Radiosurgery

azdelta

Uw ziekenhuis.

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Dear patient,

You have been referred to the radiotherapy department of AZ Delta by your specialist to have cranial stereotactic radiation or radiosurgery. This brochure is intended to inform you about the course of your treatment in our department. This brochure is in addition to the discussions you will have with your radiotherapist and the specialist treating you. If you still have any questions about your situation during your treatment, please ask one of our staff members.

The doctors of the Radiotherapy Department specialising in radiosurgery



From left to right: Dr Caroline Sweldens and Dr Benedikt Engels.

1 Stereotaxy

Radiosurgery or cranial stereotaxy is a short, powerful radiation treatment using a high dose of radiation with great accuracy. Due to its high precision, surrounding tissues, such as nerves, normal brain tissue or the brainstem, can be spared.

It is a radiation treatment with the same long-term effect as a surgical treatment. However, unlike surgery, it is done without general anaesthesia and without incisions.

This treatment can also be performed after you have undergone surgical treatment to remove a tumour in your head. The radiation treatment is then given preventively to prevent the recurrence of a tumour that has been removed.

In order to administer the treatment, the patient must understand and agree to the procedure.

The volume to be irradiated determines the number of sessions, which varies between one and five sessions. Several sites can be irradiated simultaneously during one session.

The assessment and treatment are multidisciplinary, which means that the referring physician, the neurosurgeon, the radiotherapist, the physicist, the radiation nurse and the radiologist work closely together.

2 The course of radiation treatment

Registration

On the day of your initial visit to our Radiotherapy Department, you must first register at the kiosk at the entrance to the hospital. You are then directed to the Radiotherapy Department's administration, where you will register

again. The secretary will identify you by your surname, first name and date of birth. Please hand the labels you received at the hospital reception/kiosk to the secretary. You can then take a seat in the waiting room. One of our doctors will collect you there.





Registering at the administration.

Consultation

You will come for a consultation with the radiotherapist, who will explain everything regarding the therapeutic indication, the procedure, the expected result and the possible side effects. You will also be asked about your medical history and the medications you use. You also have time to ask questions.



Consultation with a radiotherapist.

After agreeing to the treatment, the radiotherapist will set a treatment date. A date for the preparation (simulation) is also agreed upon.

Simulation

To prepare for the radiation, you will first go to the CT simulator. The CT simulator is not a radiation machine. The machine is used to make a CT scan in the position you will be in for the radiation treatment.

When you enter the simulator, you will be asked for your surname, first name and date of birth. This is a check for the nurses to know they have the right patient in front of them. Because the staff at the machine are often not the same as the nurses during the simulation, a photo of your face is taken. This is included with your information so that the staff members at the machine can be sure that they are treating the right patient.

For the treatment, you must lie on the treatment table in exactly the same way every day. The nurses will help you position yourself on the table. The nurses use various aids such as cushions in a specific shape. It is important that you indicate

whether you are comfortable in that position so that you can lie still in that position for some time (the time needed for your radiation treatment). It is very important that you do not move or change your position.

Important during preparing for irradiation

- **Try to relax as much as possible in the position indicated.**
- **Try to lie as still as possible in the same position. If you are unable to do so, please tell the nurses why it is not possible. They will then help you to get into a more comfortable position.**

A special mask is used for irradiation of the head. This mask ensures that you lie in exactly the same position every day. The nurse can draw the lines on your mask so that they are not on your face or neck. This mask consists of two parts.

Making a mask

First, a shower cap is placed over your hair to prevent the hair from sticking to the mask. For the first part, a flat plate that is warm and wet is placed under your head. Now the nurses will press the plate so that your neck is nicely supported in this part of the mask. In doing this, a head and neck support is made to measure.



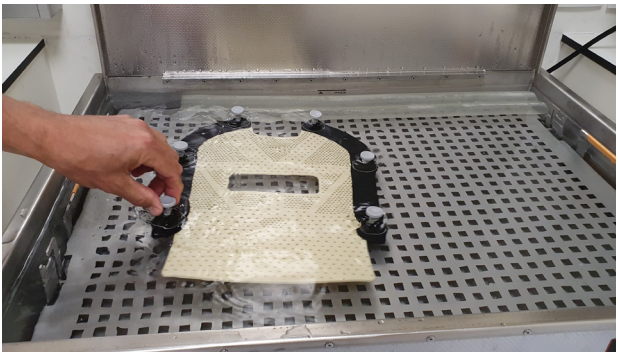




Making an individual mask.

