

Patient information factsheet

Selective internal radiation therapy (SIRT)

We've given you this factsheet because we believe you may benefit from a cancer treatment called selective internal radiation therapy (SIRT). It explains what SIRT is, what the treatment involves, and what the possible benefits and risks are. We hope it will help to answer some of the questions you may have. If you have any further questions or concerns, please speak to a member of your healthcare team.

Before agreeing to the treatment, you will have a consultation with either an oncologist and an interventional radiologist (a specially trained doctor), or a hepatology consultant and an interventional radiologist, where you will have the opportunity to ask any questions you may have.

What is selective internal radiation therapy (SIRT)?

SIRT is a type of internal radiotherapy used to treat primary liver cancer (tumours that started in your liver) and secondary liver cancer (tumours that spread to your liver from another part of your body).

SIRT is split into two separate appointments over two weeks:

- Stage one: Work-up angiogram
- Stage two: Treatment

How does SIRT work?

During SIRT, millions of tiny radioactive beads (called microspheres) are injected into a blood vessel that takes blood to the liver. The beads get stuck in the small blood vessels in and around the tumours (cancer cells) in the liver, and release radiation which destroys the cancer cells. As the radiation only travels a few millimetres from where the beads are trapped, it causes little damage to the surrounding healthy cells.

Why might I need this treatment?

Tumours can be treated in a number of ways, including radiation therapy, chemoembolisation, radiotherapy and surgery. You will have been referred for SIRT because you have tumours in your liver that cannot be removed with surgery.

Who has made the decision that SIRT may be appropriate for me?

Your oncologist has discussed your case with us and we have decided that this treatment may be appropriate for you. We will invite you to a clinic appointment so we can discuss the treatment with you in more detail. We will only proceed with the treatment with your consent. We will give you time to decide and discuss with your relatives, if you so wish. We will never begin treatment at this first clinic appointment, so please don't worry about making an immediate decision.

Who will administer the treatment?

The treatment will be administered by a specially trained doctor called an interventional radiologist. Interventional radiologists have specialist expertise in performing image guided surgery, such as SIRT.

Where will the treatment take place?

The treatment will take place in the radiology department, in a specially adapted x-ray theatre.

How should I prepare for the treatment?

Pre-assessment appointment

We will send you a letter in the post for a pre-assessment appointment. This will usually be a telephone appointment, but we may ask you to come into hospital if we need to perform a blood test. During this appointment, we will ask you questions about your health, medical history and home circumstances to ensure you are well enough for the treatment. We will also explain how to prepare for the treatment.

Medication

We will inform you during your pre-assessment appointment about which medications you will need to temporarily stop taking and which you can continue taking.

Food and drink

You must not eat or drink anything (nil by mouth) for six hours before each stage of SIRT.

Staying overnight

The first stage of SIRT is usually done as a day case, so you will be able to go home the same day. Please arrange for a responsible adult to accompany you home after your appointment and stay with you overnight.

After the second stage of SIRT, you will need to stay in hospital overnight. This is so we can make sure you're feeling well before you go home. Please bring an overnight bag with you, including all the medications you are currently taking.

Allergies

Please let us know during your pre-assessment appointment if you have any allergies, or if you have previously reacted to intravenous contrast medium (the dye used for x-rays and CT scans).

What will happen during each stage of the treatment?

Stage one: Work-up angiogram

When you arrive for your appointment, we will complete your admission documents and then check your blood pressure, blood oxygen levels, temperature, heart rate and respiratory rate. We will then ask you to change into a hospital gown.

We will begin the treatment by inserting a cannula (a thin, plastic tube) into a vein in your arm. This will allow us to give you painkillers and a sedative (medication that makes you feel sleepy and relaxes you), if needed. Once in place, you shouldn't be able to feel the cannula.

We will then take you into one of our special screening rooms and ask you to lie flat on your back on an x-ray table. We will place a monitoring device on both your chest and your finger. We may also give you some oxygen through small tubes in your nostrils. We will clean the skin around your groin with antiseptic and cover the rest of your body with a theatre drape.

We will then inject some local anaesthetic into your groin. This may sting briefly before going numb.

