

# TREATMENTS EXPLAINED



**TREATMENT  
ONLY STARTS  
WITH YOUR  
CONSENT**

# TREATMENTS EXPLAINED

In the UK there are guidelines that recommend a **Multi-Disciplinary Team (MDT)** should treat people with cancer, thus several experts together decide on the best treatment plan rather than relying on a single opinion.

Throughout this book we talk about a care team which ideally would include a NET specialist team and other clinical staff who may not be part of the MDT. **Your NET specialist team** (or MDT) is made up of a group of specialists with expertise in NETs. The joint discussions they have are called MDMs (Multi-Disciplinary Meetings). The outcome of an MDM will be discussed with you at your treatment planning appointment.

Because NETs are rarer cancers, your MDT may not be based at your nearest hospital, this can mean that it may take a little longer than you'd like to get results or see your treatment plan. But try to bear in mind that the MDT approach is designed to put you in the best possible position, and do let your doctors know if you have any concerns.

## Who's who?

There are many different experts who could play a part in your MDT.

**Here's who they are and what they do:**

### Consultant/Lead Clinician

A senior medical or surgical specialist in a particular area of medicine or surgery - such as an endocrinologist or gastroenterologist (see below).

### Clinical Nurse Specialist (CNS)

An expert nurse who helps to plan and carry out your treatment and is often the link between all of the other members of the MDT. Your CNS is there to talk through whatever is on your mind, including any concerns, and can help you and your family to understand what's planned and what's expected.

### Endocrinologist

A consultant specialist in diagnosing and treating illnesses involving endocrine glands and hormones.

### Gastroenterologist

A consultant specialist in diagnosing and treating illnesses in the gastrointestinal system (such as stomach and bowel problems).

### Surgeon

A consultant surgeon with expertise in the surgical treatment of particular diseases and body systems. For example, a pancreatic surgeon would be consulted for treatment of diseases - including cancer - of the pancreas.

### Oncologist

A specialist in diagnosing and treating cancer.

- A medical oncologist diagnoses and treats cancer using chemotherapy and other drugs but doesn't use radiotherapy

- A clinical oncologist diagnoses and treats cancer using chemotherapy and other drugs and does use radiotherapy.

## **Nuclear Medicine Physician**

A consultant specialist in nuclear medicine scans and treatments.

## **Radiologist**

A consultant specialist in radiology scans and treatments.

- A diagnostic radiologist interprets scans to understand more about your NET and the surrounding area
- An interventional radiologist specialises in treatments carried out within the radiology department such as radiofrequency ablation. (You can read more about these in the treatments section starting on page 72.)

Most radiologists involved in specialist MDTs are both diagnostic and interventional experts.

## **Histopathologist**

A specialist in examining cells and tissue samples for signs of disease.

## **Dietician**

An expert in diet and nutrition who can help you to eat healthily after being diagnosed with a NET.

## **Palliative Care Consultant/Team**

Specialists in cancer-related symptom control and support. Although often associated with end-of-life care, this team can also offer support at any time during your life with a NET.

**Other clinical staff who may be involved in your care - but not necessarily part of the MDT:**

## **General Practitioner (GP)**

Your local doctor, who can treat all common conditions and refer you to other services for specialist treatment.

## **District/Community Nurse**

Usually attached to your GP practice, a district or community nurse may offer support during your treatment, for example helping to care for your wounds at home after surgery.

## **Pharmacist**

An expert in drugs and medicines who can help you to manage your cancer treatment and any side effects.

## **Biochemist/Clinical Scientist**

A specialist in analysing and interpreting routine and specialist blood and urine samples such as chromogranins and urinary 5HiAA.

## **Pathologist**

A specialist in diagnosing and treating illnesses in body tissues, blood, urine and other bodily fluids.

## **Radiotherapist**

A specialist responsible for radiotherapy treatments.

## **Haematologist**

A specialist in diagnosing and treating illnesses related to the blood.

# DECIDING ON TREATMENT

Your MDT will talk you through which treatments are being considered and what they hope to achieve. They may also provide you with written information about your treatment.

Aims of treatment may include:

- Removal of all or part of your NET (you can read about the different types of surgery starting on page 62)
- Control of your disease, by slowing or stopping the growth of your NET
- Palliation, or easing your symptoms
- Helping you to have the best possible quality of life - by addressing what's important to you through one or several of the approaches above.

A lot of people find it helps to take someone with them to appointments when treatments are discussed. It may make it easier to talk through your options and ask questions, and can help you make sure you've understood everything afterwards.

It's a good idea to ask for written information to take home too. This can help you to think through treatments and come up with new questions to ask before making a decision.

# GIVING YOUR CONSENT - OR NOT

The next stage is for you to give your consent to treatment. You'll be asked to sign a consent form, which you should never do until you feel totally confident about what's planned. You have control here and it has to be a decision you feel sure of making - so take at least a day to think everything through before signing the form, and if you've got any questions, ask.

Informed consent relies on you being given the information you need to make an informed choice. This information shouldn't cover just the treatment itself, but should also look at any preparation needed, side effects and potential consequences.

Questions like these can help you to get the information you need:

- What exactly does the treatment involve?
- How long does it take?
- Where will treatment take place?
- What are the advantages and disadvantages of the treatment?
- What impact will it have on my everyday life?
- Will I need to take time off work? How long?
- Will there be limitations to what I can do? For how long?
- Will I need someone to look after me or my family?
- What if I'm a carer, single parent, or have pets or neighbours who rely on me?

- Could there be side effects? Will these be short- or long-term?
- What can I do to reduce the impact of any side effects?
- Could other treatments be more effective?
- How likely is the treatment to be effective?

All of these matters should be covered during your treatment discussions. So if any areas are missed, ask about them.

It can be helpful to discuss your beliefs and preferences too. For example, are alternatives available to blood transfusion during surgery? Are treatments available that mean you don't need to stay in hospital?

Sometimes talking with someone who has had the same treatment may help. Being shown round the unit or ward you may stay in can be useful too. Remember though, that everyone experiences cancer and cancer treatment differently.

**Remember - you can say no to treatment. Your care team must respect your choice and you don't have to give a reason, although it can be useful for your care team to understand your decision so they can plan future treatments with you.**

# PREPARING FOR TREATMENT

A range of treatments are available for NETs, and your care team will let you know if there's anything specific you need to do to get ready. But there are plenty of things you can do to put yourself in the best position, whatever treatment you're having.

**Cancer treatments can put a lot of extra strain on your body, and preparing yourself physically and psychologically can make it easier to cope with treatment and recover afterwards.**

So before you start any treatments it's a good idea to think about the following:

## Exercise

You don't need to suddenly take up marathon running, but gentle activities like swimming, cycling, jogging and even walking can all help your body to get stronger. If you have issues that affect your mobility, such as arthritis, simple armchair exercises can help too. And you might find that exercise gives your mood a boost.

## Dropping bad habits

We don't expect you to radically change your lifestyle because you've been diagnosed with a NET, but if you smoke or drink too much, now's a very good time to think about giving up.

