

Guide to Radiation therapy for parent and children

HYGEIA Hospital Radiation Oncology Centre

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About this guide

This guide has been written for children and their parents who are about to get or are now getting radiation therapy and covers:

- Questions and answers about radiation therapy
 - Information about the radiation therapy team
 - Questions and answers about possible side effects due to radiotherapy and how to manage them
 - Useful advices during radiotherapy
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In the link below you can find a video about the procedure of radiation therapy that you can show to your child.

One of a Kind! A guide to radiotherapy
<https://www.youtube.com/watch?v=8pBjobqdtrc>

Questions and answers about radiotherapy

What is radiation therapy?

Radiotherapy (also called **Radiation therapy**) is a cancer treatment that uses high doses of radiation to kill cancer cells and stop them from spreading.

What is external beam radiotherapy?



External beam radiation therapy is delivered by a linear accelerator (LINAC) that produces high energy photon beams or electron beams. External beam radiation therapy is a **local treatment**. The radiation is aimed exactly at the area (target) that the Radiation Oncologist has defined.

New radiation therapy techniques have the advantage of delivering radiation with high precision while minimizing the dose to surrounding healthy tissues and therefore minimizing side effects.

What does radiotherapy do to cancer cells?

Given in high doses, radiation kills or slows the growth of cancer cells. Radiation therapy is used to:

- **Treat cancer:** Radiation can be used to cure, stop, or slow the growth of cancer.
- **Reduce symptoms:** When a cure is not possible, radiation may be used to shrink cancer tumors in order to reduce symptoms. Radiation therapy used in this way can treat problems such as pain, hemorrhage etc.

How long does it take radiotherapy to work?

Radiation therapy does not kill cancer cells right away. It takes days or weeks of treatment before cancer cells start to die. Then, cancer cells keep dying for weeks or months after radiation therapy ends.

What does radiotherapy do to healthy tissues?

Radiation not only kills or slows the growth of cancer cells, it can also affect nearby healthy cells. In most cases the healthy cells recover after treatment is over.

New techniques, such as **IMRT/VMAT/IGRT**, allow your child's doctor to aim higher doses of radiation at your child's tumor while reducing the radiation to nearby healthy tissues.

Does radiotherapy hurt?

No, radiation therapy does not hurt while it is being given. But the side effects that children may get from radiation therapy can cause pain or discomfort. Your child's Radiation Oncologist can help you manage the side effects your child might have.

Will my child need anesthesia?

If your child is very young, he or she will not feel comfortable staying in the radiation therapy room alone or won't be able to stay still during irradiation. So your child will have to receive anesthesia for immobilization procedure and for everyday treatment. The anesthesiologist will give you instructions about your child's diet before anesthesia.

What happens before my child's first external beam radiotherapy?

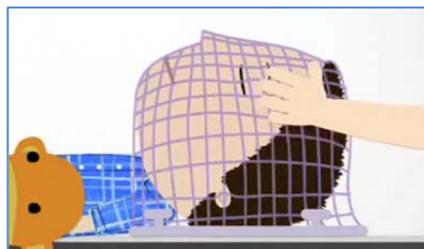


You will have a consultation with your child's Radiation Oncologist. Your child's doctor will physically exam your child, talk about your child's medical history, and will discuss external beam radiation therapy, its benefits and side effects, and ways you can care for your child during and after treatment. You can then choose whether your child will have external beam radiation therapy and sign the **informed consent**.

If you agree to proceed with radiation therapy, the secretary will fill in your child's demographic data and take a photo of your child. The photo will be used daily as part of your child's identification process. The secretary will schedule an appointment for your child's **immobilization** procedure:



- The accuracy of your child everyday treatment depends on positioning on the linear accelerator. Every day your child have to be positioned in the same way. It is of great importance to «immobilize» him or her at this position.
- This procedure takes place in the machine called "Simulator". The radiographer will follow your child's doctor's instructions and position your child in the way he or she will be treated daily. The radiographer will then put small permanent marks (tattoos) on your child's skin to mark the treatment area. Those marks are needed throughout the course of your child's radiation therapy. The radiographers will use them each day to make sure that your child is in the correct position. Tattoos are about the size of a freckle and will remain on your child's skin for the rest of his or her life.
- If your child is getting radiation to the head & neck region, he or she will need a mask. The mask has air holes, and holes can be cut for your eyes, nose, and mouth. It attaches to the table where your child will lie to receive treatment. The mask helps keep your child's head from moving so that he or she is in the exact same position every day.
- When immobilization is finished, the radiographer will take some pictures of your child at treatment position to include them in his or her medical file.



How often will my child get external beam radiotherapy?

