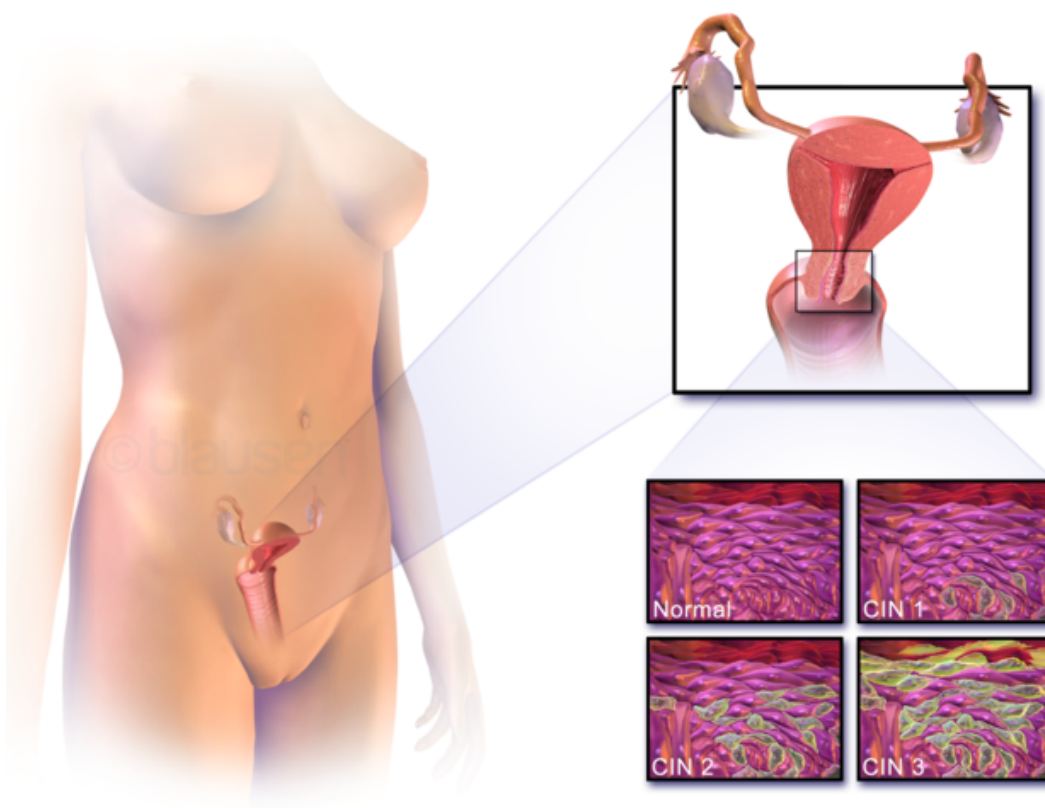


Cervical Cancer — Diagnostics and Therapy

[See online here](#)

Thanks to the early detection program, the incidence of cervical cancer is declining. Every woman from the age of 20 is admitted once a year and includes various examinations. If a malignant disease is suspected, further diagnostic steps should be taken and a treatment plan adapted to the patient should be developed. The following article will help you to diagnose cervical cancer reliably and to initiate the right steps in the therapy.