Focusing on getting enough sleep - It's very easy to get caught up in the frenetic pace of a 24/7 world, but just as exercise and diet play an enormous part in health, so do rest and sleep. If you're struggling to sleep, you can read our advice starting on page 130.

## Eating well

Giving your body what it needs is a vital way to stay healthy and boost your recovery. Usually a normal, healthy, well-balanced diet is enough to fuel your body, but sometimes a few simple adjustments may help - especially if your appetite has changed or you find yourself eating less. See section 5 for information and advice on diet and nutrition.

## Your wellbeing

Preparing yourself mentally is important too, so think about things that help you relax if you're feeling stressed. Maybe it's spending time with friends, or sitting down with a crossword, or taking a walk in your favourite park. Even a few deep breaths can help to clear your head. Whatever works for you, try and keep it in mind for days when you're not feeling too good.

## Your treatment

Whether you want to know every detail or not, there are a few basics about treatment it's always worth keeping in mind. So remember that...

- Everyone reacts to treatments differently, which means that comparing yourself to other people may not be helpful, though others may have useful tips that can help you through treatment
- If you're told something might happen and it doesn't happen, that doesn't mean the treatment hasn't worked
- If your NET can't be cured, the ultimate goal of treatment is often to improve your quality of life - so if you don't feel that's happening, say so.

## Your treatment plan and pathway of care

Once you've agreed your treatments with your care team, you'll be given a **treatment plan** explaining what's planned and when. This should cover all aspects of your treatment - including things like visits to wards or units.

The plan ensures that everyone's expectations are addressed, but it's also only the beginning of your treatment - and it can always be adapted to fit your personal needs.

You might hear your care team talk about your **pathway of care** or your **clinical pathway**. Both of these terms refer to the ongoing process of reviewing and refining your treatment. Your progress and response to treatment will be continually monitored and discussed, and choosing one treatment route initially, doesn't rule out other options being used later on.

The main thing to remember, is that you do have control over how treatment happens, when it happens and if it goes ahead. Treatment isn't just something that's done to you - it's a process you can be involved in at every stage.

## Avoiding a carcinoid crisis

We have already talked about carcinoid syndrome on page 25, and how it can be triggered by general anaesthetics, certain medical procedures and stress. In extreme cases, carcinoid syndrome can become a medical emergency - "carcinoid crisis" - causing changes to your blood pressure, breathing and consciousness level it may even result in a coma.

If you're having any surgery or treatments that could put you at risk of "carcinoid crisis", your care team will monitor you carefully and give you an injection or infusion (drip) containing a somatostatin analogue (Octreotide).

We'd recommend you carry one of our carcinoid crisis cards in your wallet or purse. It explains what medical professionals need to do in a crisis. To obtain a card, please contact us on **01926 883487** or at **admin@netpatientfoundation.org**

### AT RISK - Carcinoid Crisis

I have a neuroendocrine cancer with 'carcinoid syndrome'. I am at risk of a carcinoid crisis if I have an invasive procedure.

I will need perioperative prophylactic treatment of intravenous octreotide for acute surgery. I may need additional intravenous octreotide if I still have symptoms. A lower dose can be given subcutaneously for more minor procedures.

ALL DOSAGES GIVEN ON THE REVERSE OF THIS CARD

[www.netpatientfoundation.org](http://www.netpatientfoundation.org)

# TYPES OF TREATMENT

**A wide variety of surgical and non-surgical treatments are used to help people diagnosed with NETs experience fewer symptoms and live well.**

## **Surgery for NETs**

Surgery is usually the first option considered as it is the only currently available treatment with the potential for cure. However it may also play a role in advanced disease - where the tumours may have spread. There are several types and aims of surgery.

### **Aims of Surgery**

#### **Potentially curative surgery**

If you have a single tumour, with no evidence of secondary disease (no lymph nodes or metastases) and it can be completely removed, then surgery may be a potentially curative treatment.

The decision on the type and regularity of follow up will be based upon the results of the histopathology review (checking what's been removed under a microscope). Follow up is not always required but expert opinion is essential to assess risk of NET recurrence.

#### **Partial/cyto-reductive/debulking surgery**

All of these terms refer to surgery designed to reduce the amount of cancer cells in your body by removing the bulk of a tumour.

This kind of surgery might involve removing:

- All or part of a primary tumour
- All or part of any secondary tumours
- All of the primary tumour and some of the secondary tumours
- Whatever can safely be removed.

This type of surgery is usually undertaken to help improve your symptoms and/or to manage the disease. It's often used in combination with other types of treatment, including somatostatin analogues, chemotherapy, interventional radiology and nuclear medicine therapy.

Debulking a tumour can improve symptoms that have been caused by the size and position of a tumour or by the release of excess hormones into the blood. It can also improve the effectiveness of other treatments, as they will be targeting a smaller amount of tumour.

#### **Pre-emptive/bypass surgery**

Occasionally, NETs develop too close to blood vessels and surrounding organs like the bowel, and interfere with how these structures work.

Removing or bypassing these kinds of tumours can help to prevent blockages and other damage, reducing the chance of extra problems developing in the future. This is known as pre-emptive or bypass surgery.

## Types of surgery explained

### Keyhole surgery

Also known as a laparoscopy or minimally invasive surgery, keyhole surgery allows surgeons to remove smaller NETs by inserting a tiny tube and surgical tools into your body through small incisions in your skin. The tube contains a light and a camera, which the surgeon uses to see to perform the surgery.

You're given a general anaesthetic before keyhole surgery, but you may only need to stay in hospital for a day or two and the small incisions mean scarring is minimal and recovery time may be shortened.

Bear in mind, though, that keyhole operations are sometimes converted into open surgery during the procedure, if the surgeon decides that this is necessary to ensure surgical success.

### Open surgery

For large or multiple tumours, if a NET has spread, or if a NET is in an awkward place that can't be reached through keyhole surgery, open surgery is normally used. You'll be given a general anaesthetic before open surgery.

Depending on the extent of your surgery and the length of your anaesthetic, you may need to be looked after in an intensive care or high dependency unit for a day or two after surgery, after which you'll be transferred to a ward.

You'll need to stay in hospital for between 3 and 14 days after open surgery.

### Combination or staged surgery

You might need more than one procedure to treat your NET through surgery. In that case your care team will discuss whether the procedures can be undertaken at the same time or in stages (which means you'll have one operation and then be given time to recover before the next one).

### Open and close surgery

This term refers to surgery being started but not completed, either because of a severe deterioration in your condition or because your NET can't be removed. Nowadays, with improved pre-operation care and scanning, this rarely happens.

If surgery is stopped because your condition deteriorates, however, you'll be given full care to recover. Your surgery may then be rescheduled.

And if an operation is stopped because your NET can't be removed, you'll be given time to recover and then your care team will discuss alternative treatments with you.

