



➡ RADIO THERAPY FACTSHEET

Radiotherapy



Introduction

Some patients diagnosed with a gynaecological tumour will be offered radiotherapy, depending on the type of gynaecologic cancer and the tumour stage and location. This document gives general information to help you understand more about radiotherapy treatment.

Radiotherapy uses radiation, most frequently X-rays and sometimes radioactive sources, as a cancer therapy. However, the X-rays used are more powerful than conventional X-rays used for diagnostic purposes. Patients treated with radiotherapy will not become radioactive and cannot emit radiation.

The first radiotherapy patients were treated in the beginning of the 20th century, and so clinical knowledge is relatively recent.

Radiation works by damaging dividing cells: healthy tissues have the ability to repair this damage, but cancer cells have lost this ability. Many clinical studies—including ongoing studies—have looked at the best way to irradiate different tumour types. The challenge of radiation therapy is to find a balance between the dose necessary to kill the tumour and the dose which is still well-tolerated by healthy surrounding tissues.

Radiation therapy has undergone great development in recent times. Previously, the entire pelvis was irradiated for individual gynaecologic cancers, but now high-dose radiation can be directed to specific, deep-lying areas to protect the surrounding tumour-free tissue.

➔ Treatment aim

Radiotherapy can be curative if the aim is to cure the patient or palliative if the aim is to relieve symptoms, such as pain, bleeding, or skin ulceration.

- A typical curative treatment takes place daily over several weeks because the applied radiation dose needs to be high.
- A typical palliative treatment takes one to a few days and applies a relatively low dose to avoid unnecessary patient burden and side effects.

➔ In combination with other treatments

Radiotherapy can be given as the only treatment or in combination with surgery, chemo-, or hormonal therapy.

In combination with surgery it can be given

- pre-operatively, to shrink the tumour and increase the chance of complete resection.
- post-operatively, to decrease the chance of recurrence.

Anti-cancer drugs like chemotherapy or hormonal therapy are added in cases in which they have been shown to enhance the effect of radiotherapy.

➔ Types of radiotherapy

There are various forms of radiation therapy. The vast majority of cancer patients receive external radiation therapy, but internal radiation therapy (brachytherapy) and stereotactic radiation therapy are also used.



- **External radiotherapy**—radiation from an X-ray machine is delivered to the outside of the body. The therapy is typically given at a hospital cancer centre during outpatient visits.

High-energy X-ray radiation is delivered by a machine called a Linear Accelerator (Linac). This machine is used to treat the majority of tumours.

During an external beam radiotherapy session, the patient is positioned carefully on a treatment couch and the machine is directed at exactly the area to be treated. The treatment can be delivered using a single beam, a series of beams given from different angles, or a beam delivered as the machine moves in an arc motion. The treatment takes 10–20 minutes; however, the preparation for treatment can take longer than the treatment itself.

The treatment is painless; the patient feels nothing during the radiation, which lasts for a few minutes. The patient is not allowed to move during the treatment.

- **Brachytherapy**—the radiation is delivered by a radioactive source positioned inside the body, e.g., intravaginally in a vaginal cylinder or in tubes called applicators inserted under anaesthesia into the tumour area. After an applicator is inserted into the treatment area, it is connected to a machine that transfers the radioactive source. This way, the source is placed close to or inside the cancerous area.

Brachytherapy is often used to treat gynaecological tumours in combination with surgery or external radiotherapy.

The machine used for brachytherapy is called an afterloader.

The duration of the treatment depends on the strength of the source in the afterloader. A high-dose-rate afterloader delivers the prescribed dose in a few minutes. A low-dose afterloader needs hours, sometimes days, to deliver the prescribed dose. The patient is not allowed to move the lower body during this treatment.

When brachytherapy is used for patients for whom it has not been possible to surgically remove the tumour, intervention can be painful, although the radiotherapist takes measures to help reduce pain. Patients report different experiences, depending on their psychological condition, their fear of radiation, and whether it is their first or second intervention.

The radiation itself during brachytherapy doesn't hurt. However, staying still on your back for several hours (sometimes longer than a day) causes discomfort, as do the large amount of bandages that are placed in the vagina to keep radiation applicators in place. Moreover, multiple patients experience pain when removing the applicators.

Neither external beam radiotherapy nor brachytherapy makes the patient radioactive.

➔ Treatment planning

Each radiotherapy treatment is carefully prepared for the individual patient.

Generally, the first step in the radiotherapy pathway is to perform a CT scan of the treatment area. A treatment planning session, i.e., CT scan, usually lasts from 30 to 60 minutes.