Then the upper part of the mask will be placed on your face. This will also feel warm and wet and then cool down quickly. There is an opening at the eyes and nose. After placing the mask, the nurses will ask you to open your mouth so they can insert a small plate between your teeth. You may then close your mouth again so that the plate is between your lips and teeth. You do not have to bite on this. Modelling the mask and letting it harden takes between 10 and 15 minutes. During this time, it is important to lie still. The result is a mask made so that your head is extremely accurately positioned in the same way every day.









Measuring and marking the mask.

Once the mask has been formed to the right shape on your face, it can be easily removed.

Your personal mask will later be at the machine where you are treated and will only be used by you.

If you suffer from claustrophobia, tell the doctor and nurses before the mask is made. They take it into account.

CT scan

A CT scan is taken while the mask is hardening.

This CT scan, or computed tomography scan, involves making cross-sections of your head. This CT scan accurately visualises the area to be radiated and indicates the location of the surrounding healthy tissues.



Taking a CT scan in the position for radiation

During the scan, the table slowly slides through a large ring where the X-ray beam rotates around the body. To make your condition or certain organs more visible, you may be given a contrast agent just before or during the scan. If so, an employee will insert an infusion needle in your arm or hand. The contrast agent is delivered through this needle. When the product is injected, you will feel a sensation of warmth throughout your body, especially in your lower abdomen and throat. This feeling of warmth disappears quickly and is normal.

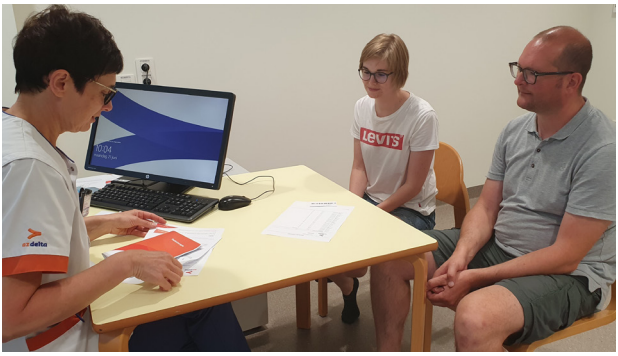
It takes about five minutes for a CT scan to be taken.

Important for a CT scan with a contrast agent

- **You have fasted. This means that you must not eat or drink anything for three hours before the CT scan.**
- **If you are allergic to a contrast agent, tell the doctor and nurse beforehand.**

Planning and explanation of the therapy

After the simulation, the nurse will give you an appointment list with the dates and times of all radiation sessions. This appointment list is made in consultation with you, the doctor and any patient transport service that is used. This list indicates which machine is used, and the telephone number of the Radiotherapy Department is also given.



Explanation of simulation by the nurse.

You will also receive a card with your name, date of birth, file number and a barcode. You will bring this card with you throughout your treatment. This card is scanned before each treatment session when you enter the radiation room. This system confirms that you are indeed the right person for whom the treatment has been prepared.



Barcode card.

The simulation takes between half an hour and three-quarters of an hour.

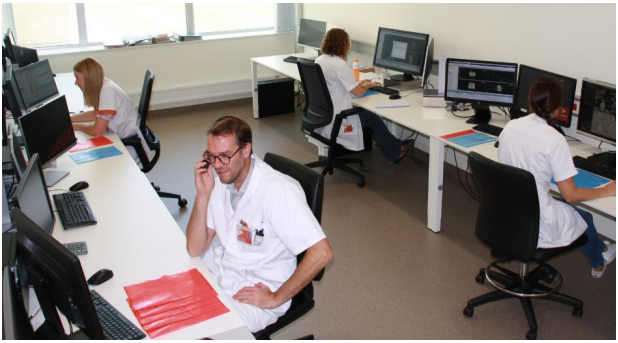
After the simulation, your GP and referring specialist will receive a letter about your treatment at our department.

In preparation for the radiosurgery, an additional NMR of the brain must also be done at the medical imaging department. This scan must always be done even if you have recently had an NMR scan. This scan is used to accurately delineate the organs at risk and the volume to be irradiated. The NMR scan is always done before the actual radiation treatment.

A contrast agent will sometimes be administered. You do not need to fast before this scan. The radiotherapist or nurse will give you the appointment.