**With any operation, the length of your stay in hospital and the time it takes to recover, will depend on the type and extent of surgery you have, and on whether any complications occur.**

**Your surgical team will give you full information about any surgery recommended for you. Make sure you ask for the details in writing if you're not offered this - many hospitals produce their own information leaflets.**

# Surgery by NET site

## Surgery for GI NETs

Your gastrointestinal tract is the long hollow tube that extends from your mouth to your rectum. It includes your stomach and intestines (the small bowel and large bowel). The linings of this tube are made up of several layers - (see diagram below).

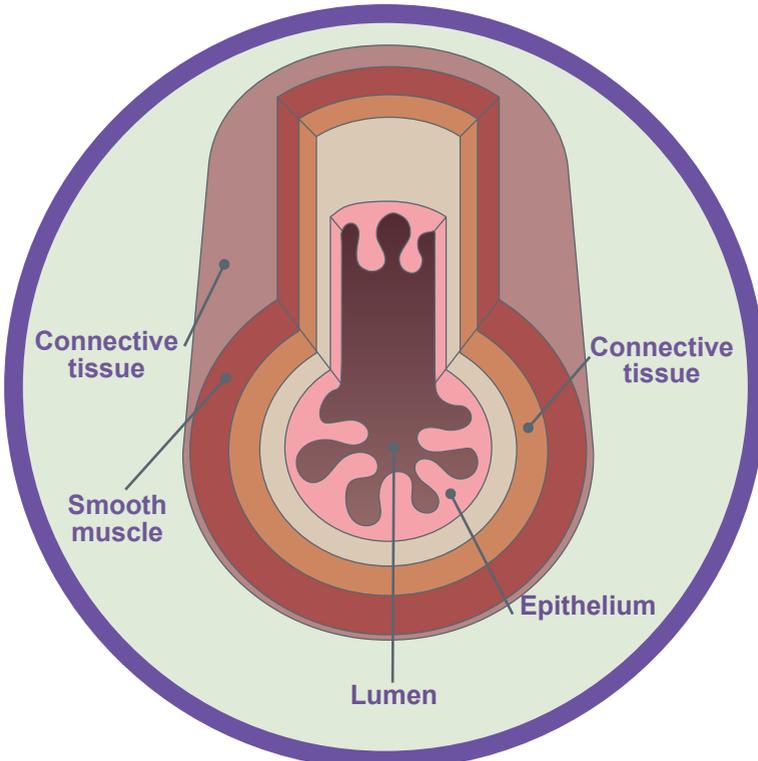
### Procedures used to remove (or partially remove/bypass) GI NETs

**Local excision**, which involves the tumour and surrounding tissue (including local lymph nodes) being removed. For stomach and rectal NETs this can be done via an endoscope or open surgery.

**Endoscopic mucosal resection**, which is an option when a tumour may only be present on the inner lining of the stomach, duodenum and rectum.

**Endoscopic submucosal dissection**, which can be used if the tumour has spread to the inner lining of the stomach, duodenum and rectum.

**Transanal endoscopic microsurgery**, which is used to remove small cancers of the rectum without having to rely on open surgery. It's often used when mucosal resection may not be effective on its own.



## Open surgical procedures for GI NETs

### For stomach NETs

- Open local excision (see previous page)
- Partial gastrectomy, when part of the stomach needs to be removed in order to remove the tumour
- Total gastrectomy, when all of the stomach may need to be removed.

### For rectal NETs

- Open local excision (see previous page)
- Total mesenteric resection, when a border of non-cancerous rectal tissue and fatty tissue from around the bowel are removed along with a tumour
- Low anterior resection, which can be used to remove a tumour from the upper part of the rectum. In this procedure, the colon is attached to the lower part of the rectum
- Abdominoperineal (AP) resection, which can be used for tumours of the lower rectum. This procedure involves removing all of the rectum, the anal sphincter, some surrounding tissue and lymph nodes. With the rectum completely removed, a hole called a stoma is created in your abdominal wall, so faeces can be diverted to a bag outside your body.

### For colonic NETs

Colonic NETs are rare and usually of a higher grade than other bowel NETs, so the first treatment recommended is often chemotherapy.

If surgery is used, it's called a colectomy and involves removing the colon. For most NETs it's only necessary to remove part of the colon however - which is called a hemicolectomy.

### For appendiceal NETs

Appendectomy, which involves removing the appendix. This is usually an emergency procedure, as symptoms, if they occur, are similar to appendicitis. If an appendiceal NET measures more than 2cm, has spread beyond the appendix or has burst, further surgery may be needed - such as a hemicolectomy.

### For Goblet Cell Carcinomas (or GCCs, found in a small percentage of appendiceal NETs)

GCCs can grow and behave more aggressively than appendiceal NETs, so if you're given this diagnosis further surgery may be recommended even if your tumour is small and doesn't seem to have spread. An oophorectomy (which involves removing the ovaries) may also be recommended to women, as GCCs can often spread to the ovaries.

### For small bowel NETs

Surgery for small bowel NETs most often involves removing the affected part of the bowel, along with surrounding lymph nodes (which often become matted together into a mass as a result of a small bowel NET).

The most common place for NETs in the small bowel is the ileocaecal valve, where the small and large bowel join, so it's sometimes also necessary to remove a small part of the large bowel.

Your surgeon will take care to leave as much of your healthy bowel in place as possible. Given the complex network of blood vessels and lymph nodes around the small bowel, it's recommended that a surgeon with expertise in visceral surgery (for example a liver, pancreatic and biliary, also known as a hepatobiliary or HPB, specialist), undertakes this procedure.

## Surgery for pancreatic and duodenal NETs

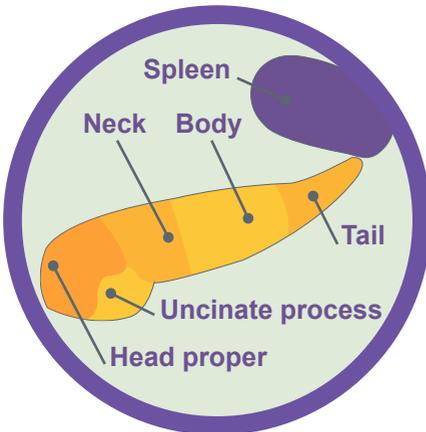
All operations affecting the pancreas and/or duodenum, including NETs, are done at specialist pancreatic cancer centres. There are four main pancreatic procedures:

### Enucleation

Usually done using keyhole surgery, this involves carefully removing a NET and leaving the pancreas completely intact. It's often used for small, slow-growing tumours, like insulinomas. For duodenal NETs this may be done via endoscopic mucosal resection and endoscopic submucosal dissection, which are explained on page 64.

