



Radiotherapy radiation department: external radiation treatment

Patient information

INTRODUCTION	3
RADIOTHERAPY	4
What is radiotherapy?	
How does radiotherapy work? WHAT DOES A COURSE OF TREATMENT INVOLVE?	6
Consultation	
Simulation	
CT-simulation	
4D-CT scan	
Radiotherapy mask	
Radiotherapy treatment	
FOLLOW-UP EXAMINATIONS	14
During the radiation treatment	
After the radiation treatment	
SIDE EFFECTS	15
General side effects	
Specific side effects	
Looking after the skin	
DIETICIAN	23
SOCIAL WORK	24
OTHER	25
The appointment system during your radiotherapy treatment	
Transport	
ADDITIONAL INFORMATION	27
FREQUENTLY ASKED QUESTIONS	31
RADIOTHERAPY CONTACT DATA	33

Your doctor will have told you that radiotherapy is an important part of the treatment for your illness. This booklet aims to provide answers to a number of your questions relating to radiotherapy treatment.

Obviously you can contact members of staff at the radiotherapy department at any time for more specific information. They will be happy to help.

The Radiotherapy Department

# **RADIOTHERAPY**

#### WHAT IS RADIOTHERAPY?

Radiotherapy is a method of treatment in which ionising rays are used to destroy malignant cells (cancer). Irradiation of cancer cells is usually carried out externally using appropriate equipment (linear accelerators) or internally by introducing a radioactive source into the body. This brochure only provides information on external irradiation.

#### **HOW DOES RADIOTHERAPY WORK?**

All human tissues are composed of cells. These cells can duplicate if necessary, for example to replace old or damaged cells. If this duplication process is uncontrolled and cells begin to divide unrestrainedly, a tumour may develop. A tumour may be benign or malignant.

A malignant tumour, or cancer, may grow into the surrounding healthy tissues and give rise to secondaries (metastases). Ionising radiation kills or damages the cells in the body. Cancer cells are more sensitive to irradiation than healthy cells. Healthy cells can recover more readily from slight radiation damage than cancer cells.

For treatment purposes the radiation dose in the tumour must be sufficiently high, whilst irradiation of the surrounding healthy tissues must remain as low as possible to ensure maximumprotection. This minimises damage to normal or healthy cells, allowing them to repair easily, whilst ensuring the destruction of malignant cells.

When choosing the appropriate radiation technique, it is important to select the correct energy or strength of radiation and to apply one or more treatment volumes from a variety of radiation angles. By administering individual treatment sessions of a few minutes several times a week, it is possible to damage cancerous cells effectively whilst ensuring that healthy tissues have the chance to repair.

lonising radiation cannot be seen, smelled or felt. Irradiation causes no pain.

Finally, it is good to know that you don't become radioactive after radiotherapy and can continue to have contact with other people, including children and pregnant women.

# WHAT DOES A COURSE OF TREATMENT INVOLVE?

#### CONSULTATION

Before your treatment starts you will meet the radiation oncologist, the doctor who specialises in radiation oncology. This initial contact may take place in the department of radiation oncology, during a consultation or on the hospital ward. The radiation oncologist will discuss the treatment that is most appropriate for you (your treatment plan).

If you wish, you can then meet the social worker who works in the department of radiation oncology. They can discuss with you how to



solve potential practical problems. If you have already been admitted to hospital, you can ask to meet the social worker on your ward.

#### **CT-SIMULATION**

An additional appointment will be arranged at the CT-simulator to set up an individual treatment plan. A CT-simulator (CT = computer tomography) produces a CT-scan, which immediately provides a three or four dimensional image, during which you have to remain in the same position as that adopted during radiation treatment. These images then enable the radiation oncologist and physician to set up an individual treatment plan.

# 4D-CT scan and Deep Inspiration Breath-Hold (DIBH)

A 4D-CT scan not only scans but also registers breathing to ensure that any movement of the tumour and healthy tissue can be taken into account when preparing the irradiation plan. This means that the margins around the tumour, and consequently the radiation volume, can be reduced, thus saving healthy tissue and/or making it possible to apply a much higher dose of radiation to the tumour.

The Deep Inspiration Breath-Hold (DIBH) is applied for some tumours located on the chest.