We will then insert a very fine tube called a catheter into the main blood vessel in your groin (femoral artery). We will pass the catheter along this artery to the main blood vessel that carries blood to your liver (hepatic artery). Through the catheter, we will inject a small amount of intravenous contrast medium, so we can carry out an angiogram (a type of x-ray used to examine blood vessels). The intravenous contrast medium will:

- allow us to clearly see where the microspheres need to be placed during the treatment stage
- 'light' up the blood vessels that lead to other parts of your body (we may need to block these vessels with small coils during the treatment stage to prevent the microspheres from exiting your liver)

Through the catheter, we will then inject a test dose of radiation into your liver. Finally, we will remove the catheter from your groin and insert a closure device to stop any bleeding.

Stage two: Treatment

This stage is very similar to stage one. The only difference is that when the catheter is in the correct position, we will slowly inject microspheres (tiny radioactive beads) into your liver.

How long will each stage take?

Each stage usually takes between one and two hours.

What will happen after each stage?

Stage one: Work-up angiogram

We will take you back to the day unit to recover. During your recovery, we will take you to have a special scan to check where the test dose of radiation has been distributed. This scan will allow us to see if it is safe to proceed with the treatment stage.

After the scan, we will take you back to the day unit to continue your recovery. You will need to lie flat on your back for two hours. The ward nurses will monitor your blood pressure, heart rate and wound area. After four hours, you will be able to stand up and start moving around. You will then be able to go home.

Stage two: Treatment

We will take you back to the ward to recover overnight. The next morning, we will take you to have another scan called a Bremstrahlung scan, to check the distribution of the microspheres. If we are happy with the scan results and you feel well enough, you will be able to go home.

Follow-up care

Once you are at home, you should rest for three to four days. During this time, it is important that you continue to move around to help with your recovery.

We will send you an appointment letter for a follow-up scan. This will usually be arranged for eight to ten weeks after the treatment stage.

Are there any risks or side effects?

SIRT is generally well tolerated by most people. However, as with any medical treatment, there are some possible risks and side effects.

The most common side effects related to the treatment are:

- fatigue (extreme tiredness)
- a mild temperature
- nausea (feeling sick)
- diarrhoea
- a stomach-ache that lasts for a few days (over-the-counter pain relief medication, such as paracetamol or ibuprofen-based products, should help ease your symptoms)

Bruising

It is common to have a bruise or a small lump (a haematoma) where the catheter was inserted. However, you should contact your specialist nurse straight away if the bruise gets bigger.

Inflammation of the gallbladder (cholecystitis)

This is a rare complication. Symptoms of cholecystitis include:

- pain in the right side of your tummy (this pain may then spread to your right shoulder)
- a fever
- feeling or being sick

This usually gets better without treatment, but in rare cases, you may need surgery to remove your gallbladder. Contact your specialist nurse, interventional radiologist or GP for advice if you experience any of the symptoms above.

Radiation-induced liver disease

This is a rare, but serious complication. If the radiation from the treatment damages your liver, your liver may stop working properly. Symptoms of radiation-induced liver disease include:

- fatigue (extreme tiredness)
- pain in the upper right side of your tummy (just under your ribs)
- yellowing of your eyes and skin (this is called jaundice)

Symptoms usually develop two to eight weeks after the treatment. Contact your specialist nurse, interventional radiologist or GP for advice if you experience any of the symptoms above.

Exposure to radiation

All x-ray procedures involve exposure to varying amounts of radiation. Radiation increases your risk of cancer, but for this treatment, the risk has been assessed as low. We will not expose you to any more radiation than is necessary. We consider that the benefit to you from the treatment outweighs the low risk from the radiation.

We will discuss all possible side effects, as well as the risks and benefits, with you during your clinic appointment.

Contact us

If you have any questions or concerns while you're in hospital, please discuss these with the interventional radiology specialist nurse.

If you need any help within a week of leaving hospital, please call them using the details below.

Interventional radiology specialist nurse

Telephone: **023 8120 1329** (Monday to Thursday, 8am to 6pm)

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If you have any medical concerns outside of these hours, please contact the acute oncology service.

Acute oncology service (24-hour service)

Telephone: **023 8120 1345**

Mobile: **07867 973649**

Useful links

www.cancerresearchuk.org/about-cancer/cancer-in-general/treatment/radiotherapy/internal-radioactive-implant-treatment/selective-internal-radiation-therapy-sirt

www.macmillan.org.uk/cancer-information-and-support/treatment/types-of-treatment/radiotherapy/internal-radiotherapy/selective-internal-radiation-therapy-sirt

www.britishlivertrust.org.uk/information-and-support/living-with-a-liver-condition/liver-conditions/liver-cancer-hcc/selective-internal-radiation-therapy-sirt-also-known-as-radioembolisation

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