### Distal pancreatectomy

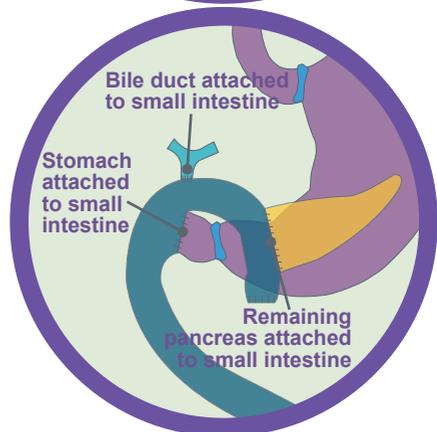
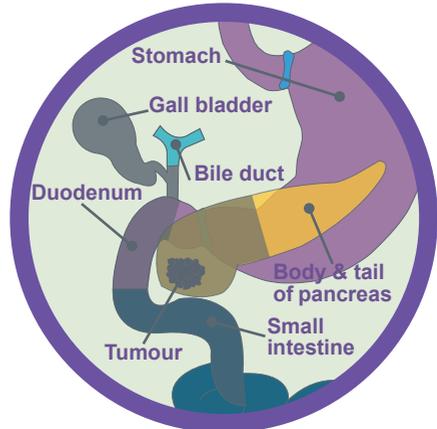
Another operation sometimes done using keyhole surgery, this procedure for NETs in the left part of the pancreas (specifically in the body and/or the tail) involves removing all or part of that side of the pancreas, and possibly the spleen. The spleen may need to be removed if the tail end of the pancreas is attached to the spleen or to prevent complications with the blood flow to the spleen.



### Whipples procedure or Pancreatoduodenectomy (aka PPPD)

These procedures are used to treat pancreatic cancers that are found in the head or uncinete process of the pancreas. They may also be used to treat duodenal NETs.

Whipples procedure is a complex operation that involves removing the right part of the pancreas (the head), along with the end of the bile duct, up to and including the lower part of your stomach, including the pyloric sphincter, part of your small intestine (duodenum) and your gall bladder. The PPPD procedure does not include removal of the pyloric sphincter.



A Whipple's procedure or PPPD can last between four and eight hours. This is partly because it takes time to separate all of the structures that need to be removed, but mostly because of the time taken to ensure all reconnections are correct and free from leaks.

#### **Multi-visceral pancreatic resection**

This is a major operation only usually recommended for younger, fitter patients and only carried out in a few specialist pancreatic NET centres.

It's used to treat large, slow-growing NETs that start in the pancreas but grow into other organs like the stomach, liver, kidney and bowels. (Visceral means related to the internal organs, so multi-visceral means involving multiple organs.)

During the surgery, the NET and the affected organs are removed together and kept intact. Major blood vessels often need to be repaired as a result.

This surgery is sometimes combined with other cyto-reductive/debulking treatments designed to reduce the amount of cancer cells in your body. These include ablation, embolisation, radioisotope treatment and chemotherapy, which you can read about elsewhere in this section.

## **Can pancreas surgery cause diabetes?**

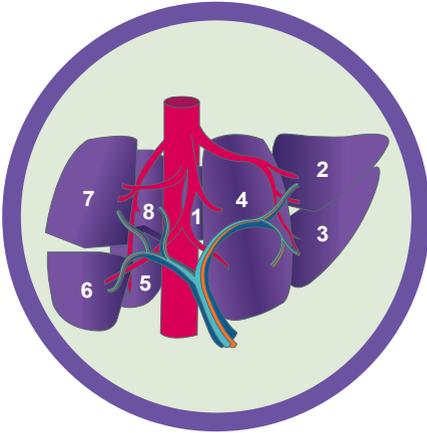
**The pancreas produces insulin - which controls blood sugar levels - and some major procedures mean it can no longer do this effectively. As a result, some people do need to take insulin and other medications after pancreatic operations to help control their blood sugar. Sometimes this is needed only temporarily as the pancreas recovers, but it can be permanent.**

**If you are already diabetic but are able to control the condition through your diet, you may need to begin taking insulin following pancreatic surgery. If you are at risk of diabetes but have not yet developed the condition, you might become diabetic earlier than expected because of surgery. If all of your pancreas is removed, you will become diabetic, regardless of any pre-existing risk.**

**One further point to remember - the pancreas is also involved in digesting food, and it's sometimes necessary to take medicines called Pancreatic Enzyme Replacement Therapy (or PERT for short) to help with this after pancreatic surgery.**

## Surgery on the liver

The liver is made up of eight segments in two lobes (the left and right lobe). Each segment has its own blood supply, delivered through branches of the hepatic artery and the portal vein.



Up to 70% of the liver can be removed through surgery, and the remaining area then expands after the operation to become fully functional again. You'll need a careful assessment before any surgery, however, to check that your liver will be able to do this.

All operations on NETs affecting the liver are done at specialist liver centres.

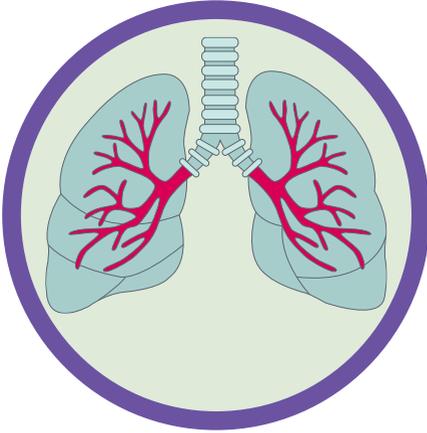
There are many possible surgical options, though what's possible will depend on the location of your NET.

### Options include:

- Metastectomy, which involves a small solitary liver tumour being 'scooped' out of the liver
- Wedge resection, which involves the removal of a 'wedge' of liver that contains the tumour
- Segmentectomy, which involves the removal of the whole segment of the liver that contains the tumour
- Partial hepatectomy, which involves the removal of the lobe of the liver that contains the tumour
- Central hepatectomy, which is rarely carried out, but involves the removal of the central segments of the liver
- Extended partial hepatectomy, which involves the removal of either the right or left lobe of the liver and a segment of whichever lobe remains.

## Surgery on the lung

The lungs are made up of lobes - three on the right and two on the left. You can lead a normal life even after having a whole lung removed, provided you don't have lung disease and exercise regularly following surgery.



All lung surgery should be carried out by a specialist respiratory, thoracic or cardiothoracic surgeon. It's possible to have keyhole surgery of the lung, which is usually done through a procedure called video-assisted thoracoscopy (or VATS). Or you can also have open surgery - either a thoracotomy (which involves an open cut being made in the chest) or a sternotomy (when a cut is made through the breastbone).

As with the liver, there are a number of possible surgical options, though these can be limited by the location of your NET.

### Options include:

- Wedge resection, which involves the removal of a 'wedge' of lung that contains the tumour
  - Segmentectomy, which involves the removal of the lobe of lung that contains the tumour
  - Lobectomy, which involves the removal of one or more lobes
  - Sleeve resection, which involves the removal of an upper lobe along with part of the main airway. The remaining lung is then attached to the remaining airway
  - Pneumonectomy, which involves the removal of an entire lung.
- Metastectomy, which involves a small lung tumour being 'scooped' out of the lung. This is usually done to treat secondary tumours that have spread from elsewhere

## Heart surgery

We explain carcinoid syndrome on page 25. It's caused by excessive hormones being released into your bloodstream by a NET, and as well as triggering symptoms like flushing and diarrhoea. It can cause a plaque-like substance to build up in parts of your heart. It's thought this is the result of having too much of the hormone serotonin in your blood.