During deep breathing the distance between the heart and the volume to be irradiated increases, making it easier to provide protection for the heart when preparing the irradiation plan. DIBH is applied during both the scanning and irradiation process.

# A CT-simulation is painless.

At the start of a CT-simulation we will ask you to state your surname, first name and date of birth. This is an essential check for the nurse to avoid potential confusion.

It is important that you position yourself on the treatment table in exactly the same way for each treatment session. The nurses and



doctor must first determine which is the best position for your radiation treatment. The position selected will be the one that is most comfortable for you and most effective for the treatment. The way in which you will be treated is also heavily dependent upon the location of the tumour.

When patients have to be treated in the chest area, abdomen or limbs we usually 'tattoo' a number of points. The nurse will mark the points by pricking the skin. Although very small, these points are permanent, which is why they are referred to as tattoo points. The nurse will determine in advance where the points need to be marked.

Sometimes additional markings are made using red ink or a black marker. It is important that the red marks remain visible for the duration of the treatment so that the nursing staff can see exactly which area needs to be irradiated. The black marks are no longer necessary during the further treatment. Of course you can wash or shower but try not to wash away the red markings. If the lines become less obvious during the course of the radiation treatment, they will be marked again by the nurse in charge of your treatment.

If a patient's head or neck has to be treated a radiotherapy mask will be made before the simulation. If this applies to you, you will be provided with any necessary information. When a mask is used no lines will be made directly onto the skin. They will be indicated on the mask. Sometimes a tattoo point may be applied to the chest or abdomen for guidance.

A simulation can take from 30 minutes to an hour. If a contrast medium has to be injected intravenously you will have to fast. This will be discussed with you in advance and you will be told not to eat or drink anything for at least 4 hours before the event. You will be able to take any medication.

At the end of the simulation the nurse will give you details of your radiotherapy appointments (day, time) and the number of the therapy machine.

Your GP will be informed about your treatment following the simulation.

Sometimes additional examinations are necessary to obtain optimum images, e.g. a PET-CET, MRI, etc., before the treatment can start.

**Radiotherapy mask** (only in case of radiotherapy on the head and/ or neck)

With some indications a radiotherapy mask is required for two reasons.

First of all, the treatment area can be marked out on the mask rather than on your face or neck. Secondly, the mask ensures that you lie on the table in the same position each day.

The mask is made in the CT-simulator room. The procedure is as follows:



You lie on your back on the treatment table with your head and neck on a special pillow. The radiation oncologist and the nurses determine the correct position of your head and neck. The material used for the mask is first warmed in a small oven or in a warm bath to make it flexible and easy to mould around your head and neck. The temperature is easily tolerable. The nose area is kept free to ensure that you can breathe comfortably at all times.

The mask does not stick to your skin or hair and can easily be removed at any time. Your clothing might get slightly wet during the procedure, which is why you will be asked to remove your clothing above the waist. It takes about fifteen minutes to make the mask, including explanation.

Do you suffer from claustrophobia? Please tell the nurse in advance so that this can be taken into account.

Your mask will be kept with your equipment throughout the treatment and will only be used for you.

#### **RADIATION TREATMENT**

#### First radiation session

The first treatment session usually takes place one to two weeks after the CT-simulation. This delay is necessary to prepare your treatment plan. When entering the radiation room we will ask you again, as in the CT-simulation, to state your surname, first name and date of birth. There are different types of radiation machines which could look a bit different. Various factors determine the choice of the machine (e.g. the location of the tumor, the radiaton technique).

Before treatment can start, the nursing staff will carefully position you on the table. They will then leave the treatment room.

The radiation period is calculated individually for each patient. The nurse will monitor the procedure on a TV monitor in the adjoining control room and will be able to hear you via an intercom system.

Control images will be taken at regular intervals. The table may move slightly before the actual radiation treatment starts to perfectly replicate the position of the simulation.

It is very important that you remain motionless during the treatment until the complete dose of radiation has been administered. You will not feel the radiation itself but the machine may produce a penetrating buzzing noise during the treatment. Once the session has finished the nurse will ask you to get up from the table.

The law stipulates that family or friends are not allowed to enter the treatment room for safety reasons.



