

# Thymectomy and/or anterior mediastinal mass resection

A patient's guide and  
consent form

## Introduction

The aim of this booklet is to provide you and your family with information about your forthcoming surgery.

### It will explain:

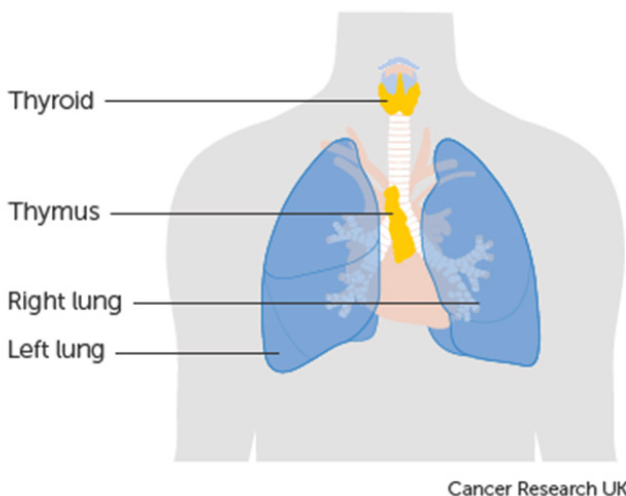
1. What the thymus gland is, its location and function.
2. Why a thymectomy or anterior mediastinal mass resection is performed with a particular focus on thymomas and thymic cancer.
3. How to prepare yourself for surgery and achieve maximum recovery whilst you are in hospital and when you go home.

If you have any questions or concerns about your surgery, please ask your surgeon or clinical nurse specialist who will be happy to answer your questions. There is also space at the back of this leaflet for you to write any questions you may have.

N.B. – the terms; mass, tumour and growth are used interchangeably and refer to an abnormal growth of tissue.

## What is the thymus?

The thymus is a small gland that sits behind the breastbone (sternum) in the mediastinum. The mediastinum is the space between your lungs that holds your heart and other important structures. The thymus is in the front (anterior) portion of the mediastinum.



## What does the thymus do?

The thymus is part of your lymphatic system. The lymphatic system is part of your immune system and is made up of a network of tissues, vessels and organs, such as your tonsils, spleen and appendix.

The thymus gland makes and trains special white blood cells called T-cells. These T-cells help your immune system fight disease and infection.

Your thymus gland is also part of the endocrine system. Your endocrine system makes and releases hormones that control the functions of your body. Your thymus produces and releases several hormones that help to keep your immune system working properly.

The thymus gland is most active and at its largest in size during childhood. Your thymus starts making T-cells before you're born. It produces all the T-cells you need by the time you reach puberty.

Once your immune system is fully developed, your thymus gland decreases in size and is replaced by fatty tissue, but in some people a remnant remains in adulthood.

## Thymus gland tumours

There are few different tumours or growths that can affect the thymus gland. Some are cancerous, some are benign (non-cancerous).

These include:

### Thymoma and thymic carcinoma, also called thymic epithelial tumours (TETs)

These are rare cancers that can form in the cells that cover the outside surface of the thymus.

- **Thymomas** are the most common tumour seen in the mediastinum in adults. They are usually slow growing tumours that do not typically spread beyond the thymus gland. Despite their usually favourable outcome, they are classed as a cancer as they can spread (metastasise) or recur. It is unusual for thymomas to spread outside of the mediastinum/chest. Thymomas are further subdivided into different types based on what the cells look like under

[1] Cancer Research UK

a microscope (A, AB, B1, B2, B3 and some rare others).

- **Thymic carcinoma** is less common than a thymoma, but usually grows quicker and can sometimes spread to other parts of the body.

### Thymic cyst

A benign cyst (sac-like pocket of tissue) that arises within or from the thymus.

### Thymic neuroendocrine tumours (NETs)

This includes carcinoid tumours and neuroendocrine carcinomas. Thymic neuroendocrine tumours are very rare.

### Thymolipoma

Is a benign tumour made up of fat tissue and thymus tissue.

### Thymic hyperplasia

Is not an actual tumour but is a benign enlargement of the thymus gland.

### Anterior mediastinal tumours

Are tumours or growths in the anterior mediastinum that are not related to the thymus gland include:

- **Lymphoma** is a cancer that forms in the lymphatic system. The two main types of lymphoma are Hodgkin lymphoma and non-Hodgkin lymphoma.
- **Germ cell tumours** can be benign such as teratomas, but some germ cell tumours are cancerous.
- **Thyroid mass tumours** are usually benign such as a goitre, however some thyroid tumours can be cancerous.

### Symptoms of tumours in the anterior mediastinum

Tumours of the thymus gland/anterior mediastinum may not cause early symptoms and may be found incidentally; for example, when having a chest X-ray or a scan for something else.

If presenting with symptoms, they may include:

- Pain in your upper chest
- Persistent cough
- Shortness of breath
- Difficulty swallowing
- Hoarse voice
- Swelling in your face, neck, upper chest or arms.