The plaque-like substance can stop certain valves in your heart from working properly, affecting blood flow. Depending on how severely the valves are affected, you may need to have surgery to replace them. Heart valve surgery, in NETs, involves replacing one or more of your heart valves, to help improve symptoms and prevent permanent damage to your heart. This might need to happen before you can have surgery to remove a tumour, because it will help your heart to function more effectively and so reduce the risks of surgery.

## Non-surgical treatments

### Somatostatin analogues (SSAs)

Somatostatin is a substance that occurs naturally in the body. It helps to control the release of hormones into your bloodstream, including several of the ones that NETs can cause to be released.

Somatostatin analogues are drugs created to mimic the behaviour of somatostatin. By helping to control hormone levels, they can reduce symptoms like diarrhoea, flushing and wheezing.

The most common somatostatin analogues are **lanreotide** (which is marketed as Somatuline) and **octreotide** (which is marketed as Sandostatin).

#### What's involved?

When you start on a somatostatin analogue, you might be taught how to self-inject a small dose, two or three times a day. Doctors will then assess your tolerance of the drug and how well it helps your symptoms, for up to two weeks. Don't worry if your symptoms get worse for a day or two initially - this is normal and symptoms should not only settle but improve. After this assessment, you'll then be given a longer-acting version of either lanreotide or octreotide.

Alternatively, you might be started straight away on the longer-acting SSA preparations.

**Lanreotide** is given by injection at 7, 14, 21 and 28 day intervals, depending on how much you need. This can be self-injected into your thigh or can be given to you by a nurse or family member into your bottom.

If you are injecting yourself or a family member is doing it, a nurse will go through the process with you. You'll also have access to nurse support at home if you need it.

Your nurse specialist or specialist centre pharmacist will give you advice on transporting and storing the medicine, and you can also call the manufacturer's freephone helpline for support.

**Octreotide** is also given by injection at 14, 21 and 28 day intervals. A nurse usually gives you this injection into your bottom. Again, you'll have access to nurse support at home if you need it.

Your nurse specialist or specialist centre pharmacist will give you advice on transporting and storing the medicine, and you can also call the manufacturer's freephone helpline for support.

### Interventional radiology

Radiology means scans - X-rays, ultrasounds, MRIs and CT scans. Interventional radiology means using those scans to perform targeted treatments. Techniques used on NETs include embolisation and ablation.

### Embolisation procedures

These are usually undertaken to treat tumours within the liver. As previously mentioned the liver has 2 blood supplies, the Hepatic Artery and the Portal Vein - embolisation involves targeting branches from either of these supplies to reduce or block blood flow to the tumour(s).

## Hepatic artery embolisation (HAE)

Your care team might recommend HAE if you have a NET that:

- Has only spread to your liver
- Is causing lots of hormones to be produced
- Can't be removed by surgery
- Hasn't responded to other treatments.

HAE involves cutting off the blood supply to your NET - because, like any tumour, a NET can only survive if there's blood flowing into it. The treatment can shrink a tumour and reduce the amount of hormones a tumour produces. On rare occasions, it can even destroy a tumour completely.

### What's involved?

Different hospitals have slightly different routines, so it's a good idea to ask for written information explaining exactly what you'll need to do before treatment.

You may be asked not to eat or drink for a few hours before HAE treatment and may be given a light sedative and painkiller just before and during the procedure.

You're then given a local anaesthetic to numb your groin, before a small cut is made in your groin. Next, a thin tube is placed through this cut and into the main artery that delivers blood to your liver. You won't feel anything while this happens.

Watching on a screen, your doctor identifies the part of the artery that's supplying blood to the tumour and injects particles or a gelfoam into it. These then swell and block the blood supply to the tumour.

HAE is sometimes done in combination with a dose of chemotherapy - either by injecting chemotherapy into the tube before the particles or gelfoam, or by using beads containing a chemotherapy drug.

You'll need to lie still for about four hours after HAE to reduce the risk of bleeding from the groin site. In most cases, following HAE you may need to stay in hospital overnight.

## Portal vein embolisation (PVE)

PVE is used to cut off part of the blood flow to part of the liver.

If you have one or more tumours in one part of the liver, PVE can be used to cut off the blood supply to that area. For example, if your tumours are all in the left lobe, you can cut off the blood supply to the left lobe. This causes the left lobe to shrink and the tumours within it to be starved of blood and nutrients, eventually dying off.

Blood continues to be supplied to the right lobe, which, as the left side shrinks, starts to grow to make up for the left lobe shrinking.

PVE is often used before surgery. By reducing the size of the part of the liver that needs to be removed - and by increasing the part that will remain - doctors can reduce the risk of poor or lost liver function, as well as improving recovery, after surgery.

### What's involved?

As with HAE, you may be advised to not eat or drink for a few hours before PVE. And you may be given a mild sedative and/or a painkiller just before the procedure and while it takes place.

Unlike HAE, PVE is not carried out through the groin. Your doctor makes a small cut in your right side (where the liver is) and, using live scan images, finds the branch of the portal vein that needs to be blocked.

A tube is then inserted through the cut in your side and into that branch of the vein. A dye is injected into the tube to highlight the blood supply, enabling the doctor to target the correct part of the vein. A blocking agent (either a gelfoam, a 'glue' or tiny microbeads) is then fed through the tube to cut off the blood supply.

The procedure can take up to two hours and you'll need to rest in bed afterwards, usually for around four hours. You may need to stay in hospital overnight.

## **Ablation techniques**

Ablation is a treatment that involves inserting a probe or needle into your NET then trying to destroy it using heat or electrical current. It can be used in combination with, or as an alternative to, surgery.

Ablation techniques can be used on liver, lung, pancreatic and adrenal/kidney NETs.

## **Radiofrequency ablation (RFA)**

RFA uses heat from radiofrequency waves to target and kill cancer cells.

### **What's involved?**

RFA is given by inserting a tiny probe - around 1 or 2mm wide - into a tumour. This is usually done through a small cut in your skin, but can also be done during surgery.

Before RFA, you're given either a general anaesthetic or a local anaesthetic and a sedative to help you relax. You then have a CT scan or an ultrasound and your surgeon or radiologist watches the scan to guide the probe into the tumour.

A current is passed through the probe, creating heat that kills cancer cells. You won't feel anything while this happens. It can take up to a couple of hours, depending on the size of the tumour(s), and you usually have to stay in hospital overnight afterwards.

## **Microwave ablation**

Microwave ablation is similar to RFA but uses heat from microwaves rather than radio waves to destroy cancer cells.

### **What's involved?**

A tiny probe is inserted through your skin and into your NET. Multiple probes are sometimes used for larger tumours. Microwaves are then passed from a generator directly into your NETs.

You'll have a local or general anaesthetic before this treatment.

## **Irreversible electroporation (IRE aka Nanoknife)**

This relatively new treatment uses a strong electric current to kill cancer cells. It's done with tiny needles, which are guided into position using an ultrasound or CT scan.

