

Radiotherapy

MRI-Linear Accelerator

You have received a referral to the department of Radiotherapy at the Amsterdam UMC for radiation treatment on the MRI-Linear Accelerator, also known as an MRI-LINAC. This folder will inform you on the entire process for your treatment.



Bron: Amsterdam UMC

What is an MRI-LINAC?

The MRI-LINAC is an irradiation device which allows us to see the healthy organs and the tumor via MRI-imaging whilst simultaneously administering radiation treatment. This allows us to target the tumor more accurately whilst also sparing as much of the surrounding healthy tissue and organs as possible. You may have already received an MRI-scan during the course of your illness. MRI stands for Magnetic Resonance Imaging, wherein strong magnets are used in order to create medical images.

Preparation

Metallic objects can negatively impact the treatment, and for that reason they are not permitted in the MRI. We request that you fill in a questionnaire in order to determine whether you have metal implanted somewhere in your body. You may keep your clothes on during the treatment, the only prerequisite is that you avoid wearing clothing with metallic components, such as zippers, buttons, and bra underwires. If you use a hearing device, this has to be removed prior to entering the MRI. We recommend to leave all jewelry at home. These measures apply to

both the preparation and the treatments. There is a metal detector in the hallway of the MRI-LINAC, it will indicate via a beeping sound whether or not there is still metal present.

In preparation, there will be an MRI-scan made on the MRI-LINAC and - potentially - a corresponding CT-scan. Both scans are made at the Radiotherapy department (VUmc location). Using the scans, your doctor will determine the specific location that requires radiation. Based on this, a treatment plan will be created.

MRI-scan

For the treatment, you will be lying down on the table of the MRI-LINAC in a 'as comfortable as possible' position. Our radiation therapists will guide you and will place a 'coil' on your body. A coil looks similar to a thin mattress, it functions like an antenna and is a necessity when performing an MRI-scan.

During the MRI-scan, you will hear a fast and loud ticking sound. You will receive headphones to place over your ears in order to muffle the sound. The headphones also serve to keep you in contact with the radiation therapists in the room adjacent to you. Furthermore, you will be given an alarm button to hold in your hand. In case you require assistance, you can press it and the radiation therapists will be by your side as quickly as possible. Once you are correctly positioned on the table, the radiation therapists will slide the table into an illuminated tunnel. This tunnel is open on both ends. The radiation therapists will then leave the room, they will be able to keep an eye on you via a camera feed in the adjacent room.

During the making of the MRI-scan, there is a small chance that you will experience strange sensations, such as warmth, cold, dizziness, and tingling sensations. It is also possible for you to develop a metallic taste in your mouth, you might also see flashes of light. These are all caused by the strong magnetic field of the MRI and it is not dangerous.

During the treatment

For the radiation treatment, the radiation therapists will place you in the same position as during the preparatory MRI-scan. They will also place the coil on your body. You will receive the headphones as well as the alarm button, the latter of which will be placed in your hand. Music can be played - on request - through the headphones.

Afterwards, the table will slide into the tunnel and the radiation therapists will leave the MRI-LINAC room in order to prepare for your radiation treatment. The treatment itself may take a while, during which we request that you try to lie as still as possible. The first step will be to make a new MRI-scan. The treatment plan will be adjusted based on the positioning of the organs and the tumor during the irradiation. Depending on the location that we will be irradiating, you may potentially receive breathing instructions via the headphones. Furthermore, another method has also been developed wherein you will regulate your breathing through the use of a mirror and monitor. This will be shown and explained to you in the doctor's appointment in preparation of your treatment. After the radiation treatment is finished, you may step off the table.

Duration

The entire treatment will take approximately 30 to 45 minutes. The radiation treatment happens over the course of several appointments. Your doctor will discuss with you how many treatment fractions you will be undergoing.

Questionnaire: Contraindications for treatment on the MRI-LINAC

Information (please read the information folder first)

During the radiation treatment on the MRI-LINAC, you will be lying in a strong magnetic field. For the sake of your safety and to avoid potential risks, we request that you answer the following questionnaire in its entirety to determine whether the treatment on the MRI-LINAC can safely take place.

Name :
 Patientnumber :
 Weight :
 Height :

Do you	Yes	No	Unknown
Struggle with claustrophobia? (For instance, you scared of small/tight spaces?)			
Have a pacemaker or (old) pacemaker wires?			
Have an Implantable Cardioverter Defibrillator (ICD)?			
Have a medical pump (such as an insulin pump)?			
Have a neurostimulator?			
Have an Ossicular Replacement Prothesis?			
Have a metallic ear canal?			
Have piercings that you are unable remove on your own?			
Have any tattoos and/or permanent make-up?			
Is there a possibility that you may have iron in your body, such as a splinter or a bullet?			
Are you a (former) metal-worker and/or is there a chance that you may have metal splinters in your eyes?			
Have you, in the past, been operated on? And during this operation, did you receive a metal or artificial implant? Examples include prostheses, artificial valve, etc. If so, Where? _____ When? _____			