Thymomas have a strong link to autoimmune conditions as listed below, which can affect presenting symptoms:

- **Myasthenia gravis** is a neuromuscular condition that causes muscle weakness; most commonly affecting the muscles that control the eyes and eyelids, facial expressions, chewing, swallowing and speaking.
- **Pure red cell aplasia** is a rare autoimmune disorder in which your body cannot produce new red blood cells, leading to severe anaemia.
- **Hypogammaglobulinemia** is a disorder in which your body produces low levels of antibodies which can increase risk of infections and other illnesses.

### Diagnosis

Provisional diagnosis of an anterior mediastinal tumour is done using imaging such as:

- **Chest X-ray:**  
High energy rays take a picture of the inside of your chest.
- **CT scan:**  
A series of X-rays that build up a 3D picture of the inside of your body.
- **MRI scan:**  
Magnetism is used to build up a detailed picture of areas of your body.

Radiologists (doctors who specialise in diagnosing conditions using medical imaging) can analyse these scans and using characteristics related to each tumour type, can sometimes make a provisional diagnosis on imaging alone.

Sometimes your medical team may decide a biopsy of the tumour is needed so a pathologist (doctors and scientists that specialise in analysing tissue samples) can examine the cells and make a diagnosis before surgery or treatment.

## Staging for thymomas and thymic carcinoma

Staging depends on the size of the tumour, if any surrounding structures are involved and if there is any evidence of spread within or outside of the chest. Your surgeon or clinical nurse specialist can discuss your staging with you.

You will also receive a post-operative staging which reviews whether the resection margin is clear of tumour and can guide us as to whether further treatment (adjuvant) is recommended.

Practice for staging thymomas and thymic carcinoma is moving towards using the TNM system which is used in staging lung cancers. Prior to this the Masaoka staging system was used and some clinicians continue to use this.

## Surgery

Whether surgery is the right option for you is dependent on several factors including:

- If the tumour can be resected (surgically removed)
- If you are fit and well enough to go through an operation

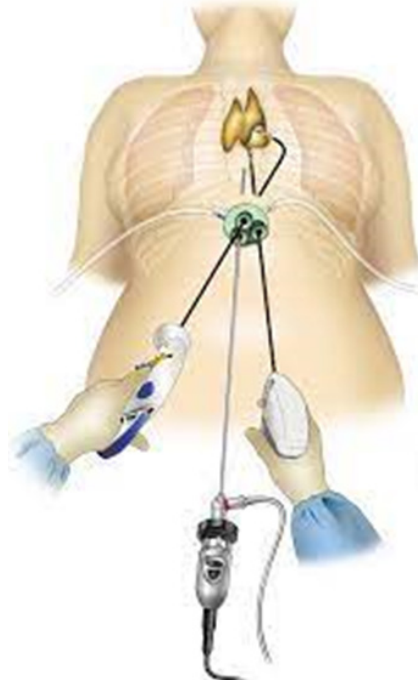
An operation to remove a tumour in the front portion of the middle of your chest, is called an anterior mediastinal mass resection. A thymectomy is the removal of the thymus gland.

Your surgeon may also need to remove part of nearby organs such as the lymph nodes, lungs, or the pericardium, this will be discussed with you before your operation.

Your surgery can be performed in a few different ways as listed below. Your surgeon will explain to you which approach they will take.

## Subxiphoid VATS incision:

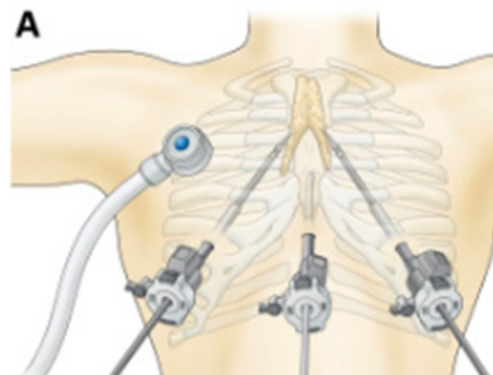
The surgeon inserts a tiny camera and surgical instruments via a single incision at the subxiphoid area (just below your chest bone). The picture below shows how this type of surgery is performed.



[2] Licensed under CC BY-NC-ND 4.0

## Robotic assisted thoracoscopic surgery (RATS):

A highly precise, minimally invasive surgical procedure, performed through a few small incisions as detailed in the picture below.



[3] Licensed under CC BY-NC-ND 4.0

## Video-assisted thoracoscopic surgery (VATS):

A few small cuts two - four centimetres long are made in the chest. One cut will be for a small camera to look inside the chest and the other cuts will be used to insert the surgical instruments to perform the surgery.

### **Sternotomy:**

This is a large incision down the middle of your chest up to 25cm long. To get to the thymus gland, your breastbone will be cut and pushed apart. Once the gland has been removed, the breastbone is pushed back together and wired shut.

This type of approach typically means a longer recovery time and following some special precautions post-operatively for 12 weeks while your breastbone heals – this is explained further later in this booklet in the 'after you leave hospital' section on page 22

### **Cervical approach (cervicotomy):**

An incision is made at the base of your neck, just above the breastbone.

