in glandular cells that line the cervix.

CAUSES AND RISKS

The risk of getting cancer of the cervix is related to your lifestyle, sexual history, health, and your immune system. Causes and risks include:

- Having a sexually transmitted virus infection. These infections are strongly linked with cancer of the cervix. They include:
  - Chlamydia.
  - Herpes.
  - Human papilloma virus (HPV).
- Becoming sexually active before age 18.
- Having more than 1 sexual partner, or having sex with someone who has more than one sex partner.
- Not using condoms with sexual partners.
- Having had cancer of the vagina or vulva. Or having sex with someone whose previous sexual partner had cancer of the cervix or cervical dysplasia.
- Having a sexual partner who has or had cancer of the penis.
- Smoking.
- Having a weakened immune system. For example, HIV or other immune deficiency disorders (organ transplant).
- Being the daughter of a woman who took DES (*diethylstilbestrol*) during pregnancy.
- A history of cancer of the cervix in your sister or mother.
- African/American, Hispanic, and Asian/Pacific Islander women have a higher risk of getting cervical cancer.
- A previous history of dysplasia (*abnormal growth*) of the cervix.

SYMPTOMS

Early stages of cervical cancer usually have no symptoms. Once the cancer invades the cervix and surrounding tissues, the woman may have vague symptoms, such as:

- Abnormal vaginal bleeding or menstrual bleeding that is longer or heavier than usual.
- Bleeding after intercourse, douching, or a pap smear.
- Vaginal bleeding following menopause.
- Abnormal vaginal discharge.
- Pelvic discomfort or pain.
- Having an abnormal Pap smear. (A Pap smear is an exam where cells are scraped from the cervix and canal of the cervix, and are viewed under a microscope.)

Symptoms of more advanced cervical cancer may include:

- Loss of appetite or weight loss.
- Tiredness (*fatigue*).
- Back and leg pain.
- Inability to control urination or bowel movements.

DIAGNOSIS

Diagnosis of cervical cancer is found earliest and done best with regular pelvic exams and Pap smears. If abnormalities are found, the Pap smear may be repeated in 3 months, or your caregiver may do additional tests, such as:

- Colposcopy: A special microscope allows the caregiver to magnify and closely examine the cells of the cervix, vagina, and vulva.
- Cervical biopsies: Small tissue samples are taken from the cervix to be examined under a microscope by a specialist. This can be done in your caregiver's office. This is done to determine if there is dysplasia or cancer cells. **You cannot tell** the stage of cervical cancer with a cervical biopsy.

A cone biopsy removes tissue to be tested for cancer. It can also be used to remove all the cancerous tissue. In a cone biopsy, a large, cone shaped tissue from the cervix is taken. This procedure can be done by:

- Cold cone biopsy or laser cone. Both are done in an operating room under an anesthetic (*you are asleep*).
- LEEP (*loop electrosurgical excision procedure*). Can be done in a doctor's office with a local anesthetic.
- Other tests may be needed, including:
  - Cystoscopy (*looking into the bladder with a lighted tube*).
  - Proctoscopy or Sigmoidoscopy (*looking into the rectum and lower intestine with a lighted tube*).
  - Ultrasound.
  - CT Scan.
  - MRI.
  - Laparoscopy (*using a lighted tube for examination*).

There are different stages of cervical cancer:

- Stage 0. CIS *(carcinoma in situ*). This first stage of cancer is the last and most serious stage of dysplasia (see above).
- Stage 1. The tumor is in the uterus and cervix only.
- Stage 2. The tumor has spread to the upper vagina. The cancer has spread beyond the uterus, but not to the pelvic walls or lower third of the vagina.
- Stage 3. The tumor has invaded the side wall of the pelvis, and the lower third of the vagina. Blockage of the ureters (*tubes that carry urine*) from the tumor may cause urine to back up and swell the kidneys (*hydronephrosis*).
- Stage 4. The tumor has spread to the rectum or bladder. In the later part of this stage, it has also spread to distant organs, like the lungs.

If abnormal cells are found early, it may be possible to avoid removing the uterus. If caught at an early stage, a woman can still have children and chances for a cure are good. Once cervical cancer reaches a late stage, more aggressive measures may be needed. Untreated, the cancer may spread to nearby areas or more distant sites in the body, through the blood and lymphatic system. Cervical cancer is not contagious and does not pose a risk to others.

TREATMENT

Options for removal include the following:

- Cone biopsy (see above).
- Removal of the entire uterus and cervix (*simple hysterectomy*).
- If the cancer has invaded deeper layers of the cervix and has spread to the uterus, more extensive treatment may be needed. This may include removal of the uterus, cervix, upper vagina, lymph nodes, and surrounding tissue (*modified radical hysterectomy*). This procedure depends on the extent of the cancer and a woman's age. The ovaries may be left in place or removed.
- Sometimes medicines for treating cancer (*radiation* and/or *chemotherapy*) can be used. This is done when the cancer has spread beyond the cervix and uterus. These treatments may be used if a woman is not a good candidate for surgery. Age or other medical conditions may prevent a woman from being a good candidate for surgery. Radiation therapy may be used before or after surgery to shrink tumor cells and kill any remaining tumor cells.
- A combination of surgery, radiation, and chemotherapy may be needed, depending on the extent of the cancer.
- Biological response modifiers (BRMs) are substances that help strengthen the immune system's fight against cancer or infection. Interferon is a BRM that is sometimes used in the treatment of cervical cancer. It may be used in combination with chemotherapy.
- Treatment of squamous cell cancer or adenocarcinoma of the cervix are essentially the same.