The treatment team perform the scan for the patient. The doctor, radiographer, medical physicist, and planning specialist will provide a detailed picture of the area that needs treatment and of the normal tissue surrounding the cancer.

After the planning CT scan is made, the dose planning process starts.

The time needed to plan dosages depends on how complex the treatment is. The health care professionals will use all the information available from previous X-rays or scans and clinical examinations to help determine the treatment area and to define other areas in the body that should be avoided in order to reduce unnecessary side effects.

Sometimes different options for treatment delivery are considered in order to choose the best one.

In urgent cases (e.g., bleeding), the treatment can be prepared in only a few hours.

Sometimes a tiny tattoo or marker pen dots are placed on the skin in connection with dose planning. They are used as a steady point to secure that the patient is situated at the exact same place every day of radiation. They often disappear, but the tiny tattoos may sometimes persist.

➔ Specific side effects

The goal is to give a radiation dose large enough to target the cancer cells without damaging healthy tissue. However, in addition to cancer cells, radiation also affects the body's normal cells. It can cause side effects.

Most side effects that occur during treatment are temporary and gradually disappear once treatment is over. Medication can be used to either prevent or manage side effects.

Smoking not only compromises general health—it can also undermine the effects of radiation therapy; therefore, smoking is strongly discouraged. Research has shown for some cancers that patients who were smokers had a significantly higher risk of experiencing cancer recurrence. Smokers also have a greater likelihood of experiencing side effects related to radiation therapy, such as urinary toxicity, compared with non-smokers. The increased risk for smokers could possibly be explained by the fact that smoking reduces oxygen concentration within the treated tumours and oxygen inside the tumour is important for the radiation therapy to work and kill the tumour cells.

There are immediate and late side effects of the therapy.

Some patients have only mild or no side effects. However, others may have more serious and lasting side effects. The side effects depend on the radiation dose, the area of the body being irradiated, and on one's general health. Side effects mostly affect the part of the body that is irradiated. The area treated in most gynaecological patients is the pelvis, and sometimes also abdominal areas.

➔ Diarrhoea and bladder irritation

The other pelvic organs, in addition to the gynaecological organs, are the bowel and the urinary bladder.

Bowel irritation may cause diarrhoea. This can be treated with a common anti-diarrhoeal tablet, such as agents containing the substance loperamide.

Bladder irritation can feel like cystitis (bladder infection). To reduce this side effect, it is important to keep well-hydrated.

Diarrhoea or multiple bowel movements per day can happen during the therapy but it usually gets better after treatment finishes. The diarrhoea can cause inflammation of the rectum, which the doctor may decide to treat.

➔ Sore skin

The skin in the irradiated area can react like a severe sunburn, becoming dry and red and peeling off. Exudative wounds (which drain fluid) may also occur. The rest of the skin is not affected. The skin reaction may be most pronounced at the end of the course of treatment and one to two weeks after the end of radiation therapy. About one month after the last treatment, the skin will heal. However, the skin in the irradiated area will often be slightly darker for months after the radiation treatment, and, in some cases, sustained changes may occur.

In patients irradiated for vulvar cancer, the skin in the treatment area becomes sore.

General advice for caring for the skin is to avoid any physical or chemical irritation. This means avoiding rubbing the area or using strongly perfumed products.

If advised, a cream or lotion can be used to keep the area moisturised. The staff of the radiation department can provide advice and guidance on skin care in connection with the treatment.

Swimming should be avoided, as chlorine in the water may increase skin irritation.

For at least one year after radiation treatment, patients should avoid sunlight in the irradiated area. It is important to protect the irradiated skin area from the sun with loose-fitting clothing as well as sunscreen with a high sun protection factor (SPF). Tight clothing can be bothersome, and perfume, deodorant, and soap can aggravate the skin. Instead, use a mild soap without perfume.

➔ Sore vagina

High radiation doses delivered in the vagina cause irritation of mucosa, which is sometimes painful. Analgesics can be prescribed. Moreover, rinses and other kinds of medication may help alleviate these symptoms.

It is most important to avoid infections. If the patient feels uncomfortable for a long period or has severe pain in the vaginal area, it is necessary to call the doctor.

Swimming should be avoided, as the chlorine in the water may increase the mucosal irritation.