### **Risks from surgery**

Recent advances in chest surgery have reduced the rates of complications and death. However, as with any operation and anaesthetic there are still some associated risks. Your surgeon will discuss both general and individual risks associated with your proposed operation. Below is a list of some of the possible risks.

### **Common risks and complications (more than 5%)**

- **Chest infections:**  
Serious chest infections and pneumonia can delay your discharge. These can be prevented with good pain control, mobilising early and ensuring you have stopped smoking before your operation.

### **Less common risks and complications (1-5%)**

- **Infections e.g. wound site:**  
These are quite rare and are usually resolved with a course of antibiotics.
- **Blockage of blood vessels in the leg: deep vein thrombosis (DVT) or blood clot in the lung [pulmonary embolism - (PE)]:**  
These are potentially serious conditions. The hospital has a care package in place to limit the occurrence of a DVT.

Please follow your nurse's instructions by wearing TED stockings (thrombo-embolic deterrent stockings to prevent clots) and keeping active during your hospital stay.

You will likely be discharged on low-molecular weight heparin (LMWH) injections for a period of two weeks as extra protection against blood clots.

- **Worsening of any existing heart problems:**  
Pre-existing heart conditions do not mean that you cannot have your operation. In fact, we deal with these conditions routinely at our hospital.

However, any surgery will put an extra strain on the heart that could, in rare cases, lead to a heart attack. Your doctor will enquire about heart problems and if appropriate refer you to a cardiologist for assessment and optimisation of your heart function prior to surgery.

- **Persistent pain:**  
Occasionally post-operative pain can last for more than a few months. If this happens, we can refer you to a pain specialist.

A risk factor for these chronic problems is a history of previous pain problems. Please tell us if you have had previous pain problems.

## Rare risks and complications

- **Bleeding:**

Most episodes of bleeding inside the mediastinal space or chest cavity will settle on their own.

You will be closely monitored by an experienced team for any deterioration or abnormal drainage. Rarely, you may need to be taken back to the theatres.

- **Chyle leak:**

A lymphatic fluid leak between your lungs and chest wall.

- **Pneumothorax (collapsed lung)**

- **Injury to nearby nerves:**

Such as the laryngeal nerves (which can affect your voice and swallowing), and the phrenic nerve (which controls your diaphragm and if damaged, can cause you to feel short of breath).

- **Death:**

The risk of death after surgery is very low in our hospital. Your surgeon will discuss the estimated likelihood of death from surgery in your case.

Very rarely, the stress of surgery can cause a myasthenic crisis – if there is underlying myasthenia gravis present.

It is important to note that the grade or staging of your mass may affect the risk from surgery, with larger tumours or tumours invading the surrounding structures likely to represent a higher risk from an operation.

## Risk of general anaesthetic

General anaesthesia is a very safe procedure for the majority of people. Skilled anaesthetists who specialise in dealing with heart and lung conditions will look after you.

You will be closely monitored with standard monitoring of your heart, blood pressure and oxygen levels. A general anaesthetic is typically administered through a cannula inserted into a vein, often in your hand or arm. Sometimes it is necessary to insert another monitoring line called an arterial line into an artery usually in your arm.

Oxygen is given for you to breathe through a face mask before you fall asleep and will be given to you afterwards until you are fully awake again.

You will be asleep for as long as the procedure takes. You may feel sleepy for a little while afterwards.

There are some common and rare risks associated with a general anaesthetic that are important to know about.

### Common risks (1 in 10) include:

- Bruising or bleeding around the site of the cannula
- A dry mouth or lips
- A sore throat
- Shivering
- Itching
- Nausea and vomiting

These common risks are temporary and should settle down soon afterwards.

### Uncommon risks (roughly 1 in 10,000 – 1 in 20,000) that may require admission to the intensive care unit or a longer stay in hospital include:

- Aspiration of gastric contents into the lungs
- Allergy to an anaesthetic drug
- The risk of awareness during a procedure under general anaesthetic is around 1 in 20,000
- The risk of death resulting from a general anaesthetic is extremely rare, around 1 in 100,000
- The risk of brain damage from a general anaesthetic is so rare that it has not been put into numbers

We will protect your eyes whilst you are asleep, however in rare circumstances you may suffer an accidental scratch to the eye called a corneal abrasion. This can cause pain and blurred vision for a few days, but usually heals without long term consequences. More serious damage to the eyes resulting in permanent loss of vision is very rare.

A hoarse voice or vocal cord damage is also possible after an anaesthetic for this procedure. This is because we will need to use a tube that passes between the vocal cords.

The reason we tell you about these potential complications is so that you can tell us if you think you may be at higher risk for getting one of these complications than another person. It is also so that you can make an informed decision about whether to go ahead with the procedure.

If your operation is for a large anterior mediastinal mass which is causing you difficulty with breathing or lying flat, then the risks of the anaesthetic are likely to be greater than for a small mass and may warrant a different strategy to that described above. Your anaesthetist will see you before the operation and discuss this with you.

Overall, for most people it is probably riskier to travel in a car than it is to have a general anaesthetic.

## Before coming into hospital

Start to make plans for going into hospital and coming home after your surgery.

