

# Thyrotoxicosis and Radioiodine Therapy

Medical Physics and Clinical Engineering

## Introduction

Radioiodine therapy is used to treat people with an overactive thyroid gland (thyrotoxicosis). The Royal Wolverhampton NHS Trust treats many people with radioiodine. Doctors from other Trusts also refer their patients to us for radioiodine treatment.

## What is Thyrotoxicosis?

This is a term used to describe a condition where the thyroid gland is overactive and producing too much thyroid hormone. The normal role of the thyroid hormone is to keep all bodily functions occurring at the correct level and rate. When your thyroid gland is overactive, it makes too much thyroid hormone and this leads to several symptoms for example, palpitations, diarrhoea, sweating and increases your chance of having irregular heart rhythm and of breaking a bone.

If you need more information on this, please feel free to ask the doctor at the time of agreeing for radioiodine treatment.

## What is Radioiodine and how does it work?

Iodine is a natural element, which is found in food. The iodine in your food concentrates in your thyroid gland. Your thyroid gland uses this iodine to produce thyroid hormone. Radioiodine is a form of iodine, which will concentrate in your thyroid the same way as the iodine in your food. . However, as it gives off radiation, it will make the thyroid gland produce less hormone and thereby treat your overactive thyroid gland.

## What is the benefit of Radioiodine treatment?

One dose of radioiodine treatment will stop the thyroid gland from making too much thyroid hormone in most people (about 17-18 in every 20 people in 4-6 months). A second treatment may be required in a few people (about 2-3 in every 20 people). After one or more radioiodine treatments, a vast majority of people will stop producing excess of thyroid hormones. This means that the overactive thyroid symptoms like palpitations, diarrhoea, sweating, will be controlled and the other effects of overactive thyroid gland like increased risk of bone fracture and heart problems will be reduced.

The majority of people in whom radioiodine therapy is successful will go on to have an underactive thyroid gland (16-17 in every 20 people in 10 years). Low thyroid hormone levels can be easily treated with tablets containing natural thyroid hormone.

**The prevention of infection is a major priority in all healthcare and everyone has a part to play.**

- Please decontaminate your hands frequently for 20 seconds using soap and water or alcohol gel if available
- If you have symptoms of diarrhoea and/or vomiting, cough or other respiratory symptoms, a temperature or any loss of taste or smell please do not visit the hospital or any other care facility and seek advice from 111
- Keep the environment clean and tidy
- Let's work together to keep infections out of our hospitals and care homes.

Radioiodine treatment shrinks the thyroid gland to a variable extent and this cannot always be predicted.

## What are the risks?

Radioiodine can sometimes cause slight discomfort of your neck, throat and face. This should last no longer than 24 hours.

During the initial weeks after taking the radioiodine treatment, there can be a temporary increase in the level of thyroid hormone in your blood and an increase in the symptoms. This usually gets better within a few days.

There is a high likelihood that the radioiodine treatment will result in an underactive thyroid gland (16-17 out of 20 patients may have an underactive thyroid, 10 years after the treatment). This could happen in a few months or many years after treatment. You will therefore need regular blood tests following this treatment.

An underactive thyroid gland can be easily treated with tablets containing natural thyroid hormone (levothyroxine). This should prevent the symptoms of an underactive thyroid such as weight gain and tiredness.

In patients who have an active thyroid eye disease, radioiodine treatment may lead to a significant increase in eye symptoms, in five out of 100 cases. This is more common in patients who smoke. In view of this risk, radioiodine therapy is usually not given to patients who already have active thyroid eye disease. If it is not possible to avoid radioiodine in such patients, steroid tablets may be given along with radioiodine, which reduces the risk to less than one in 100 patients. You may also require steroid tablets, if you have other risk factors like inactive thyroid eye disease or history of smoking. In patients who do not have thyroid eye disease before radioiodine treatment, the chances of developing thyroid eye disease are much lower (one in 100 patients) and steroid tablets are not required.

You are still able to carry out most day-to-day tasks such as driving, eating, drinking and you may still have contact with your pets.

## Is Radioiodine treatment dangerous?

No. Radioiodine has been given to millions of people since it was introduced in the early 1940's. We know that it is both safe and effective.

The rest of your body will receive a much smaller amount of radiation than your thyroid gland. Other people may be exposed to an even smaller dose if they come into close contact with you. We will help you to keep this as low as possible.

## Can Radioiodine treatment cause cancer?

Radioiodine has been used since the early 1940's and patients who have received this treatment have been studied very carefully. The view is that there is no significant overall increase in the risk of developing cancer as a result of this treatment.