It's particularly useful when surgery, or other ablation techniques, are risky because tumours are located close to structures such as major blood vessels.

### **What's involved?**

You're given a general anaesthetic before IRE treatment, and the operation takes around 90 minutes. Up to six needles are guided into place around your NET, and electrical pulses are then used to puncture tiny holes in the tumour.

One of the advantages of IRE is that it limits damage to surrounding cells. It's also not as invasive as many other types of surgery, so you can usually go home the day after your treatment. However, because IRE uses direct electrical current, it cannot be used in people who may have a heart condition.

**Ablation involves applying heat or voltage directly to a tumour to kill cancer cells.**

**Embolisation involves injecting substances into the liver to block the blood flow to cancer cells.**

## **Radiotherapy (aka radiation therapy)**

Radiotherapy for all cancers involves using radiation to kill cancer cells. There are two main types - internal radiotherapy, when injections and implants are used to give radiotherapy inside your body, and external radiotherapy, when machines outside your body are used to target cancer cells using X-rays. External radiotherapy used to treat cancer is called external beam therapy (EXT) or deep X-ray therapy (DXT).

For NETs, radiotherapy usually involves a type of internal radiotherapy called targeted radiotherapy (or radio-labelled treatment), but external beam therapy can be used to help treat secondary bone tumours.

There are several different types of internal radiotherapy:

### **Peptide receptor radionuclide therapy (PRRT)**

PRRT works by targeting receptors on the surface of NETs.

Before being given this treatment you'll have an mIBG scan, an octreotide or Gallium PET scan (you can read about these in the 'Which test is that?' section of this handbook). If your scans show receptors that are sensitive to PRRT on your cancer cells, this treatment might be recommended for you.

Due to the effects that radiation therapy can have on a foetus, baby or young child, PRRT can't be given to pregnant women or breastfeeding mums. All patients will be advised to use barrier methods of contraception (such as condoms, a diaphragm or cervical cap) during PRRT treatment and if you're female you'll be advised not to get pregnant during treatment.

### **What's involved?**

PRRT is a type of very targeted radiotherapy. It involves using a substance that travels directly to NET cells, binds to receptors on those cells and then releases a high dose of radiation designed to kill the cells.

Once the radiation has been delivered it is then secreted from your body, usually through the kidneys. However you will have radiation in your body for a period of time following treatment, this means that certain precautions are required during that time (such as double-flushing the toilet). Your treatment team will give you written information about these precautions to help with your decision-making about the treatment and to help you make any necessary arrangements at home before you come into hospital for it (for example you may be advised not to share a bed for 7-10 days after treatment).

Each PRRT session begins with an anti-sickness medication followed by an amino acid solution delivered intravenously to protect your kidneys from the effects of the radiation. The radiopeptide is then injected into the patient, followed by additional amino acid solution. In total, the treatment session lasts approximately four hours.

You will usually have four cycles of treatment, eight to twelve weeks apart. You may need to stay in hospital for a night or two after each treatment (exactly how long will depend on the type of treatment), and your care team will let you know when the levels of radioactivity in your body have fallen enough for you to go home.

PRRT can affect your kidneys and blood, so you'll only be offered this treatment if your kidneys and bone marrow (the substance that produces blood cells) are healthy. Both will be checked before you're offered PRRT. You'll also have blood tests every two weeks for 6 - 8 weeks during and after treatment to monitor your health.

## Lutetium-177 PRRT

Lutetium-177 is a radioactive substance, which is added to a carrier (radioactive isotope), and delivered through a drip in your arm.

After Lutetium treatment you'll either be allowed home, after several hours, or need to stay overnight. You'll have your own room and visitors, including staff, will only be able to spend a short time with you so they're not exposed to too much radiation.

A day or two after treatment you will be asked to return to the nuclear medicine department for a post-therapy scan. The scan may take up to two hours and will be similar to the one you had to check that Lutetium therapy was suitable for you. The physics team will advise you of the precautions you need to take. These precautions are necessary to reduce the radiation dose to other people with whom you come into contact.

**When this handbook was printed, Lutetium PRRT wasn't available on the NHS. A decision by NICE on whether this could change is expected by Autumn 2017 - we'll let you know any changes at [www.netpatientfoundation.org](http://www.netpatientfoundation.org)**

In the interim, some centres are using Yttrium-90 (Y-90) to treat NETs - this uses a different radioactive substance Y-90 rather than Lutetium. With Y-90 you may need to stay in hospital for a few days whilst your radiation levels fall. As with other PRRT procedures you will be

asked to attend the nuclear medicine department to undergo a post treatment scan. Advice regarding precautions to take will be repeated at this time, before you go home.

## 131 I-MIBG PRRT

131 I-MIBG involves using a chemical called Meta-iodobenzylguanidine (MIBG) and a radioactive isotope (iodine-131).

### What's involved?

During treatment, small amounts of the iodine-131 can detach from the mIBG. If this happens, the 'free' iodine-131 is then absorbed by the thyroid gland and can cause damage. You will need to take a medicine called potassium iodate or Lugol's iodine one day before and then daily during the treatment. This medicine will stop the thyroid taking up the radioiodine while the treatment takes effect.

After treatment you'll need to stay in hospital for up to a week while your radioactivity levels fall. You'll have your own room and visitors, including staff, will only be able to spend a short time with you so they're not exposed to too much radiation.

On the day of your planned discharge you will return to the nuclear medicine department for a post-therapy scan. The scan may take up to two hours and will be similar to the one you had to check that mIBG therapy was suitable for you. The physics team will monitor you to assess your radiation levels and advise you of the precautions you need to take when you leave hospital. These precautions are necessary to reduce the radiation dose to other people with whom you come into contact.

## Selective Internal Radiation Therapy (SIRT)

SIRT is a treatment for NETs that have spread to the liver and can't be removed through surgery. It uses tiny beads - called microspheres or SIR-spheres - to target and kill cancer cells. The beads are coated in a radioactive substance called yttrium-90. SIRT is used for liver only or liver dominant disease - as it does not treat disease outside of the liver.

As with all radiation treatments, there are certain precautions you'll need to take before and after SIRT. Your care team will give you written information about this.

### What's involved?

SIRT is a two-stage procedure. Here's how it works:

#### Stage one

To begin, a thin tube called a catheter is inserted through a small cut in your groin and into the main blood vessel (the hepatic artery) that supplies blood to the liver. A dye is injected into the tube, which helps the doctor to map out the blood supply in your liver and in particular to NETs.

An assessment is then made to check where the blood flows after passing by your tumour, and small particles or coils are injected to stop blood flowing beyond your tumour. This is to prevent the radioactive microspheres used in stage two SIRT from passing into other body parts of your body, such as the stomach and lungs, and exposing them to radiation.

You may need to stay in hospital overnight after this stage but you'll then be able to head home. You'll need to return in one or two weeks to have the irradiated microspheres injected. Stage one is essential to ensure the safe delivery of SIRT.

### Stage two

The process for stage two is similar to stage one.

Dye is again injected into a tube so the blood supply can be mapped out and doctors can check that the blockages made during stage one remain intact.