- Think about how you will travel to the hospital. It might involve an early start so try to get some rest the day before.
- Think about what you will take into hospital. Make sure you have a pair of well fitting, flat, comfortable slippers or shoes. If you normally use a walking aid or have glasses, dentures or hearing aids, then make sure you bring these with you.
- Think about how you will get home from hospital. You will be given the date that we expect you to be discharged. Make sure your friends and family know when this will be.
- Check that you have enough support in place for when you get home, as you might need extra help. If you live alone, you may want a family member or friend to stay with you for a short period.

- Before going into hospital, think about stocking up your freezer so you don't have to worry about shopping immediately after you are discharged.
- If you are finding it difficult to manage at home prior to your operation, or you cannot get up out of a chair easily without using your arms, please mention this to your surgeon or nurse before your admission.
- If you are the carer for someone else, think about how this person will be looked after whilst you recover from your operation.
- Please bring an up-to-date prescription and all your medication, in their boxes if possible.

## Live well

Please see the exercises in the following section that can be incorporated into your daily routine and improve your fitness pre-operatively, which will help you recover after surgery quicker.

Stopping smoking is good for your health at any time but is particularly important prior to your operation as smoking increases the risk of complications, such as a serious chest infection. If you need some help:

- Your GP practice or local pharmacy may have a registered Stop Smoking Advisor who can help you. Ask for further information at your GP practice.
- Contact your local NHS Stop Smoking Service for free group, or one-to-one help and advice from trained experts. Let them know that you are going to have an operation so they can give you priority.
- Ask your local pharmacist if they have a trained Stop Smoking Advisor you can see for free one-to-one help and support.
- The NHS Smoking Helpline and website are there to give free advice, help and support. Call 0300 123 1044 or for online help and support visit: [nhs.uk/smokefree](https://www.nhs.uk/smokefree)

## Eat well

Good nutrition is always important, but it becomes even more vital before and after surgery. A healthy balanced diet will provide your body with all the nutrients it needs to fight infection and repair tissues. Studies have shown that people who are underweight, malnourished or overweight have more complications after surgery.

Prior to surgery your nutritional state will be assessed. If you are identified as malnourished or at risk of malnutrition (this means you are eating and drinking too little or have unintentionally lost weight) you will be provided with some written dietary information to help you to improve your nutrition before surgery. You may also be prescribed supplement drinks and referred to a dietitian for further advice.

If you are overweight, you should try to take steps to lose weight before surgery as this will reduce your risk of complications (particularly breathing and wound problems).

You should do this sensibly by continuing to eat a healthy balanced diet.

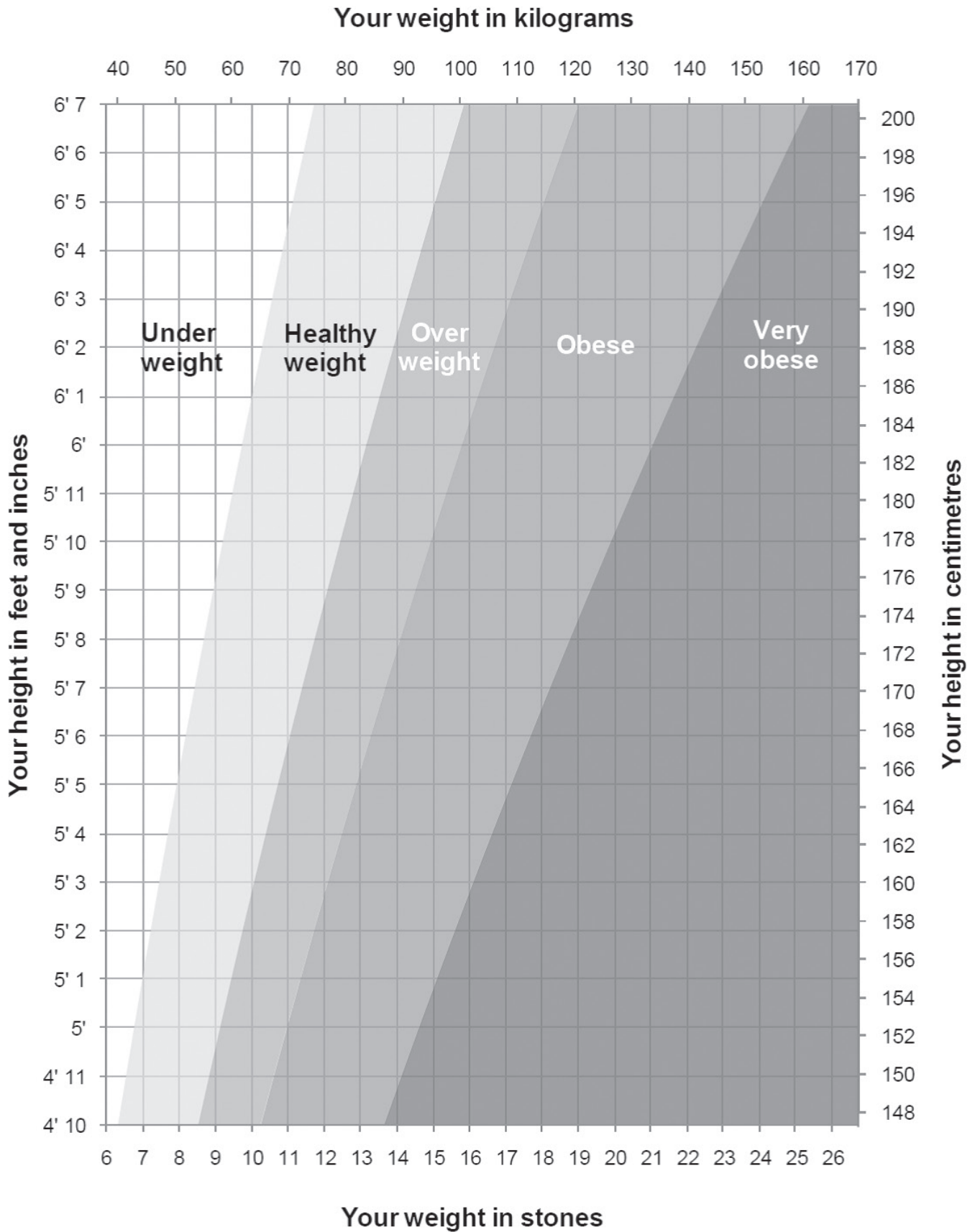
It is important that you continue to eat regular meals, but you could cut down on food and drinks high in fat, sugar and salt and reduce your portion size. If you need to snack between meals, choose healthy snacks such as fruit and low-calorie yoghurts.