## What are the alternatives for treating Thyrotoxicosis?

There are two other ways to treat an overactive thyroid gland and the following is a summary of the other available options. Your doctor will discuss these in greater detail and the reasons for choosing radioiodine. If you need more information on this, please feel free to ask the Doctor at the time of agreeing for radioiodine treatment.

### **(a) Tablets (carbimazole or propylthiouracil)**

Carbimazole and propylthiouracil are used to control an overactive thyroid gland. They are typically taken, with or without thyroxine tablets, for a period ranging from 9-18 months with the dose being adjusted to keep the thyroid hormone levels under control. A few people experience skin, joint or gut symptoms with these tablets. In a very small number of people the white cell count becomes severely low and special precautions need to be observed (please ask the Doctor for a separate leaflet on "hyperthyroidism" for more details). These tablets are highly effective in correcting the over-production of thyroid hormone.

However, the thyroid gland becomes overactive again approximately 7-8 of every 20 people in within two years when the tablets are stopped.

### **(b) Thyroid surgery**

Modern thyroid surgery is safe and effective. It is an option for people who would prefer this form of treatment. Thyroid surgery can be considered for any of the people with thyrotoxicosis, but is most commonly used in people with large thyroid glands or for people in whom other forms of treatments are either ineffective or are unsuitable. The Surgeon usually removes the whole gland, which ensures immediate correction of an overactive thyroid gland. Following the operation, treatment with tablets containing natural thyroid hormone (levothyroxine) is needed for life.

Surgery achieves a cure of an overactive thyroid more promptly but radioiodine treatment has the advantage over surgery of permanently curing an overactive thyroid gland without the need for an operation.

## **What happens if I do not have Radioiodine treatment?**

Thyrotoxicosis, if not treated, can have significant adverse impact on your health as described above. In view of this, if you do not have radioiodine treatment, you would need to be treated with either tablets (carbimazole or propylthiouracil) or surgery.

## **Consent**

If you decide to have radioiodine treatment we would ask you to sign a consent form. Signing this form indicates that you:

- You have read this leaflet describing radioiodine treatment (or have had someone read it to you)
- You are aware of the risks, benefits and alternatives to radioiodine treatment
- You are aware of the need to take precautions after radioiodine treatment, so as to minimise the radiation exposure to other people
- You have been given the opportunity to discuss any concerns that you may have
- You agree to have radioiodine treatment and understand what the risks are

## **Will I have Radioiodine treatment on my first visit?**

When radioiodine therapy is arranged on a particular date, most people have radioiodine treatment at that visit. However during your assessment, immediately before the administration of radioiodine, if additional information comes to light or if the clinical situation has changed in any of the following ways, it may need to be postponed.

- If you are pregnant or are breastfeeding
- If you have taken amiodarone tablets or injections in the past six months
- If you have had a CT scan recently in the past 6 weeks, which involved an injection. The injection that is used for CT scans is usually an iodine-based contrast medium that can interfere with radioiodine treatment
- If your general health or your thyroid-related condition has changed significantly

Before you have radioiodine treatment, more tests may be needed to make sure that radioiodine treatment is suitable for you. Under these circumstances, you may have to wait for the results or you may have to come back on another day to have the radioiodine treatment.

## **How is the Radioiodine given?**

You will be asked to swallow a standard sized capsule or a colourless, tasteless liquid containing the radioiodine. Capsules are given to most patients. The capsule ingredients include a gelatin of animal origin.

## How long will the Radioiodine stay in my body?

Most of the radioiodine will be taken up by your thyroid gland over the two or three days following your appointment. The rest will be mainly passed out in your urine over the next few days. A small amount is excreted in the saliva and sweat.

You should drink plenty of fluids during the first two days after your radioiodine treatment and empty your bladder regularly as this will help remove any radioiodine that has not been taken up by your thyroid gland. The amount of radioiodine in your body will reduce each day.

## How long does the Radioiodine take to work?

Radioiodine works slowly over a few weeks (six to eight weeks) after it is taken, and you may need to restart your thyroid tablets for a short period during this time. You will be advised about this when you are seen in clinic a few weeks after your treatment.

## Can I drink and eat normally before and after I have been treated?

You may drink and eat normally before attending for treatment. After the capsule has been administered you should drink plenty of fluids for the next two days to wash out any of the iodine not taken up by your thyroid gland.

## Can I have Radioiodine if I am pregnant or breastfeeding?

No. Pregnant women must not be given radioiodine and breastfeeding needs to be stopped before radioiodine treatment. It is absolutely essential to avoid pregnancy or breastfeeding for six months after radioiodine treatment.