Drawing up a radiation plan

Using the CT images and the NMR images, the radiotherapist and the physicist will draw up an individual radiation plan for you. In this plan, they ensure that the area to be radiated is treated as precisely as possible and that the healthy tissues are spared as much as possible. They determine the number of radiation fields, their spatial orientation and their size, the intensity of the radiation beams and the distribution of the radiation dose in accordance with international guidelines.



After the radiation plan has been created, all data are transferred to the computer of the radiation machine.

You do not need to be present at the unit while your radiation plan is being drawn up. Drawing up such a plan takes some time. This is why there is at least a week between your simulation and your actual radiation treatment.

The radiation treatment

The first radiation treatment

You do not need to have fasted before the radiation. When you come for your first radiation treatment, report to the administration. If no one is present, take a seat in the waiting area opposite the secretariat waiting area.

When it is your turn, a nurse will ask you to enter the radiation room, and you can immediately go to the radiation machine.

A nurse scans your card so that your treatment plan can be accessed. You will see your name and photo on the screen in the treatment room. You may check this daily. This is an additional safety feature built into the system.



Scanning the unique barcode.

You will be positioned on the treatment table in exactly the same position as during the simulation and your personal mask is put on. Your position is precisely adjusted by using lines on your mask and laser lights projected from the wall.

Your face is also reconstructed by laser lights and compared with the CT scan in the position for radiation taken during the simulation. This allows us to immediately observe small changes in the position of your head and adjust it if necessary. Sometimes the mask will be removed to change the position of your head slightly.

You will be asked to close your eyes when the nurses leave the room. It is important that you do not force this because the shape of your face changes as a result, and this is visible on the reconstruction by the laser lights.

When all the data are correct, the nurses leave the radiation

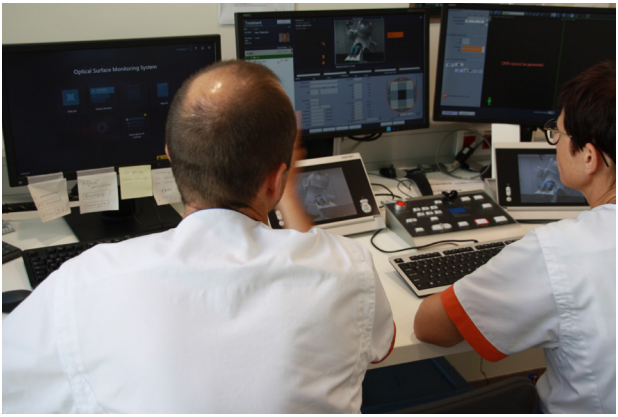
room. They can then see you through cameras and hear you through an intercom. If something happens during your treatment, e.g. you have to cough, the radiation is interrupted and the nurses return to the treatment room. You may raise your hand at any time if there is a problem or if the mask does not feel comfortable.
On the days of your radiation treatments, a doctor will come to monitor your treatment. Control images are taken, which the doctor immediately checks. The radiation will only be administered after approval by the doctor. Control images are taken every session.



Treatment session.

Once the nurses have set up your radiation, it is important that you do not move during the radiation session until it is over. You will lie still even if the nurses come in during your treatment to reset the machine.

The machine can also be operated from the outside so that it moves around you without anyone coming in.



The control room.

You just lie still during your treatment. You can breathe and swallow. You do not see or feel the radiation treatment. You also do not become radioactive from the radiation.
During radiation, the machine may make a sharp buzzing sound.

When the radiation time is finished, the machine will switch off automatically. Once the treatment is over, the nurses will come back in, take the mask off and help you get off the table. The duration of radiation is calculated individually for each patient and therefore varies per patient and per treatment.

It is not legally possible (for safety reasons) for family members or companions to accompany you in the treatment room.

Last radiation treatment

You will see your radiotherapist on the last day of your radiation treatment. He or she will want to know how the radiation went for you. You will be given advice on the further treatment of any side effects and possibly an appointment for your next check-up with your referring physician.

The effects of the radiation will continue for some time even

though the treatment has ended.

You will receive a certificate for reimbursement of your travel expenses through your doctor or from the nurses (if it is one session). You must submit this certificate to your health insurance fund or give it to the patient transport driver.

3 Side effects

The side effects occur in the irradiated part of the body, in this case, in the head. Depending on where the radiation was directed in the brain, the side effects may vary.