## For most people a healthy balanced diet includes:

- **Fruit and vegetables** - aim to eat at least five portions per day. Ensure you have a variety and choose from fresh, frozen, tinned, dried or juiced.
- **Starchy foods** at each mealtime, such as rice, bread, pasta and potatoes. Choose wholegrain varieties when you can.
- **Protein-rich foods** such as meat, fish, eggs, beans, lentils or nuts. These should be eaten at least twice a day.
- **Milk and dairy foods** each day. Try lower-fat versions if you need to lose weight.
- **Limit foods high in fat, sugar and salt**

Before surgery	After surgery
Nutritionally balanced + a healthy weight	= quicker recovery + fewer complications!





## Stay active and exercise

It is important to remain physically active while you wait for your operation. The stronger and fitter you are before your surgery, the sooner you are likely to be able to go home after your operation. It is important to find ways to fit exercise into your daily routine. Walking and housework all count as physical activity, or you could try a structured exercise program.

The following are a combination of cardiovascular exercises, strengthening exercises and stretches. You do not need to do all the exercises every day, but you should try to choose something from each section and aim for five 30-minute exercise sessions per week if you are able to. Use the BORG scale of breathlessness to gauge how hard you are working.

### Shortness of breath BORG dyspnea scale

Using the BORG scale of breathlessness, you will be aiming for 3-4 whilst you are exercising.

0	No shortness of breath
0.5	Very very slightly (just noticeable) short of breath
1	Very slightly short of breath
2	Slightly short of breath
3	Moderately short of breath
4	Somewhat severely short of breath
5	Severely short of breath
6	
7	Very severely short of breath
8	
9	Very very severely short of breath (almost completely)
10	Completely short of breath

### Warm-up

You should always warm-up your muscles and prepare your body for exercise. 5 to 10 minutes should be enough - by marching on the spot, or starting a very gentle walk or cycle.

#### Marching on the spot

Standing on the spot, march your legs up and down picking your knees up high.

You should march at a pace which works you at a level around a BORG score of 2 as this is just a warm-up to prepare you for exercise. If you find it too easy, you can lift your knees higher or march at a faster pace. You should use your walking aid if you need one.

If your exercise tolerance is poor and marching works you at a BORG score of 3-4 then you can use this as part of your cardiovascular exercise instead of stairs/exercise bike.



## Cardiovascular exercises

Walking, cycling and climbing stairs are all good ways of improving your fitness. You should choose an activity and an intensity that is appropriate for your current level of fitness.

Ideally the exercise should raise your heart rate and make you breathless; however you should not be so breathless that you cannot hold a conversation.

Using the BORG scale of breathlessness you will be aiming for 3-4 on the scale. If you feel you are working at a level less than 3, you should consider increasing the amount of time you spend exercising, or increasing your speed.

Try to gradually increase the amount of time you exercise to between 30 and 45 minutes. Then consider increasing your speed or cycling resistance if you are finding it too easy.

### Walking

It's important to increase the amount of walking you can do before your operation.

Start at a comfortable pace and see how long you can walk for, keeping yourself working at a BORG score of 3-4.

You should increase the distance you are able to walk before increasing your pace.



### Exercise bike

If you have a static exercise bike you can use this as part of your cardiovascular exercise. Start by pedalling at a low speed of 40-50 revolutions per minute (RPM) with low or no resistance and aim to cycle for ten minutes.

Increase the amount of time you are able to cycle for, before you increase your speed or theresistance.

Remember to keep yourself working at a BORG score of 3-4.



### Stairs

You can climb the stairs at home as part of your cardiovascular exercise, either completing a full flight or by doing step-ups on the bottom step.

This activity should work you at a BORG score of 3-4.