A long-term side effect after irradiation is that, due to tissue shrinkage, the vagina can become narrow and sore. It can be important after treatment, when the patient enters a follow up-program to be able to inspect the cervical area / top of the vagina and to perform regular gynaecological examinations. For this reason, it is advisable to prevent the vagina to agglutinate (become very narrow or closed). This can be avoided by regular sexual intercourse or by the use of dilators that may be offered to you by the radiation therapy unit staff.

➔ Some general side effects

• Tiredness (fatigue)

Fatigue and nausea can sometimes occur during radiotherapy—though often to a mild degree. Most often, fatigue appears after a few weeks of treatment. It is very different from person to person how pronounced the fatigue becomes.

The fatigue may have many causes, such as the disease itself, the treatment, nausea, pain, fever, anaemia, depression, stress, eating and drinking too little, or not sleeping well. For many people, it can be stressful to have to go to the cancer department and thus relate to being sick. Attending radiotherapy daily or having a long transport time to the hospital can be tiring in itself. Ongoing recovery from surgery or chemotherapy can also cause fatigue.

Listening to the body and taking enough rest is advised. Sometimes, dehydration can cause tiredness. An increase in fluid intake can improve energy levels.

In any case, it may be beneficial to take time for extra rest during the day, both during the period of radiation treatment and in the time after the end of treatment.

A light daily exercise such as walking and / or cycling can result in better rest after the exertion.

If you feel tired, you should use your energy to do the things that are most important to you and let others help, for example, with housework. Taking more short rests during the day provides renewed energy and does not spoil the night's sleep as easily as long naps during the day. Also, try eating a diet high in nutrients.

• Nausea and vomiting, loss of appetite

Some patients feel sick during radiotherapy. This occurs mostly in combination with chemotherapy or for patients who receive radiotherapy on a large part of the abdominal area. Anti-emetics are prescribed, if necessary.

It is important to try to eat well during the treatment and also to keep well hydrated by drinking about two litres of fluid per day.

In the case of cancer and treatment, it is not unusual for the appetite to decrease for shorter or longer periods. During illness and treatment, the body needs extra energy, so it is important to consume high-nutritional-value food.

It is different from patient to patient how reduced appetite can be handled. You may want to ask for a consultation with the dietician if one is affiliated with the department where you are treated.

• Hair loss

Radiotherapy can cause hair loss in the area being treated. Most hair loss is temporary, and hair will start to grow back within two to three months after finishing treatment, depending on the radiation dose you have received. Pubic hair in the genital area will be reduced and, for some, completely lost. Head hair loss occurs only if the whole skull is irradiated due to a specific, very seldom indication.

- **Chronic side effects**

In some cases, the side effects are lasting (chronic side effects) and can occur months and years after radiation therapy is completed. Radiation therapy is planned and dosed very carefully to avoid these side effects as much as possible. Chronic side effects are caused by permanent changes in the tissue in the irradiated area. However, it can also be fatigue.

The most common lasting side effects are:

- Acute menopause, in which the ovaries no longer function and pregnancy is no longer possible.
- Dry vagina, which can cause bleeding or pain during sexual intercourse.
- Vaginal narrowing, for which regular dilatations can be necessary.
- Change of bowel habits, periods of frequent defecation or even diarrhoea

Often occurring chronic side effects:

- Periods of frequent urination or painful urination.
- Recurrent cystitis.
- Difficulty in controlling bowels.
- Blood in stools and/or mucus in stools.
- swelling in one or both legs due to the radiation of lymph nodes (lymphoedema). The risk of this is increased if lymph nodes were removed during surgery.

Rare side effects:

- Deep mucosal ulcerations of the vagina, bladder, rectum, or bowel which will not recover and requires colostomy.
- Bowel stricture, requiring surgery.
- Painful bone fractures localised in the irradiated area (this occurs seldomly).
- New cancer occurrence many years after the treatment as a result of the radiation (also rare).

During and after the therapies for patients, in addition to the help of doctors, nurses, and a psychologist, it is good to share experiences and discuss common questions with fellow patients.

ENGAGE recommends finding a patient organization in the patient's own country in order to facilitate the otherwise difficult path of the patient.



*ENGAGE would like to thank the authors, the contributors
and ENGAGE Executive Group members
for their constant availability and work on updating this factsheet.*

*ENGAGE wishes to express sincere gratitude to the authors
Kim Hulscher (NL), Icó Tóth (HU)
and to Dr. Elzbieta van der Steen-Banasin (NL)
and to Dr. Karina Dahl Steffensen (DK)
for the clinician review of this factsheet.*

*ENGAGE would like to thank its Executive Group members
for their constant availability and hard work.*

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ENGAGE recommends contacting your local patient association!