Diagnosis of Cervical Cancer

Clinical evaluation of cervical cancer

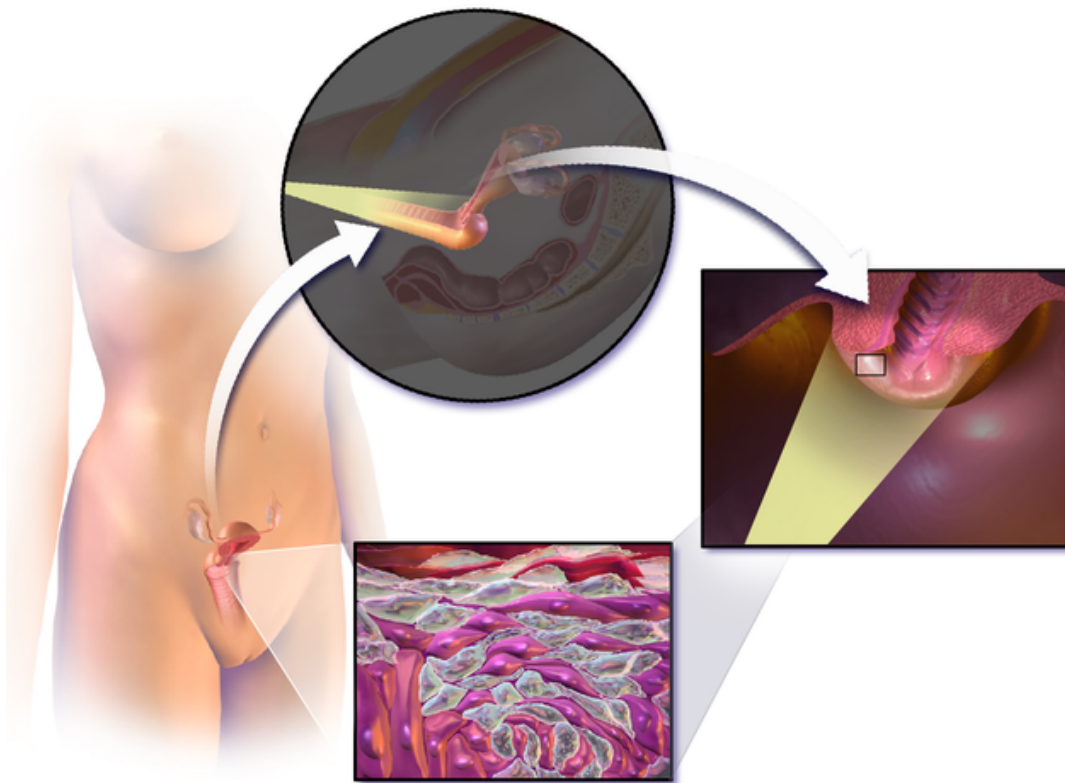
Because **pre-malignant** and **early stages** of cervical cancer are usually **asymptomatic**, they usually represent a **random finding**. In 90% of the cases, however, **advanced cancers** show symptoms, such as contact bleeding, lymphedema of the legs, ureteral stenosis, ileus symptoms, or back pain.

Gynecologic examination in cervical carcinoma

The recommended age at first screening suggested by the World Health Organization (WHO) is 30 years. However, the age at first screening varies between countries. It is 20 years in Germany, and 21 years in the USA. Screening includes **direct visualization** of the cervix by adjusting the speculum and using acetic acid or Lugol's iodine to highlight precancerous lesions, assess **epithelial atypia** on the vaginal portion of the cervix or ectocervix (**portio vaginalis cervicis**), and **cytologic evaluation of the cervical smear**.

In this case, smears are obtained from the **endocervix** and the **ectocervix** for microscopic evaluation via **Papanicolaou** staining ('Pap smear').

In addition, a **colposcopy** can be used to view the ectocervix under a 6- to 40-fold magnification. For an extended investigation, the ectocervix is dabbed with **acetic acid** or **Lugol's iodine**. In the case of the latter, the normal epithelium turns brown, while the atypical, altered epithelium remains bright.



[Image](#): Illustration demonstrating a colposcopy. By BruceBlaus, Licence: [CC BY-SA 4.0](#)

The various diagnostic steps in the gynecological examination are found here:

[Diagnostics of female genitalia](#).

Abnormal findings indicate **atypia**:

Diagnostics	Findings
Cytological smear	Changes in the nucleus (e.g., polymorphic, multiple nuclei), changes in the plasma, a shift in the nuclear-to-plasma ratio in favor of the nucleus
Colposcopy	Vesicular epithelium, mosaic, puncture, bleeding nodular surface, ulcer, exophytic or endophytic tumor

Further Studies in Cervical Cancer

HPV diagnostics

HPV infection can be detected **using a PCR**. Because papillomaviruses are found in 98% of invasive carcinomas, a negative test result almost excludes oncologic risk. However, a positive finding only indicates **potential disease risk**. Thus, HPV diagnostics are indicated for **supplementary examination** in suspicious findings, but not as a screening method.