General side effects

Fatigue

If you have to have several sessions or if you already had surgery before the radiation, you may be a little tired for the first few days after treatment. This fatigue will be limited since only a very small area of the brain is treated. Fatigue will subside spontaneously within the first few days after the administration of the treatment.

Hair loss

Local hair loss may occur a few days to weeks after treatment. This is mainly the case with tumours that are close to the skull. Hair loss is usually temporary and spontaneous regrowth is expected after about three months.

Local side effects

Increased pressure within the skull

As a result of your treatment, some oedema or swelling may occur in your head. Depending on where the swelling occurs, this may cause symptoms of nausea, vomiting, headache, etc.

To avoid this swelling and the associated side effects, preventive cortisone (Medrol®) will sometimes be given for a short period of time. The treatment schedule will be given by your attending physician. This side effect is short-term and spontaneously subsides a few days after treatment.

Regarding bridge angle tumours/vestibular schwannomas

These side effects are specific to patients who are receiving treatment for a bridge angle tumour/vestibular schwannoma. This is a rare, benign tumour in the skull.

Hearing

Since a vestibular schwannoma leads to deafness over time, treatment with radiotherapy is carried out. In contrast to surgery, further hearing loss can be prevented in some patients. However, in a number of patients, there is a further decrease in hearing and possibly a progression towards deafness. The decreased hearing and the tinnitus that already existed before treatment will not recover after radiotherapy.

Balance organ

In patients who already occasionally suffer from balance disorders, swelling in the area of the balance organ (located in the inner ear) may temporarily increase these balance disorders. This side effect spontaneously subsides after a few days to weeks.

Loss of function of nerves

Despite careful planning and administration of the radiation, local swelling may occasionally cause a temporary loss in nearby nerves, e.g. facial paralysis after treatment for a vestibular schwannoma or bridge angle tumour.
There is usually a spontaneous recovery, and only treatment with cortisone should be administered. This recovery may take some time. In rare cases, permanent paralysis of this nerve is possible.

Practical information

The appointment system

On the day of your simulation, you will be given a list of all the appointments for the remaining radiation treatments.

After the first radiation treatment, you can keep going straight to the waiting room for the radiation machine.

If it is not yet your turn half an hour after the appointment time noted on your list, you may always ask the nurses at the unit about this.

Travel

Coming to the hospital every day for your treatment sometimes requires some organisation for transport.

Public transport
The hospital is easily accessible by bus. There is also a bus connection from the station to the hospital.

If you come by public transport, we always try to adapt your appointment list to the times of the bus and/or train schedule.

Your own means of transport
If you drive a car yourself or are taken by a family member, friend or neighbour, you can park in the car park at the East ("Oost") entrance every day after your simulation. You can have your parking ticket converted into a free ticket in the department, allowing you to leave the car park without having to pay.

Patient transport
You can use a patient transport service to get to the hospital every day. Most health insurance funds have agreements with certain companies that are responsible for transporting patients at reasonable prices. It is advisable to always discuss your wish for patient transport with the nurses at the simulation, then they can check whether this is the most advantageous transport for you. If necessary, advice can be obtained from the social services of our hospital.

Reimbursement

Radiation treatment entitles you to a legally determined transport allowance. On the last day of your radiation, you will receive a certificate signed by the radiotherapist for the reimbursement of your travel expenses. Send this certificate to your health insurance fund.

Additional costs

The costs of radiation treatment are borne by the health insurance fund. You will have to pay the patient contribution for a maximum of two consultations, regardless of how many times you are seen by a doctor.
For more information, please contact your attending radiotherapist.

More information

You can also find more information at the following organisations

Flemish League against Cancer (Vlaamse Liga tegen Kanker, VLK)

The VLK aims to inform and support people and those close to them during and after their treatment. A wide range of services has been developed for this purpose.

Kom Op Tegen Kanker

Koningsstraat 217
1210 Brussels
t 02 227 69 69
f 02 223 22 00
www.komoptegenkanker.be

Stichting tegen Kanker

The Stichting tegen Kanker provides various services to promote the well-being of people with cancer and their loved ones.

Stichting tegen Kanker
Leuvensesteenweg 479
1030 Brussels
t 02 736 99 99
f 02 734 92 50
www.kanker.be

Contact

Secretariaat dienst

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Artsen