# **Subsequent sessions**

The radiation oncologist decides how the treatment is to proceed. Treatment may vary from patient to patient, even with the same illness.

The total number of radiation sessions, the total dose and the required interval between two sessions will depend on the type of tumour, its location in the body and the conclusions drawn from previous examinations.

You will undergo one or sometimes two radiation treatments per day and the total number of sessions may vary from I to 40. Normally you will not be treated at weekends or on public holidays, unless the machine has been out of use for several days for maintenance purposes the week before.

# **FOLLOW-UP EXAMINATIONS**

#### **DURING THE RADIATION TREATMENT**

Every week or every two weeks, following your treatment, you will be able to arrange an appointment with the radiation oncologist or a resident in training. They will check that you are coping with the treatment and you will have the opportunity to ask questions or request certificates/prescriptions.

To ensure that these consultations run smoothly we will ask you to complete a questionnaire beforehand. The questions relate to your health and wellbeing or any complaints you might have. Your response will enable the doctor to adopt a more focused approach and deal with your complaints. The questionnaire can be completed via mynexuzhealth, your online medical dossier. Register via www.mynexuzhealth.be or open the app.

For further information refer to the 'Mynexuzhealth, access to your medical dossier' brochure (www.uzleuven.be/brochure/700352).

Every group of doctors is identified by a colour code. You will note on your appointments list that you are monitored by a doctor of a specific group. This code tells us who is monitoring you and who we must contact in the event of problems. If necessary, the doctor may order some blood tests. If you have a prescription for a blood test, tell the nurse in charge of your machine. These blood tests are carried out in situ by the nurse in charge of your machine and you don't need to fast beforehand.

#### AFTER THE RADIATION TREATMENT

On the last day of your treatment you will be given an appointment for your next check-up with the doctor. You will remain under supervision to monitor the impact of your treatment.

If you feel unwell or you are worried about anything during the days or weeks following termination of your treatment, you can phone for an early appointment after consulting your GP.

For wound related problems you can arrange an appointment with our wound care consultant on 016 34 76 00.

# SIDE EFFECTS

#### **GENERAL SIDE EFFECTS**

Reactions to radiotherapy depend on the part of the body being treated. A number of general reactions usually occur during the course of treatment, including fatigue, increased need for sleep or reduced appetite.

Your doctor will talk to you about this beforehand and discuss ways in which these reactions can be managed.

If you experience any worrying symptoms you should discuss them with your doctor or the nursing staff. Information booklets on specific problems are available.

The effects of radiation can last for some time and the overall impact often takes several weeks to manifest itself. If you suffer few or no ill-effects from the treatment you should not worry. The effectiveness of the treatment is not related in any way to the severity of the side-effects. Discuss this with your doctor so that they can provide you with the correct information.

#### **SPECIFIC SIDE EFFECTS**

Specific side effects may occur depending on the part of the body that is being treated.

Discuss your complaints with the nurse or doctor. They can advise you on how to best manage the complaints or what can be done about them.

#### LOOKING AFTER THE SKIN

It is perfectly normal for your skin to react to the radiation treatment. The intensity of the reaction depends on a number of factors: the type of rays, the administered dose and the treatment area.

Your skin will only react in the treatment area. It may become red, very dry and slightly swollen and subsequently peel off. Your skin will feel itchy and sensitive in the treated area. In some cases the skin may become dark red, shiny and painful. Blisters may form and break open releasing fluid. This often occurs in skin folds, e.g. behind the ears, in folds in the neck, in the armpits, under the breasts, in the groin or between the buttocks.

#### **Duration**

Skin reactions usually occur around the third week after treatment and gradually intensify. The worst skin reaction may not occur until the first week after termination of your treatment.

Minor skin reactions improve within one to two weeks of the treatment. Severe skin reactions will only heal two to four weeks after treatment. The dark red or brown discoloration of the skin will fade gradually over a period of weeks or months.

#### Recommendations

These recommendations only apply to the areas of the skin that have been irradiated. The rest of your skin does not need the same care.