Side effects of treatment:

- A hysterectomy may cause inability to control urination or psychological sexual problems. There may be swelling in the legs if lymph nodes are removed. Occasionally, blood transfusions may be required. Allergic reactions can occur. Hemorrhage, infection, and rarely death, can occur.
- Chemotherapy and radiation therapy may cause a wide variety of side effects. Including:
  - Hair loss.
  - Tiredness (*fatigue*).
  - Lessened ability to fight infections.
  - Feeling sick to your stomach (*nausea*).
  - Vomiting.
  - Diarrhea.
  - Urinary problems.
  - Atrophic vaginitis (*inflammation of the vagina*) with painful intercourse.
- Biological response modifiers such as interferon may cause flu-like symptoms. These include:
  - Body aches.
  - Nausea.
  - Vomiting.
  - Fatigue.

Treatment of cervical cancer in a pregnant woman:

- Treatment of cervical cancer in pregnant women depends on the patient's culture, religious feelings, and ethical considerations.
- A pregnant woman with cancer at Stage 0 or Stage 1, with microinvasion of 3mm or less (*cancerous tissue has spread to a very small area*), can deliver her baby vaginally. She can then be treated 6 weeks after the delivery, with surgery.
- Other factors that can determine treatment include:
  - Size of the tumor.
  - Location of the tumor.
  - Stage of the pregnancy.
  - Desire of the patient to go on with the pregnancy.
- Radiation with or without chemotherapy, following delivery and/or surgery, may be advised or necessary to

prevent the cancerous tumor from coming back (*recurrences*).
- Delaying treatment until the baby has a better chance to survive is better for the baby.

Follow-up on cervical cancer:
- After treatment, follow-up is important to look for reoccurrence.
- A pelvic exam and Pap smear, if the cervix is intact, will be done every 3 months for at least 2 years. After the 2 year phase, a pelvic exam and Pap smear will be done every 6 months. Because cancer tends to come back at the same spot or spread to the lungs and liver, chest x-rays and liver function tests are done yearly.
- If a woman has had a hysterectomy, the top of the vagina is cuffed or closed. A colposcopy may be done at follow-up visits to examine the vaginal cuff.
- Tell your caregiver about any new or worsening problems.

LENGTH OF ILLNESS

The outcome for a woman with cervical cancer depends on many factors, including:
- Overall health.
- Age when first diagnosed.
- The type and growth of specific cancer cells.
- How far the disease has spread.

After treatment, the length of time to live depends on the stage of the cancer. Your caregiver will discuss this with you and help you plan your treatment for the best possible outcome.

PREVENTION

- A Pap smear is done to screen for cervical cancer.
  - The first Pap smear should be done at age 21.
  - **Between ages 21 and 29**, **Pap smears are repeated every 2 years**.
  - Beginning at age 30, you are advised to have a Pap smear **every 3 years, as long as your past 3 Pap smears have been normal, you have no history of dysplasia, your mother did not get DES while pregnant, and you are not immunosuppressed with HIV, organ transplant, or other disease.**
  - Some women have medical problems that increase the chance of getting cervical cancer. Talk to your caregiver about these problems. It is especially important to talk to your caregiver if a new problem develops soon after your last Pap smear. **In these cases, your caregiver may advise more frequent screening and Pap smears.**
  - The above recommendations are the same for women who **have** or **have not** gotten the vaccine for HPV.
  - If you had a hysterectomy for a problem that was **not** a cancer of the cervix or a condition that could lead to cancer, then you no longer need Pap smears.
  - If you are between ages 65 and 70, and you have had normal Pap smears for the past 10 years, you no longer need Pap smears.
  - If you have had past treatment for cervical cancer or a condition that could lead to cancer, you need Pap smears and screening for cancer for at least 20 years after your treatment.
- A woman can lower her risk for getting cervical cancer by:
  - Quitting smoking.
  - Waiting to have intercourse until age 18 or later.
  - Having only one sexual partner in a lifetime.
  - Using latex condoms.
  - Practicing safe sex with each sexual encounter.
- Remaining celibate (*not having sex*). Celibate women do not get squamous cell cancer of the cervix, but they can get adenocarcinoma of the cervix.
- A woman should ask her sexual partners about their sexual histories. By doing this, she can avoid partners that are high risk.
- Identifying early warning signs of cervical cancer is also important. A woman should see her caregiver, and may need to be treated, if she has any of the following signs or symptoms:

- Vaginal discharge that does not seem normal.
- Vaginal bleeding between periods.
- Bleeding with intercourse or after menopause.
- Pain with intercourse (*dyspareunia*).

➢ Vaccines are available to help prevent certain types of human papilloma virus infection and cervical cancer.

HOME CARE INSTRUCTIONS

➢ Get a yearly gynecology examination and Pap test, or as advised by your caregiver.
➢ Get the Human papilloma virus (HPV) vaccine.
➢ Do not smoke.
➢ Tell your caregiver if you have a family history of cancer of the cervix.
➢ Do not have sexual intercourse before age 18.
➢ Practice safe sex:
  - Use condoms.
  - Have one sex partner.
  - Make sure you are the only sex partner of your sex partner.

SEEK MEDICAL CARE IF:

➢ You have abnormal vaginal bleeding.
➢ You have abnormal vaginal discharge.
➢ You have vaginal bleeding after sexual intercourse, douching, or using tampons.
➢ You develop vaginal bleeding after menopause.
➢ You have pain with sexual intercourse.
➢ You have unexplained weight loss.
➢ You have unexplained tiredness.
➢ You feel pressure with urination and/or with a bowel movement.

SEEK IMMEDIATE MEDICAL CARE IF:

➢ You have heavy vaginal bleeding, with or without clots.
➢ You cannot urinate, or you have blood in your urine.
➢ You have blood or pressure with a bowel movement.
➢ You develop severe back, stomach, or pelvic pain.
➢ You develop an unexplained temperature of 100°F (37.9°C), or higher.

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