# Recommended summary plan for emergency care and treatment (ReSPECT)

## What is ReSPECT?

ReSPECT stands for 'Recommended summary plan for emergency care and treatment'. It is a process that helps people to think about what treatment is suitable in an emergency, should they be unable to make decisions at the time.

## Why is it important?

We know that, when people are very unwell, they are often unable to think clearly about what treatment they may or may not want because their brain and body are overwhelmed by the illness. It is also normal for people to feel anxious about what is happening when they are sick and in hospital, and this can also make it difficult to think clearly. This is why we think it is a good idea, where possible, for decisions about medical treatment to be made in advance – before there is an emergency situation or crisis.

## How does it work?

The ReSPECT process is designed to help conversations between you and your healthcare professionals: they need to make sure you understand your health problems and which treatments may or may not benefit you. You need to make sure the healthcare professionals understand what matters most to you and whether there is anything you are particularly worried about or would want to avoid.

This conversation is used to complete a ReSPECT form that records a person's health problems, their preferences and which medical treatments may or may not be suggested. The original form should stay with the patient, though it is extremely helpful to have a record of the content of the form on their electronic patient record.

**A ReSPECT form is NOT a legally binding document and can be changed or withdrawn at any point.**

The ReSPECT form is often used to indicate treatments that someone may not want and/or treatments that their healthcare professionals consider would no longer be of benefit to them.

If people are getting worse from progressive conditions, it may be helpful to consider in advance about things such as whether they would wish to go back into hospital and, if in hospital, what sort of treatments might or might not be helpful for them.

This often includes a decision on whether or not they should have attempted cardiopulmonary resuscitation (CPR) if their heart was to stop.

## Who is it for / is this relevant for me?

This process has increasing relevance for people who have complex health needs, people who may be nearing the end of their lives and those who are at risk of sudden deterioration or cardiac arrest.

However, many people come to Royal Papworth to have major procedures or surgery with the intention of curing a progressive disease or with the intention of substantially prolonging their life and, if that is you, you may wonder how a ReSPECT discussion applies to you and others like you.

One of the key things to understand about the ReSPECT process is that it can be used simply to document a person's wishes and priorities, without setting any limitations on what treatment they should have.

This is important because all the procedures and operations we do here come with the risk of complications. In the unlikely event that things do not go as planned, it is really helpful to have some idea about a person's preferences and about their fears, worries and hopes.

Once again, the document is not legally binding, but it can help those looking after you to know what you might want if you weren't able to say for yourself.



Please affix patient label or complete details below.

Full name:

Hospital number:

NHS number:

DOB:

# PIC 249: patient agreement to PI 249 - Thymectomy and anterior mediastinal resection

Intended procedure/surgery

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

## Statement of health professional

(To be filled in by health professional with appropriate knowledge of proposed procedure, as specified in consent policy).

I have explained the procedure to the patient. In particular I have explained:

The intended benefits: .....  
.....  
.....

Significant, unavoidable or frequently occurring risks:

- Death
- Stroke
- Bleeding
- Myasthenia gravis crisis
- Infection
- Arrhythmia
- Nerve damage

Additional risks specific to you or your operation - please specify below:

.....  
.....  
.....

Any extra procedures, which may become necessary during the procedure:

- Blood transfusion
- Other procedure - please specify below:

.....  
.....

I have also discussed what the procedure is likely to involve, the benefits and risks of any available alternative treatments (including no treatment) and any particular concerns of this patient.

This procedure will involve general anaesthesia.

Top copy to be filed in medical notes, carbon copy to be retained in booklet for patient.

## Healthcare professional

Signed: .....

Date: .....

Name (PRINT): .....

Job title: .....

### Contact details

.....  
.....

**Has a ReSPECT form been considered and, if relevant, appended to this form?**

- Yes       No

## Statement of patient

Please read the patient information and this form carefully. If the treatment has been planned in advance, you should already have your own copy of which describes the benefits and risks of the proposed treatment. If not, you will be offered a copy now. If you have any further questions, do ask - we are here to help you. You have the right to change your mind at any time, including after you have signed this form.

**Yes    No**

**I agree** to the procedure or course of treatment described on this form and have read this information leaflet on thymectomy and anterior mediastinal mass resection (PI 249) and had the opportunity to ask questions.

**I agree** to the use of photography for the purpose of diagnosis and treatment and I agree to photographs being used for medical teaching and education.

- **I understand** what the procedure is and I know why it is being done, including the risks and benefits.



Please affix patient label or complete details below.

Full name:

Hospital number:

NHS number:

DOB:

- **I understand** that any tissue removed as part of the procedure or treatment may be used for diagnosis, stored or disposed of as appropriate and in a manner regulated by appropriate, ethical, legal and professional standards.
- **I understand** that any procedure in addition to those described on this form will be carried out only if necessary to save my life or to prevent serious harm to my health.
- I have listed below any procedures **which I do not wish to be carried out** without further discussion:

.....

.....

.....

.....

.....