# During the treatment

- Protect irradiated skin from other irritations, wounds and infections throughout the course of treatment and until your skin has fully healed.
- X Wash the skin in the treatment area with neutral, unscented soap.
- X Preferably use lukewarm water.
- X Wash carefully and use your hands rather than a washcloth.
- X Carefully pat the skin dry. Don't rub. Keep skin folds very dry because this is where the skin is more liable to crack.
- X Place a soft cloth in skin folds.
- You can take a bath or shower. Never touch up skin markings yourself if they have faded.
- X Protect the skin in the treated area from excessively high or low temperatures. Never use a hot water bottle or electrically heated cushion.
- X Don't shave irradiated skin, e.g. the armpits.

#### Male patients: if your face is being irradiated:

- Use an electric razor.
- Don't use pre-shave or aftershave products as they irritate the skin.

#### If you suffer from itching, burning sensations or dry skin:

- Apply a moisturiser twice a day.
- Cool your skin down with a cold, moist washcloth or cold pack stored in the refrigerator (not the freezer).
- Don't scratch; rubbing gently using the flat of your hand can help.
- Special silicon foam bandages are available that alleviate itching and pain. Ask the nursing staff in charge of the radiation equipment; they can assist you with this.

# Avoid any clothing that chafes the treated skin:

- Preferably choose 100% cotton clothing if it comes into direct contact with irradiated skin.
- Make sure your clothes feel soft. Never use starch or harsh detergents as they may irritate the skin.
- Wear loose clothing over the treated skin to prevent chafing.

## Male patients:

- Avoid close fitting shirts, tight collars, belts etc.
- Wear a silk scarf to prevent chafing of irradiated skin in the neck area.

### Female patients:

 Don't wear a tight bra or corset. If you do wear a bra insert a soft cloth to protect your skin. You could wear a cotton vest underneath your bra. Protect irradiated skin from direct sunlight, cold, wind and rain. Sunscreens don't completely keep out the sun and can cause irritation. Better to cover irradiated skin.

During the course of your treatment both the doctor and nurse will regularly examine your skin. If you notice any problems you can also talk to the wound care nurse.

#### After the radiation treatment

Continue to protect irradiated skin, even after treatment and/or after your skin appears to be healed.

## During the first few weeks after the treatment

- X Observe the care instructions you are issued with, e.g. apply moisturising creams or special dressings.
- X Avoid injuries, chafing or pressure.
- X Avoid using products that might irritate your skin, e.g. pre and aftershave products for men.
- If your skin becomes raw at the end of your treatment, contact the department immediately to make an appointment with the wound care nurse.

# During the three months following your treatment

- X Protect irradiated skin from direct sunlight.
- Use a sunscreen with a minimum protection factor of 50 or higher if you can't avoid exposing irradiated skin to the sun.
- X Protect your skin from the direct impact of wind and cold.

Contact your doctor or nurse if the skin shows the following symptoms in the treatment area:

- ✓ becomes very red.
- ✓ develops blisters.
- ✓ becomes moist and sticky.
- ✓ is very painful.

# **DIETICIAN**

Radiotherapy damages both malignant and healthy cells. Depending on the area of treatment you may suffer from various symptoms such as a sore throat, dry mouth and difficulty swallowing if your neck is treated, and intestinal problems if your abdominal area is treated.

The treatment places the body under severe stress. To maintain your weight and condition you need to ingest sufficient energy (calories), fluids and nutrients.

Obviously a healthy diet is important for everyone, but in your case even more so and you should be careful about what you eat and drink. If you are eating properly you will usually cope better with the treatment and have a lower risk of complications.

Adapting your diet can make things easier for you and ensure that you don't suffer unnecessary stress from the treatment and receive the required nutrition to recover from your treatment.

The dietician will be happy to provide appropriate advice. Depending on your wishes and/or the severity of your complaints, the dietician will monitor you throughout the course of treatment.

You can make an appointment with the dietician via the nurse in charge of your radiation machine, the secretariat or the radiation oncologist.

# **SOCIAL WORK**

Illness can be very worrying for you and your family. The social workers at the radiation oncology department can help you tackle the difficulties you encounter in your personal and family life. They will also act as a link between you and the doctors.