If you are female and aged between 12 and 55, it is routine for us to complete a pregnancy test prior to you receiving radioiodine.

Male patients must avoid fathering a child for six months.

## Are there any risks to future pregnancy?

Radioiodine therapy has not been shown to reduce the chances of pregnancy in the future.

If pregnant after six months of radioiodine treatment it is not known to have any harmful effect on the growth of the baby in the womb. No harmful effects have been noted on the health of children born to mothers who have had this treatment.

## How do I reduce radiation exposure to others?

Some simple precautions need to be followed after receiving radioiodine treatment to reduce unnecessary radiation exposure to others. Below are some general precautions that need to be followed and at the end of this leaflet some tips. More detailed instructions will be discussed when you attend your appointment.

If any more specific questions need to be answered before or after you consent for this treatment, please ask your Doctor to arrange a meeting or telephone conversation with the Medical Physics team.

The following points will apply for a variable amount of time ranging between 10-24 days, depending on the dose given:

- If you have children of less than three years of age, it may be necessary to arrange for them to be looked after
- You would also need to stay away from adults and older children
- You will need to sleep apart from your partner
- You will need to avoid visiting crowded public places and journeys on public transport, if the journey time exceeds one hour
- Pay extra care to hand washing after the use of the toilet

- Gentlemen, please sit down whilst urinating (for four days following treatment)
- You should set aside a toothbrush, towel, face-cloth, a set of cutlery and crockery for your own use for four days following treatment
- It would be advisable to wear kitchen gloves when preparing food for other people for four days following treatment
- Wash clothes, bed linen and towels separately for 2 weeks after radioiodine treatment

## Procedure to follow if you experience any bodily fluid spillage for example vomiting within 24 hours post capsule administration.

Contact Medical Physics immediately on 01902 694172 / 695526 or 07920278523.

## How long should I stay away from work?

In general, you can return to work within a few days. This is very dependent on your occupation. This may be longer if your job involves:

- Handling food
- Working with children, young people or pregnant women
- Radiosensitive work

If your job involves any of the above, you must inform the hospital staff so that you can be advised on when to return to work.

## Travelling abroad in the next three months?

There are sensitive radiation detectors in airports and seaports. These are present to help maintain national security by preventing radioactive materials entering or leaving the country. Please tell us if you plan to travel abroad within three months of your radioiodine treatment. We can give you a letter stating that you have received radioiodine treatment.

## Will I need to see a doctor after the radioiodine treatment?

You should see an endocrine doctor at around six weeks, three months, six months and 12 months after your radioiodine treatment. This will be arranged by the Endocrinology Department, by appointment. On each occasion you should have a blood test a few days prior to these appointments.

On the day of receiving treatment please ensure that a six-week appointment is made, and that you obtain a form for a thyroid blood test.

## Radiation Precautions Tips

### For Low Dose Radioiodine Treatment (400MBq)

#### From day 1 to 4

- Do not share crockery (plates, bowls, cups), cutlery (knives, forks, spoons) or toothbrushes with others. Rinse your crockery and cutlery after use, then wash with other people's.
- Avoid sexual contact and open-mouth kissing.
- Avoid preparing food that involves handling of food that cannot be washed. Examples include making pastry or bread. If you really want, or need, to continue to prepare such food, wear thin plastic gloves during food preparation.
- Flush the toilet twice after use, and pay extra care with hand washing afterwards.
- Make sure no one else uses your towels and face-cloths.

**From day 1 to 11**

- Try to stay more than an arm's length from other people, and limit the time you spend close to them.
- Sleep in a separate bed.

**Advice about contact with children and pregnant women**

- If you are a main carer for young children, the amount of time you normally spend close to them probably depends on their age. For this reason, the periods of restriction below depends on the children's age.
- For children more than five years old, avoid long periods (more than a few minutes, a few times a day) of close contact (less than an arm's length) from day 1 to 11.
- For children aged between three and five years, avoid close contact from day 1 to day 16.
- For children aged less than three years old, and for pregnant women, avoid close contact from day 1 to day 21.

**For Medium Dose Radioiodine Treatment (550MBq)****From day 1 to 4**

- Do not share crockery (plates, bowls, cups), cutlery (knives, forks, spoons) or toothbrushes with others. Rinse your crockery and cutlery after use, then wash with other people's.
- Avoid sexual contact and open-mouth kissing.
- Avoid preparing food that involves handling of food that cannot be washed. Examples include making pastry or bread. If you really want, or need, to continue to prepare such food, wear thin plastic gloves during food preparation.
- Flush the toilet twice after use, and pay extra care with hand washing afterwards.
- Make sure no one else uses your towels and face-cloths.