Most children get external beam radiation therapy once a day, 5 days a week, Monday through Friday. Treatment lasts for 2 to 10 weeks, depending on the type of cancer and the goal of treatment. The time between your child's first and last radiation therapy sessions is called a course of treatment.

What is a planning CT scan?

In order to prepare your child's treatment plan and to accurately calculate the dose to the target and organs at risk, your child will have to have a CT scan positioned in the way that he or she was immobilized. This CT is not diagnostic. If a mask is used for your child's daily immobilization then your child will need to have the planning CT scan with the mask on.

Does my child need to have other imaging exams (e.g. MRI, PET etc)?

In many cases, in order to accurately define the target, your child's doctor might ask for more diagnostic imaging examinations. These could be examinations that your child already had or new ones (p.e. MRI, PET etc.). These images are useful for your child's treatment plan because they provide **more anatomic and functional information** of the area that will be treated. The medical physicist is using sophisticated software to fuse all these images.

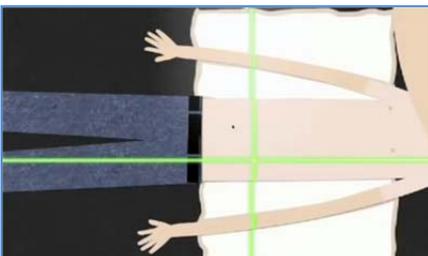
What is a treatment plan?



The Medical Physics department prepares your child's treatment plan. This means the way that your child's treatment will be delivered and how much time he or she will need to stay on the linear accelerator. In addition, the dose to the target and the surrounding normal tissues is calculated. All treatment plans are verified with measurements on the machine or with independent calculations before your child starts treatment, for your child's safety.

Treatment plan data are electronically sent to the patient information system MOSAIQ and daily treatment is scheduled.

What happens during my child's treatment sessions?



- Your child will be escorted to the linear accelerator room where he or she will have daily treatment.
- In case your child needs anesthesia for daily treatment, this is given prior entering the treatment room.
- Your child will remove his or her clothes at the area that will be irradiated.
- The radiographer will help your child lie down on the treatment couch.
- The radiographer will position your child in the correct way following the treatment plan instructions.
- The radiographer uses your child's skin tattoos or marks on your child's mask to position him or her correctly with the use of lasers that help him for your accurate positioning.
- In some fractions Image Guided Radiation Therapy will be used. This means that your child's positioning will be checked and corrected with the help of images (planar or CT) taken on the linac just before your treatment starts.

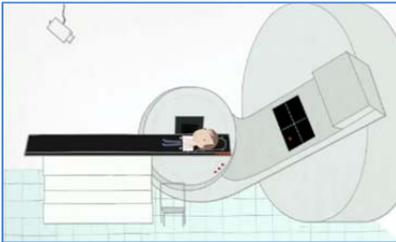
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- **Special low dose pediatric protocols** are used for imaging.
- Your child will need to stay very still so the radiation goes to the exact same place each time. Your child can breathe as always and does not have to hold his or her breath.

The radiographer will leave the room just before treatment begins. He or she will be at the control room and will **watch your child** from two cameras installed in the treatment room. He or she can **hear and talk with your child** through a speaker in the treatment room. He or she can stop the radiation machine at any time. Your child cannot feel, hear or see radiation.



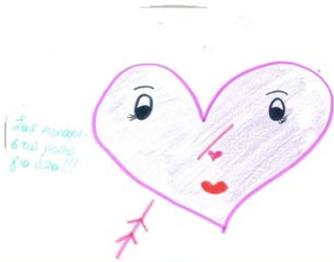
The time your child will spent in the machine in total is almost 15min. Most of the time is spent setting your child in the correct position. Your child will get radiation only for 1-2min. If your child is getting IMRT or VMAT treatment, radiation will last some more minutes.

Will radiation make my child radioactive? Will it be dangerous to be among other people?

No, external beam radiation therapy won't make your child radioactive. It is **absolutely safe** to be around other people, even babies and other young children.

Who is on my child's radiation therapy team?

Radiation Oncologist



Radiation Oncologist is a doctor who specializes in using radiation therapy to treat cancer. He or she prescribes how much radiation your child will receive, plans how your child's treatment will be given, closely follows your child during his or her course of treatment, and prescribes care that your child may need to help with side effects.

He or she works closely with the radiation therapy team in order for your child to have the best treatment.

Medical Physicist

The Medical Physicist is responsible for the choice of radiation therapy technique and machine that will be used for your child's radiotherapy, in order to have the best treatment. He or she is also the person that creates your child's treatment plan and is responsible for the verification of the plan prior to your child's treatment start. In addition, the medical physicist is responsible for checking and correcting your child's positioning on the treatment machine when IGRT is used.