**I have been told in the past by Public Health that I am at increased risk of CJD (Creutzfeldt Jakob disease) or vCJD (variant Creutzfeldt Jacob disease).**

Yes       No

(Where patient indicates 'yes' health professional to refer to Trust CJD procedure DN092)

**Statement of interpreter**

If an interpreter was present to support this consent, please state the name and number of the interpreter present.

Date: .....

Interpreter's number: .....

Name (PRINT): .....

If a telephone / video service has been used, please document the name of the interpreter and company below

.....

.....

**Patient**

Patient signature: .....

Date: .....

Name (PRINT): .....

**Confirmation of consent**

(To be completed by a health professional when the patient is admitted for the procedure, if the patient has signed the form in advance).

**On behalf of the team treating the patient, I have confirmed with the patient that they have no further questions and wish the procedure to go ahead.**

Signed: .....

Date: .....

Name (PRINT): .....

Job title: .....

**Important notes** (tick if applicable).

- Patient has advance decision to refuse treatment
- Patient has withdrawn consent (ask patient to sign/date here)

Patient signature: .....

Date: .....

Name (PRINT): .....





## Strengthening

### Bicep curl

Either sitting or standing, bend and straighten your elbow 10 times.

Before your operation you can increase the resistance by holding a hand weight or something like a can of beans.

After your operation you must not use any resistance to allow your wound to heal. Repeat with other arm.



### Static quads

Sitting or lying on the bed with your legs straight out in front of you, straighten your knee as much as possible pushing the back of your knee into the bed, and hold for a count of 10..

Repeat five times on each leg.



### Knee extension in sitting

Sitting on a chair, straighten your knee, hold it for a count of 10. and then bend it again.

Repeat this ten times on each leg.



### Hip extension

Standing with a chair in front of you for support, extend your leg out behind you and hold for a count of five.

Repeat 10 times on each leg



## Stretches

The following stretches are designed to improve your flexibility and posture prior to your surgery. When performing them you should feel a stretch, but it should not be painful. You should continue these stretches after your surgery to ensure that your shoulders and back remain flexible while your wound heals. Remember that any increase in your exercise, however small, will be beneficial for you.

### Shoulder flexion

Sitting on a chair, raise your arm up above your head in front of you, keeping your arm straight, and slowly lower it again.

Repeat ten times on each arm.



### Trunk lateral flexion in standing

Standing up with your arms down straight by your side, slide your left hand down your left leg, bending to the left as you do so.

Slowly return to an upright position, and then repeat with your right hand sliding down your right leg, bending to the right as you do so. Repeat five times in each direction.



### Trunk rotation in sitting

Sitting in a chair, cross your arms over your chest and turn to look over your left shoulder making sure you turn at the waist.

Hold for a count of three, then repeat turning to look over your right shoulder.

Repeat this five times in each direction.



### Neck rotation

Sitting in a chair, turn your head to look over your right shoulder and hold it there for a count of three, then repeat to look over your left shoulder.

Repeat this five times in each direction.



## Who will you meet during your inpatient stay?

Thoracic surgeon	A senior doctor at consultant level who performs operations on the lungs, oesophagus, and other organs in the chest.
Surgical registrar	A doctor who assists the main surgeon with performing operations on the lungs, oesophagus, and other organs in the chest and ensures that the surgeon's instructions are actioned on the ward.
Thoracic oncology clinical nurse specialist (CNS) – your keyworker	A nurse with expertise in caring for patients undergoing treatment for cancer in the lungs and chest.
Advanced nurse practitioner (ANP)	A highly experienced and educated member of the team who can take comprehensive patient history, carry out physical examinations, and assess and evaluate, with patients, the effectiveness of the treatment and care provided and make changes as needed.
Anaesthetist	A doctor responsible for administering anaesthesia and pain relief, and monitoring vital functions during surgery.
Senior house officer (SHO)	A junior doctor undergoing training in a speciality, in this context - surgery.
Physiotherapist	A healthcare professional who works with patients to optimise and support physical activity and respiratory function. You will meet a physiotherapist if you have surgery via sternotomy approach – or if you are struggling with mobility post-op.
Occupational therapist	A healthcare professional who can assist with any extra support required post-op at home, such as equipment, to help you maintain independence.
Dietitian	A healthcare professional who is an expert on diet and nutrition.

## Consenting to your surgery

Your surgeon will explain the operation to you including risks, benefits and alternative treatment options. If you want to proceed with the operation, the surgeon will ask you to sign a consent form stating that you agree to have the operation and understand what is involved.

## Pre-operative assessment

Pre-op assessment will be undertaken by a clinical nurse specialist or an advanced nurse practitioner. Some or all of this may take place in clinic, virtually (e.g. over the phone) or on the ward.

### Pre-op assessment includes:

- A physical examination
- A medical clerking – questions about your past medical history, presenting and current symptoms.
- Full medication history – please ensure you bring all your medication and if possible, an up-to-date prescription.
- MRSA swabs.
- Blood tests.
- ECG (heart trace).
- Further routine pre-op investigations as required.

### An anaesthetist will:

- Assess your anaesthetic risks.
- Discuss pain control methods with you.