**From day 1 to 13**

- Try to stay more than an arm's length from other people, and limit the time you spend close to them.
- Sleep in a separate bed.

**Advice about contact with children and pregnant women**

- If you are a main carer for young children, the amount of time you normally spend close to them probably depends on their age. For this reason, the periods of restriction below depends on the children's age.
- For children more than five years old, avoid long periods (more than a few minutes, a few times a day) of close contact (less than an arm's length) from day 1 to 13.
- For children aged between three and five years, avoid close contact from day 1 to day 19.
- For children aged less than three years old, and for pregnant women, avoid close contact from day 1 to day 24.

**For High Dose Radioiodine Treatment (800MBq)****From Day 1 to 4**

- Do not share crockery (plates, bowls, cups), cutlery (knives, forks, spoons) or toothbrushes with others. Rinse your crockery and cutlery after use, then wash with other people's.
- Avoid sexual contact and open-mouth kissing.
- Avoid preparing food that involves handling of food that cannot be washed. Examples include making pastry or bread. If you really want, or need, to continue to prepare such food, wear thin plastic gloves during food preparation.
- Flush the toilet twice after use, and pay extra care with hand washing afterwards.
- Make sure no one else uses your towels and face-cloths.



### From day 1 to 16

- Try to stay more than an arm's length from other people, and limit the time you spend close to them.
- Sleep in a separate bed.
- Advice about contact with children and pregnant women
- If you are a main carer for young children, the amount of time you normally spend close to them probably depends on their age. For this reason, the periods of restriction below depends on the children's age.
- For children more than five years old, avoid long periods (more than a few minutes, a few times a day) of close contact (less than an arm's length) from **day 1 to 16**.
- For children aged between three and five years, avoid close contact from **day 1 to day 22**.
- For children aged less than three years old, and for pregnant women, avoid close contact from **day 1 to day 27**.

## What should I do if I have any more questions?

If you have any questions please feel free to ask these on the day of your treatment or you can telephone one of the following contact numbers:

Diabetes Centre: 01902 695310

Monday to Friday: 09:00 - 17:00

Medical Physics Department: 01902 694172 / 695526

Monday to Friday: 09:00 - 17:00

Further information can also be obtained from the following website:

[www.british-thyroid-association.org](http://www.british-thyroid-association.org)

## English

If you need information in another way like easy read or a different language please let us know.

If you need an interpreter or assistance please let us know.

## Lithuanian

Jeigu norėtumėte, kad informacija jums būtų pateikta kitu būdu, pavyzdžiui, supaprastinta forma ar kita kalba, prašome mums apie tai pranešti.

Jeigu jums reikia vertėjo ar kitos pagalbos, prašome mums apie tai pranešti.

## Polish

Jeżeli chcieliby Państwo otrzymać te informacje w innej postaci, na przykład w wersji łatwej do czytania lub w innym języku, prosimy powiedzieć nam o tym.

Prosimy poinformować nas również, jeżeli potrzebowaliby Państwo usługi tłumaczenia ustnego lub innej pomocy.

## Punjabi

ਜੇ ਤੁਹਾਨੂੰ ਇਹ ਜਾਣਕਾਰੀ ਕਿਸੇ ਹੋਰ ਰੂਪ ਵਿਚ, ਜਿਵੇਂ ਪੜ੍ਹਨ ਵਿਚ ਆਸਾਨ ਰੂਪ ਜਾਂ ਕਿਸੇ ਦੂਜੀ ਭਾਸ਼ਾ ਵਿਚ, ਚਾਹੀਦੀ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

ਜੇ ਤੁਹਾਨੂੰ ਦੁਭਾਸ਼ੀਏ ਦੀ ਜਾਂ ਸਹਾਇਤਾ ਦੀ ਲੋੜ ਹੈ ਤਾਂ ਕਿਰਪਾ ਕਰਕੇ ਸਾਨੂੰ ਦੱਸੋ।

## Romanian

Dacă aveți nevoie de informații în alt format, ca de exemplu caractere ușor de citit sau altă limbă, vă rugăm să ne informați.

Dacă aveți nevoie de un interpret sau de asistență, vă rugăm să ne informați.

## Traditional Chinese

如果您需要以其他方式了解信息，如易读或其他语种，请告诉我们。

如果您需要口译人员或帮助，请告诉我们。