Radiographer

Radiographer is the person that works with your child during each radiation therapy session. He or she positions your child for treatment and runs the machines to make sure your child gets the dose of radiation prescribed by the radiation oncologist. He or she is responsible for the verification of your child's daily treatment data.

Radiotherapy Nurse

The Radiotherapy nurse will provide special nursing care (if needed) during your child's course of treatment.

Anesthesiologist

Is a doctor that will give anesthesia to your child and watch your child during the whole radiotherapy session if anesthesia is needed.

Quality Assurance

Hygeia Hospital is JCI accredited. The quality and safety of your child's treatment is guaranteed through a series of procedures that won't allow treatment delivery if special checks are not performed.

Possible radiation therapy side effects

What are side effects?

Side effects are problems that can happen as a result of radiation therapy treatment. They may happen because the high doses of radiation used to kill cancer cells can also damage healthy cells in the treatment area. Side effects are different for each child. Some children have many side effects; others have hardly any. Side effects may be more severe if your child is also receiving chemotherapy.

Your radiation oncologist will inform you about the possible side effects your child might have. The team will watch your child closely and ask if you notice any problems. If your child does have side effects or other problems, the doctor will talk with you about ways to manage them.

Common side effects

Most children getting radiotherapy have skin changes and fatigue. Other side effects depend on the part of your child's body being treated. Here you can find some side effects that your child might have during his or her course of treatment.

Radiation therapy side effects occur only in the part your child's body is irradiated.



Head and Neck

Radiation to the head or neck may cause dryness or soreness of the mouth, taste changes, sore throat and difficulty in swallowing. Your doctor will help you manage these side effects.

Thorax

Radiation to the thorax area may cause difficulty in swallowing and dry cough. Your doctor will help you manage these side effects.

Abdomen

A child receiving abdominal radiation may experience nausea, vomiting or diarrhea. Your doctor will help you manage these side effects.

Pelvis

Pelvic radiation may cause nausea, vomiting or diarrhea. Your doctor will help you manage these side effects.

Spine

Pelvic radiation may cause nausea, vomiting or diarrhea. Your doctor will help you manage these side effects.

Brain (Cranium)

Cranium radiation usually results in loss of hair in the treatment area, often after the second week of treatment. The hair will generally begin to grow back 3 months after completing cranial irradiation. Some children become sleepy when they are receiving radiation to the cranium. This period of sleepiness is temporary and may continue to occur up to 6 weeks after completion of therapy.



How can I take care of my child's skin?



Some children develop a skin reaction due to radiotherapy. The area may become more dry or sensitive. The amount of reaction depends on the area being treated and the individual's skin. **Some children have no skin problems at all.**

Below you can find instructions on how to treat your child's skin over the treatment area:

1. Wash with warm water that is not too hot or too cold.
2. We recommend that you use simple soap to wash with.
3. Dry the area with a soft towel; do not rub, pat dry gently.
4. Gently apply a moisturizing cream to the area, 2 to 3 times a day.
5. Do not use talcum powder.
6. Refrain from wet shaving, waxing, cream or laser hair removal.
7. Refrain from swimming in a chlorinated pool.
8. Don't expose your child's skin to extremes of temperature e.g. hot water bottles or ice packs, sunlight.

These restrictions apply to the treatment area only. If you are unsure about the exact area that is being treated, please ask your doctor to show you. After your child's treatment finishes, continue the skin care regime until your child's skin has recovered.

Clothing

During treatment it is better for your child to wear loose fitting clothing, preferably in natural fibers that are more comfortable and less irritating to the skin. Collars, straps or underwired bras can cause irritation if they rub against your child's skin.

Avoiding the sun

Your child's skin in the treatment area will be very sensitive and needs protecting from the sun. For example, if your child is having radiotherapy to the head or neck region, it is better to wear a hat or a cotton scarf. While your child is having treatment, it is important not to use any sun protection products over the treated area. The chemicals in these products can irritate your child's skin.

Fatigue

Fatigue is often described as feeling worn out or exhausted. The ways to manage your child's fatigue are:

- Try to make your child sleep at least 8 hours each night.
- Plan time for your child to rest. Your child may need to nap during the day.

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Nutrition

It is important that your child maintains a healthy diet and drinks plenty of fluids whilst on treatment. Your child's eating habits might change. It may be easier for you child to have small snacks throughout the day rather than large meals. If your child is having problems with eating it is important to ask your doctor.

Ask us

Don't hesitate to ask us if you have any questions.