The microspheres are then fed into the catheter and delivered to the tumour(s). They get stuck in the small blood vessels that surround a NET, and the yttrium-90 delivers a dose of radiation that destroys cancer cells.

You'll need to stay on bedrest for 4 - 6 hours post treatment and in hospital overnight if you have SIRT. After 24 hours you will undergo a post treatment scan - this is to check on where the microspheres have settled. If all is well, you will receive post treatment precautions advice and medication (usually a PPI and reducing dose steroid) and then allowed home.

The stomach and liver sit quite close to each other and the radiation dose may increase the levels of acid within the stomach causing irritation. Therefore PPIs are routinely given, (for about four weeks) to help alleviate this. Steroids are given, (a reducing dose over a week - 10 days) to help reduce any potential inflammation response. Please ensure you have these medications before going home.

## Chemotherapy and targeted therapies

In NET treatment, chemotherapy can be used before, alongside or after other treatments. When considering whether chemotherapy is right for your NET, your care team will consider whether:

- Your tumour contains a particular type of cell (see page 5 for more information)
- Your tumour is growing quickly (Grading)
- Your doctors want to shrink a tumour before surgery
- Your doctors want to kill more cells after surgery
- The location of your tumour makes chemotherapy viable.

Chemotherapy kills rapidly-dividing cells in a variety of ways, depending on the drug. Since there are many different types of cancers that all grow differently, many chemotherapy drugs have been developed to target these various growth patterns. Each drug has a different way of working and is effective at a specific time in the life cycle of the cell it targets.

However, a high percentage of NETs have slow to moderately dividing cells, so chemotherapy may not be the first choice of treatment for those NETs. Having said that, certain NETs, such as Pancreatic NETs, may have a particular sensitivity to chemotherapy, even when they are low-moderate grade.

Having examined your NET under a microscope after a biopsy or surgery, your care team will discuss the best options for you and which chemotherapy medications are being considered.

### **What's involved?**

Chemotherapy is usually given in cycles: a treatment followed by a period of rest. A cycle is usually one, two, three, or four weeks long. A course of chemotherapy is comprised of multiple cycles. Each course is different, but generally consists of four to six cycles.

It may take a relatively short period of time to receive some chemotherapy drugs, while others take hours. It all depends on the treatment regimen that your doctor recommends.

**Chemotherapy** is usually as an infusion into a vein (intravenously). The drugs are administered by inserting a tube with a needle into a vein in your arm or into a device in a vein in your chest. However some drugs may be given orally - in tablet form.

If you are to have chemotherapy, you will attend an oncology (cancer) clinic, where you will have a blood test prior to (and on specific days during) treatment, to ensure that your blood cells are at normal levels. Chemotherapy can cause a drop in the number of certain blood cells - for example your white cells. White cells help us fight infection, so if these are reduced too much we can be at increased risk of infection, which in certain instances can be life-threatening. If your "blood count" is ok, you will start/continue chemotherapy as planned. If low, your chemotherapy may be postponed for up to a week, to allow the blood count to return to a safe level to continue.

For intravenous chemotherapy - your chemotherapy nurse will put the needle in at the start of each treatment and remove it when treatment is over. Let your doctor or nurse know right away if you feel pain or burning while you are

getting IV chemotherapy. Occasionally chemotherapy may be given through a PiCC or tunnelled line. This is a device that can be inserted into either a vein in upper arm, or just below the collarbone, that can stay in place until all of chemotherapy cycles have finished. Blood can also be sampled from these lines.

You may be given other medications, such as anti-sickness and/or steroids to take for a few days around each treatment part of your chemotherapy cycle - this is to help prevent or minimise any side effects that may occur.

**Your care team - and your oncology/chemotherapy nurse - will talk through all of the risks, potential side effects and precautions you may have to take prior to starting treatment.**

**They will also provide you with a 24hr support number and guide as to what to do if you become unwell at home during treatment.**

## **Targeted therapies**

### **Sunitinib**

Sunitinib (which is marketed as Sutent) is used to treat cancer by preventing the activity of a special group of proteins which are known to be involved in the growth and spread of cancer cells. It can also stop cancer cells from developing new blood vessels.

In the UK, Sunitinib is licensed for use in the treatment of well-differentiated pancreatic NETs, that are continuing to grow ("progressing"), and cannot be removed by surgery.

### **What's involved?**

Sunitinib comes as a capsule. You take the capsules once a day, at the same time each day, with a glass of water. It can be taken with or without food. Avoid grapefruit or grapefruit juice during treatment as this can interfere with the way the drug is used by the body.

You'll have regular blood tests before you start taking Sunitinib and while you're taking it. Treatment with Sunitinib continues for as long as it appears to be controlling your NET, and is well tolerated (that is no or minimal side effects).

Sunitinib may not be given if you have certain health conditions - such as severe hypertension or heart disease - or are on certain drugs.

Please ensure that your care team is aware of all of your medical history and medications.

**At the time of printing, NHS availability of Sunitinib for NETs is under review by NICE. A formal decision is due by Autumn 2017.**

### **Everolimus**

Everolimus (which is marketed as Afinitor) is used to treat well-differentiated and moderately-differentiated pancreatic NETs that can't be removed by surgery, have spread and are growing. It's also used to treat non-functional gastrointestinal and lung NETs.

It works by blocking a particular protein, called mTOR, that causes cancer cells to grow. Everolimus may also stop cancer cells from developing blood vessels. Without a blood supply, cells are starved of oxygen and nutrients and so can't grow.

In the UK, Everolimus is licensed for use in advanced non-functioning neuroendocrine tumours that originate from the stomach, bowels, lung or pancreas. That is NETs that are progressing and are inoperable and do not overproduce specific hormones or other related natural substances.

### **What's involved?**

Everolimus comes as a capsule. You take the capsules once a day, at the same time each day, with a glass of water. It can be taken with or without food. Avoid grapefruit or grapefruit juice during treatment as this can interfere with the way the drug is used by the body.

You'll have regular blood tests before you start taking Everolimus and while you're taking it. Treatment with Everolimus continues for as long as it appears to be controlling your NET, and is well tolerated (that is no or minimal side effects).

Everolimus may not be given if you have certain health conditions - such as diabetes or respiratory disease i.e. asthma - or are on certain drugs.

Please ensure that your care team is aware of all of your medical history and medications.

**At the time of printing, the use of Everolimus for NETs on the NHS is under review by NICE. A formal decision is due by Autumn 2017.**

## Interferon Alpha

Interferons are made naturally by the body as part of the immune system. They prompt cells to respond to - or 'interfere' with - problems like viruses and bacteria.

Interferon Alpha is a manmade substance designed to mimic interferons. It stimulates immune system cells to attack cancer cells, it interferes with the development of cancer cells, and it causes cancer cells to produce chemicals that attract immune cells.

For NETs, it's given to reduce the symptoms of tumours that have spread, often when other treatments aren't working. And it's sometimes given in combination with a somatostatin analogue (see page 70).