You can contact them with questions or concerns relating to:

- ✓ personal integration (of the illness or the treatment);
- ✓ the influence of the diagnosis and/or the treatment on the family life and the social functioning;
- ✓ preservation of socials contacts and activities;
- ✓ the mutual communication between you and the medical team;
- ✓ reintegration into your professional situation;
- ✓ practical arrangements relating to the treatment (e.g. transport);
- ✓ clear up the financial situation;
- ✓ referrals to social services;
- ✓ help with insurances;
- ✓ home help;
- ✓ residential accommodation (e.g. for convalescence);
- ✓ referrals to support groups and patient organisations;
- ✓ referrals to other disciplines (e.g. a dietician, a psychologist ...)
- ✓ general information or education material for children;
- ✓ language assistance, if necessary.

You can request an appointment, either directly via the social workers, or via the nursing staff in charge of the radiation equipment or via your radiation oncologist.

#### Social work:

Tel. 016 34 86 20

# **OTHER**

# THE APPOINTMENT SYSTEM DURING RADIATION TREATMENT

On the day of your simulation you will be given a list of all the radiation treatment appointments. If certain appointments don't suit, you can talk to the nursing staff at the simulation department or, during treatment, to the nursing staff in charge of your radiation equipment. Where possible your wishes will be taken into account. From the first therapy session you can go straight to your radiotherapy machine. Give your appointment sheet before entering the waiting room. If you have to wait more than half an hour after the agreed appointment time, you can contact the nursing staff to find out the reason for this.

#### **TRANSPORT**

Having to visit the hospital every day for radiation treatment will require some organisation in terms of transport. There are various options to come to the radiation department. If necessary, the social worker can provide further information.

# **Public transport**

The campuses of UZ Leuven are easily accessible by bus. Buses run approximately every 5 minutes between the Gasthuisberg



campus and the town centre or Leuven station. Good rail connections are also available between Leuven station and the outlying areas.

#### Own transport

If you wish to use your own car it is advisable to discuss this with your doctor first. You could also ask a family member, friend or neighbour to drive you. You can park at the nearby West 'ONCO day centre' car park, but you will have to obtain an access badge from the secretariat. The badge will have to be returned upon completion of your treatment. Follow the signs for 'dagcentra ONCO'.

#### **Taxi**

Most health insurance providers will arrange transport by taxi at a reduced cost.

#### Reimbursement

Radiotherapy treatment entitles you to reimbursement of your travel expenses. Some health insurance providers also provide an additional transport allowance. Also inquire at your hospital assurance if they provide a transport allowance.

On the last day of your treatment you will receive a signed declaration for reimbursement of your travel expenses, with a list of your travel dates, which should be forwarded to your health insurance provider.

#### **COFFEE, TEA AND WATER**

You are free to use the coffee machine at any time. Coffee, tea and water are provided free of charge.

#### **STUDIES**

One of the tasks of a university hospital is to conduct research in order to improve treatments. This is referred to as a study or trial. We may ask you to take part in a research project of this kind, but it is entirely up to you whether or not to participate in a trial.

# ADDITIONAL INFORMATION

Various patient information and support initiatives are in place.

#### **INFORMATIVE AFTERNOONS**

Twice a month the department organises an 'informative afternoon' for patients and their families. They offer an informal way of finding out more about the practical aspects of radiation treatment. An initial brief description will be followed by a tour of the department, where you will be able to observe a CT-stimulator and a radiotherapy machine. The whole programme lasts about one and a half hours.

Relevant information can be obtained from the reception desk. If you're interested, you can subscribe here to an informative afternoon.

# INFORMATION AREA, BROCHURES AND INTERNET FACILITIES

A special information area near the reception desk provides brochures published by UZ Leuven, additional information on your illness, prevention, healthy living, social services, self-help groups and other topics.

Or you can just have a drink and perhaps sit and talk to other patients.

The information is also available on the UZ Leuven website: www.uzleuven.be/radiotherapie-oncologie



# **'KOM OP TEGEN KANKER' (STAND UP TO CANCER)**

'Kom op tegen Kanker' aims to provide cancer patients and their families with information and support during the period of treatment and convalescence. They have built up an extensive range of services for this purpose. 'Kom op tegen Kanker' organises information sessions on various aspects of the illness. On Tuesday and Thursday, a volunteer is present at the department who offers you a listening ear.