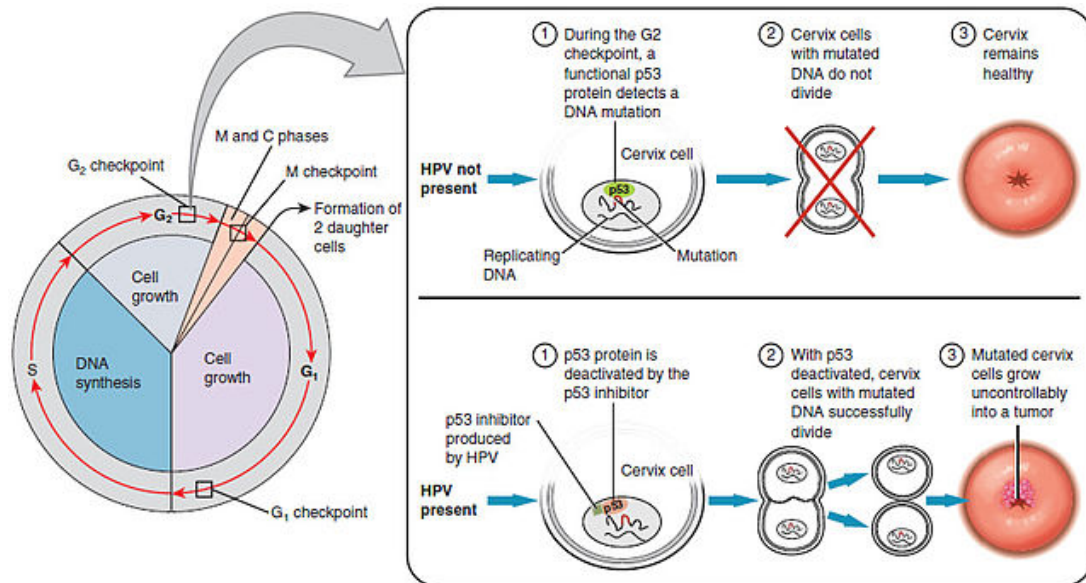


Image: In most cases, cells infected with the HPV virus heal on their own. In some cases, however, the virus continues to spread and becomes invasive cancer. By OpenStax College, License: [CC BY 3.0](https://creativecommons.org/licenses/by/3.0/)

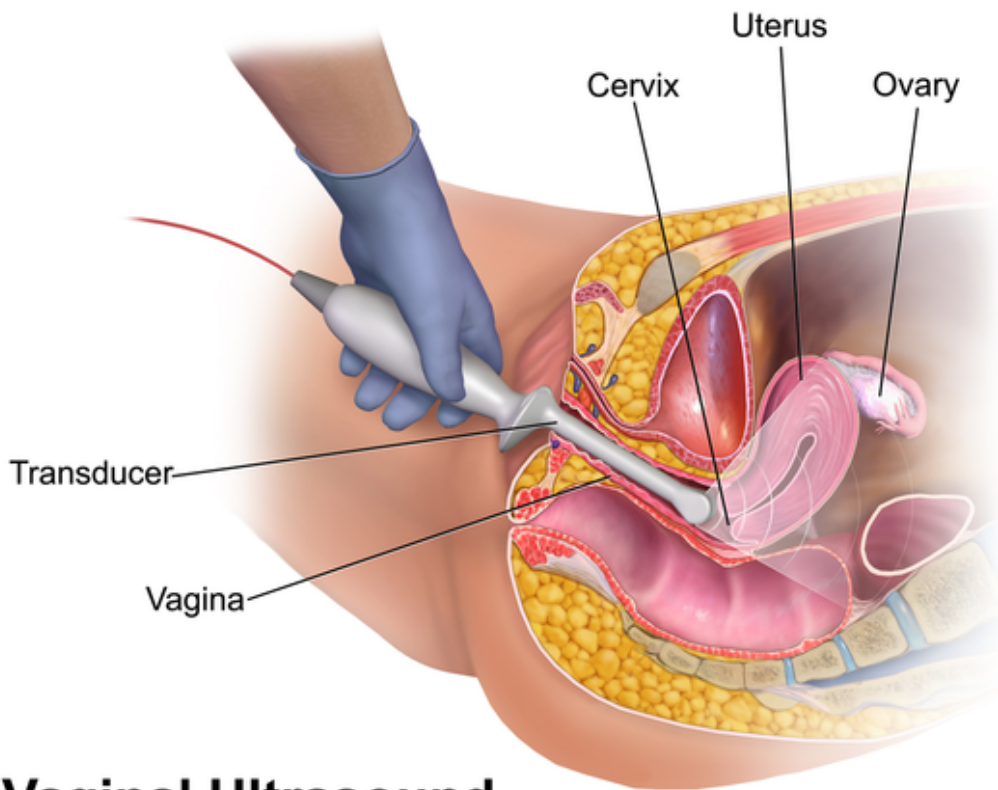
Histology

Any significant findings associated with suspicious cases must be confirmed **histologically** via selective **biopsy** under **colposcopy** or **cervical curettage**.

Conization is a **more invasive** method entailing the removal of pathological tissue containing both the **endocervix** and the **ectocervix**, using a **scalpel (knife conization)** or **electric loop (loop conization, LEEP)**. Because of the typical tumor localization (sexually mature women: ectocervix; older women: cervical canal), the cones are flat in **premenopausal** women and high and narrow in **postmenopausal** cases. However, this method is associated with the risk of **bleeding** and **late complications**, such as **cervical stenosis** and **insufficiency**.

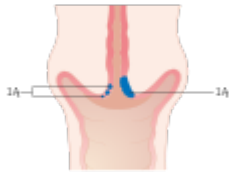
Pre-therapeutic staging

In addition to direct visualization of the cervix via a speculum and palpation, the evaluation of **tumor spread** is also mandatory in histologically-confirmed cancer. Therefore, **transvaginal** and **renal** ultrasound is performed.