### What's involved?

Interferon Alpha is given as an injection into the fatty tissue under your skin. You usually have the injection three times a week, and your care team will probably show you how to do this yourself so you don't have to keep travelling to hospital.

## Treatment for high-grade NETs

**If you're diagnosed with a Grade 3 NET, a NEC (neuroendocrine carcinoma) or a MANEC (mixed adenocarcinoma), your care team might suggest a treatment plan that is similar to those used for common cancers.**

Some high-grade NETs behave more like other common cancers than other NETs. So if you have a high-grade NET (which means the tumour cells are dividing and growing quickly), you might be given different treatments to other NET patients.

Chemotherapy is the most common treatment for high-grade NETs, sometimes in combination with surgery and/or radiotherapy. Your care team will talk you through which types of chemotherapy could be most suitable for your individual situation.

## Active surveillance

**If your NET isn't causing symptoms or is growing very slowly, your care team may recommend that the best response is to keep a careful eye on it - rather than starting treatment.**

There are various terms used to describe the process of monitoring an illness rather than starting a course of treatment. Your care team might call it active surveillance, active monitoring, watchful waiting or wait and see. Some of these are slightly different, but they all mean your doctors think the best option could be to see how your NET and symptoms develop.

This can seem odd or unnerving. It's natural to think that if you have a tumour you should do something about it. But active surveillance doesn't mean doing nothing. It means closely watching your condition but not putting you through any treatments that might not be necessary and could cause side effects, which could affect your quality of life.

### Will you be ignored?

In a word, no, especially if you're under the care of a NET specialist MDT. If you and your care team decide that active surveillance is the best course of action, you'll have regular tests and check-ups to see keep a close eye on you and your NET. But for now the disruption to your everyday life will be kept to a minimum - and that isn't always the case when you're going through treatment. Treatment should improve your quality of life, and sometimes that means not starting treatments that could make your quality of life worse.

There are some risks. Your NET could change quicker than expected, for example, or your general health - other health problems - might get worse, meaning some treatments that may be possible now become unsuitable in the future. (For this reason it's important to have a point of contact in your care team you can get in touch with between surveillance scans and appointments to let them know if your health has changed.)

So if your doctors suggest active surveillance, talk through what it would mean and how they've reached that conclusion - and remember that it's a genuine treatment option which may well be the best choice for you right now. Active surveillance may also be used, after and in between treatments, which can sometimes be years apart.

**Active surveillance doesn't mean doing nothing. It means closely watching your condition but not putting you through unnecessary treatments that could cause side effects.**

# Clinical trials

Your care team might suggest participating in a clinical trial, as a treatment option. Clinical trials are voluntary research studies conducted in people and designed to answer specific questions about the safety or effectiveness of drugs, vaccines, other therapies, or new ways of using existing treatments.

There are many clinical trials going on at any one time, so there's a chance you might be asked to get involved in one. This could mean something as straightforward as having an extra blood test, or it could mean using a totally new treatment to help doctors understand whether it works.

People often ask whether clinical trials are safe, and the short answer is yes - although as with any treatment you might experience side effects. Years of research and testing will have gone into treatments before you're asked to trial them, so you will not be used as a guinea pig.

## Phases of clinical trials

If you're asked to take part in a trial it's most likely to be a phase three test, which is the final stage of testing before a product is launched:

	Phase one	Phase two	Phase three	Phase four
People involved	Small number, usually healthy volunteers	Larger number, with a select number diagnosed with a disease - for example patients with a particular type, stage and grade of NET	Up to several thousand, people diagnosed with a disease - for example patients with a particular type, stage and grade of NET	People prescribed the drug
Purpose	Assess side effects and safe dosage	Assess safe dosage, effectiveness of treatments and side effects	Large-scale comparison with existing treatments	Study a drug's impact after launch <b>or long-term effects</b>

## What's involved?

Your care team will explain the specifics of any clinical trial, but in many phase three trials participants are divided into 2 groups - group A and group B. Group A will be given either a new treatment on its own or new treatment plus best existing treatment and group B will be given the best existing treatment, for example:

New drug vs paracetamol OR new drug + paracetamol vs paracetamol  
(If no existing treatment is effective, you might be given a placebo treatment instead - but you'll be told if placebo treatments are involved beforehand.)

Researchers then monitor your progress, so you might need to have more check-ups, tests and scans than normal. And the two groups are assessed and compared to see which one seems to be receiving the more effective treatment and least side effects.

If there is early evidence that any treatment involved in a clinical trial has an obvious benefit, the trial might be stopped or all participants might be offered that treatment.

## You're the boss

Throughout any clinical trial, you're in control. So if you decide you don't want to take part any more, that's fine. You don't have to explain why - although letting your care team know will help them to plan the best alternative treatment.

The research team has a duty to make sure you understand what's happening and to respond to any concerns you might have. So there's no chance of you being given a treatment and then left in the dark. In fact, being on a trial often means you're monitored more closely and given more chance to share what's on your mind.

Ultimately, the decision is yours - but before you join a clinical trial it makes sense to ask a number of basic questions so you understand exactly what's planned. For example:

- What's the aim of the trial?
- What treatment will I get if I don't take part?
- How long will it last?
- Where is it taking place?
- What will happen if I leave the trial before the end?
- Will I need to take time off work?
- Will any travel costs be covered?
- What are the possible side effects of the new treatment?
- Who can I contact if I have a problem during the trial?

## Are there other types of trials or research that you can be involved in?

The simple answer is yes. Not all trials/research involves treatment - for example the (2016) 100,000 Genomes Project which is currently underway NHS wide. This project is looking at sequencing DNA from a patient's tumour and healthy cells. The two sequences are compared, which may help uncover the exact genomic changes causing an individual's cancer. This information can improve diagnosis. It may also help doctors choose treatments most likely to be effective for each person.

Similar projects, including biobanking, are being undertaken in NET specialist centres in England. Biobanking involves giving a sample of blood (or permission to use tissue from your biopsy or surgery) to be stored for possible future use in clinical research. Other types of research may include looking at how people experience cancer - from the care they receive to how it affects their everyday life.

You can find out more about current clinical trials and research into NETs at [www.netpatientfoundation.org](http://www.netpatientfoundation.org) or [www.ukinets.org/research](http://www.ukinets.org/research) For the 100,000 Genomes Project: [www.genomicsengland.co.uk/the-100000-genomes-project](http://www.genomicsengland.co.uk/the-100000-genomes-project)

## The future of treatment

New treatments are being developed and tested everyday and existing treatments are being reviewed and re-tested in different combinations.

Research into cancer and cancer treatments is moving forward all the time, so don't be surprised if you're offered a treatment or trial that's not listed here. At the time of publication, 2016, new options being explored include Telotristat etiprate - for people with NETs who have symptoms of carcinoid syndrome and further studies are being undertaken with Lutetium PRRT, as well as genomic studies.

**The main thing with any new treatment - and any existing treatment, for that matter - is never to feel pressured into anything. Treatment only starts with your consent, so keep asking questions and work with your care team to make the decision that's right for you.**