#### For more information on these activities contact:

Regional Care Coordinator Vlaams-Brabant

Tel. 02 225 83 14

Zorgregio.vlaamsbrabant@komoptegenkanker.be

www.allesoverkanker.be

www.allesoverkanker.be/lotgenotengroepen

# **'STICHTING TEGEN KANKER' (CANCER FOUNDATION)**

The 'Stichting tegen Kanker' foundation also provides various services to facilitate the lives of cancer patients and their families.

# Further information on their services and activities is available from:

Stichting tegen Kanker

Leuvensesteenweg 479, 1030 Brussels

Tel. 02 733 68 68

www.kanker.be

# INFORMATIVE AND INTERACTIVE SESSIONS FOR CANCER PATIENTS AND THEIR FAMILIES – AT THE UZ LEUVEN GASTHUISBERG CAMPUS

A cancer diagnosis can generate many questions, insecurities and other concerns. The Leuven Cancer Institute offers patients and their families an extensive programme of information sessions and meeting opportunities that cover many different topics.

# For further information or to register visit:

www.uzleuven.be/lki/infosessies or call 016 34 68 96

- For all cancer patients treated or monitored at UZ Leuven and their families.
- A description is provided of the content and target group of each session, to enable you to assess whether a session would be useful for you.
- Some sessions tend to be more informative, others more interactive.
- There is always an opportunity for questions or for sharing experiences.
- Sessions are supervised by professional care providers from the Leuven Cancer Institute.
- All sessions are free of charge.

#### FREE FACIAL CARE

Would you like a moment to relax and enjoy, or would you prefer to get a few tips on how to keep your skin in tip top condition?

A volunteer is present at the department every Friday morning to provide free facial care and advice. Register your interest with the nurse in charge of your treatment machine or at the secretariat.

The Bianca Centrum (Bianca Centre) also offers free facial care, massages, hair and make-up advice.

The Bianca Centrum is located at the Gasthuisberg campus on the first floor, beige arrow, E 616.

To make an appointment call 016 34 88 66.

# FREQUENTLY ASKED QUESTIONS

# Who can you contact if something is not clear?

If you have any questions you can always contact the reception desk, nursing staff or your doctor.

# Who can you contact if you have a complaint or other problem?

If you have any complaints about the treatment or rate of progress, we hope you will discuss this with us so that we can try and find a solution. You may well have your own suggestions for improvement. Feel free to talk to your doctor, the nursing staff in charge of your radiation machine, the social worker or staff at the reception desk. You can also ask for an appointment with the head of department or senior nurse. Alternatively, you can write down your comments and place them in the suggestion box at the coffee corner, or contact the hospital's ombudsman via ombudsdienst@uzleuven.be or by calling 016 34 48 18.

# What if any problems arise after the treatment?

If you have problems or questions you should first speak to your GP, as they will always be kept fully informed of your medical situation, treatment and expected side effects. In most cases they will be able to assist. If necessary, they will arrange an early appointment at the hospital.

### Are there any additional costs involved in the treatment?

The full cost of the radiotherapy treatment is covered by the health insurance provider. You will be expected to pay the standard share of the cost for maximum two consultations, irrespective of whether you have two or more consultations with the doctor. If you decide to go private and consult a specific doctor, an additional fee may be incurred. The doctor in charge of your treatment will be able to provide further information regarding this matter.

# RADIOTHERAPY CONTACT DATA

Head of Department: Dr. Jean-François Daisne

Senior Nurse: Katleen Luyten

UZ Leuven E 606 Radiotherapy Herestraat 49 3000 Leuven

Tel. 016 34 76 00

radiotherapie@uzleuven.be

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Duplication of this text and these illustrations shall always be subject to prior approval from the UZ Leuven Communications Department.

#### Design and Production

This text was composed by the Radiotherapy/Oncology Department in conjunction with the Communications Department.

This brochure is also available at www.uzleuven.be/en/brochure/700090.

Comments or suggestions pertaining to this brochure can be submitted via communicatie@uzleuven.be.

Editor-in-chief UZ Leuven Herestraat 49 3000 Leuven tel. 016 33 22 11 www.uzleuven.be