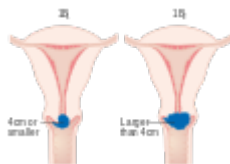


Vaginal Ultrasound

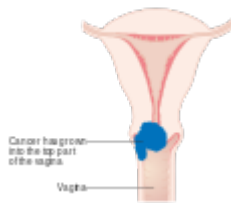
[Image:](#) Transvaginal ultrasonography procedure. By BruceBlaus, Licence: [CC BY-SA 4.0](#)



- [Image:](#) Stage 1A. By Cancer Research UK, License: [CC BY-SA 4.0](#)



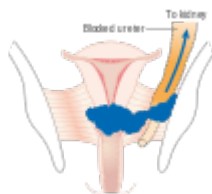
- [Image:](#) Stage 1B. By Cancer Research UK, License: [CC BY-SA 4.0](#)



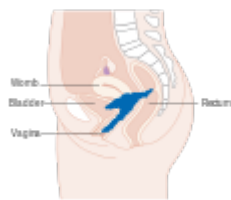
- **Image:** Stage 2A. By Cancer Research UK, License: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



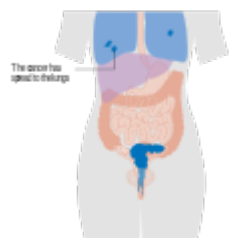
- **Image:** Stage 2B. By Cancer Research UK, License: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



- **Image:** Stage 3B. By Cancer Research UK, License: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



- **Image:** Stage 4A. By Cancer Research UK, License: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)



- **Image:** Stage 4B. By Cancer Research UK, License: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)

Cervical cancer is staged by the [International Federation of Gynecology and Obstetrics](https://www.who.int/news-room/fact-sheets/detail/cervical-cancer)

(FIGO) staging system, which is based on a clinical examination, rather than surgical findings. The diagnosis is based on staging using the following tests: palpation (feeling with the fingers); inspection; [colposcopy](#); endocervical [curettage](#); [hysteroscopy](#); [cystoscopy](#); [proctoscopy](#); intravenous [urography](#); [X-ray](#) examination of the lungs and skeleton; and cervical [conization](#).

Indications for MRI

Patients with histologically confirmed cervical cancer FIGO stage from 1B2 up to and including III should receive a baseline MRI for the assessment of locoregional tumor spread.

If necessary, **rectoscopy and cystoscopy** can be performed. In FIGO IB2, a **CT** of the thorax and abdomen can be used to assess **extrapelvic** tumor spread.

Therapy of Cervical Cancer

Therapy of cervical cancer is tailored to individual cases and entails complex **individual** treatment planning. In addition to the **stage classification**, factors such as family planning, patient age, and risk factors are considered.

Note: The therapy of cervical cancer must be adapted to each patient individually!

Treatment of cervical intraepithelial neoplasia (CIN)

The spontaneous recovery rate of **CIN I** and **II** is high, and therefore, **follow-up cytology** is needed after 3 months.

Changes persisting beyond 12 months or the presence of **CIN III** warrant **operative** therapy.

Conization is the most frequently performed treatment. The cut margins are assessed **histologically**, and in the absence of atypia, the probability of CIN recurrence is 1-2% however, cut margins with atypia increase the risk of CIN by 15-20%.

Laser surgery is another option, in which the pathologic tissue is destroyed by a laser beam at a depth of 5-7 mm. This method is only slightly **invasive**, but a **histologic** assessment is not possible.

A **hysterectomy** is considered in cases of postmenopausal women, and women who have undesired fertility or are diagnosed with other diseases of the uterus.

Treatment of early stages of cervical cancer

Cancer with early stromal invasion can be cured by **hysterectomy** (see below). In the case of a **microcarcinoma** (FIGO 1A2), the removal of the **pelvic lymph nodes** is another option; however, women contemplating pregnancy and childbirth may undergo **conization** alone.

Surgical Treatment of Invasive Cervical

Cancer

Abdominal radical operation

Operative therapy is the therapy of choice in FIGO stages **IB-IIB**. **Radical hysterectomy (abdominal radical surgery)** is the standard.

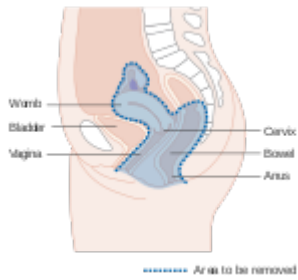


Image: Diagram showing the area removed with a posterior surgery. By Cancer Research UK, Licence: [CC BY-SA 4.0](https://creativecommons.org/licenses/by-sa/4.0/)