### At the pre-op clinic we will discuss with you:

- How to prepare your skin for surgery including instructions on using a special skin wash and nasal cream (Octenisan) prior to your operation to help prevent infection.
- When to stop eating and drinking in preparation for your surgery.
- What to expect during your stay in hospital.
- Your plans for your discharge day - how you will get home from hospital and arrangements you need to make at home for the first few weeks.

## Coming into hospital

You will be asked to come into hospital on the morning of your operation, or sometimes the day before. You will be advised of this by the bookings team.

### Nil by mouth (NBM) times:

You must not eat any food from midnight before surgery and should be allowed clear fluids (water only) until two hours prior to your operation.

The nurse looking after you on the ward will tell you when you need to stop drinking as the theatre co-ordinator will confirm the order of the operating list by 08:30.

If you are being admitted on the same day as your surgery, please try to have a glass of water (250ml) before 06:00.

If you suffer from gastro-oesophageal (stomach and gullet) problems such as reflux or hiatus hernia, we may ask you to stop drinking from midnight.

It is important that you follow the instructions for stopping food and drink otherwise we cannot usually proceed with your operation because of the risk of aspiration (choking due to food or liquid particles coming back up your throat and into your lungs).

### Getting ready:

On the morning of your surgery, the skin on your chest (where the surgical cut will be made) may be shaved if needed and sometimes marked. It is best to shave the site close to the time of operation so do NOT shave your chest prior to admission. You will then have a shower using a special skin wash. You will be given a clean theatre gown to put on and if needed, a pair of elastic stockings to wear to assist the blood flow in your legs.

### Anaesthesia:

When it is time for your operation, you will be transferred into theatres. Several people will be there, including your anaesthetist and the anaesthetic assistant. It is in the theatre where the anaesthetist will anaesthetise you.

Your anaesthetist will attach you to machines to watch your heart rate, blood pressure and oxygen in the blood. To give you an anaesthetic, a thin plastic tube (a cannula) is inserted into a vein in the back of your hand or arm. Once you are safely anaesthetised, a ventilator will be used to breathe for you.

### **After your surgery:**

Your operation usually takes approximately one to three hours, following which you will wake up in the recovery area. You will have an oxygen mask, intravenous patient-controlled pain relief (PCA) and sometimes an extra continual local anaesthetic in place. These are temporary and will be removed within approximately 24 hours.

You will spend one to three hours in the recovery area. In recovery the nursing staff may get you out of bed into a chair if they feel you are ready and awake enough. Once recovered from your anaesthetic, you will be transferred back to your room.

On the ward your nurse may help you get out of bed and walk around your room or along the ward corridor. Occasionally, some patients may need to be more closely monitored and will be admitted to intensive care if deemed necessary.

- **Nausea and vomiting:**

You may experience nausea after your anaesthetic and if required we will give you an anti-sickness medicine (anti-emetic) to manage this.

- **Fluid balance:**

You will have a cannula (a small plastic tube) placed in a vein either in your arm or your neck through which fluids will be administered.

- **Eating and drinking:**

A few hours after your operation you will be able to start drinking. You may even have something to eat if you feel up to it.

- **Chest drain:**

Following surgery, you may have one or more chest drains. These are tubes leading from your chest to a bottle, which fluid (and air if applicable) from the space where the thymus gland or anterior mediastinal mass has been removed.

Most of these are portable, such as the Thopaz drain pictured below, and you will be expected to carry them around with you as you exercise.



### **Physiotherapy:**

You will not routinely be seen by a physiotherapist after your thymectomy unless you have any concerns with your mobility, or you are struggling to clear your chest of congestion.

The earlier you can start to move around you will reduce your risk of developing post-op complications. Please make sure someone is with you when you first try to stand as you may feel dizzy. You may experience some shortness of breath on exertion, but you should be able to walk and talk at the same time. If you are not able to do this, please speak to your nurse.

We recommend you change position and walk hourly while you're awake and try to do exercises twice daily where you increase distance and pace.

### **Length of stay:**

The average length of stay post operatively is between one and three days. This may be longer if you have surgery via a sternotomy approach and depending on your recovery. The medical team will discuss with you whether you feel ready to go home. Please express any concerns you have about your discharge and whether you feel ready to go home.

**Pain control:**

Good pain control is a priority after thoracic surgery allowing you to breathe deeply, cough and move effectively.

A combination of pain management techniques can be used to control any pain.

1. While you are asleep during the operation the anaesthetist may inject a local anaesthetic drug directly into the nerves around the site of the surgery.
2. Patient controlled analgesia (PCA) - when you wake up you might have a pump with an intravenous painkiller such as morphine. This type of pain relief will be available for you to use on demand if you need to.
3. Intravenous and then oral paracetamol will be given regularly.
4. Stronger oral pain killers such as codeine, tramadol or liquid morphine may also be given as appropriate.

The nursing staff will regularly assess your pain and make every effort to minimise this using different methods to control it.

However, it is important that you are honest with the nursing staff and tell them how your pain is. You will be asked to describe your pain as:

0	No pain
1	Mild pain
2	Moderate pain
3	Severe pain

When your pain is well controlled you will be able to breathe deeply and move more effectively which will aid your recovery.

**After you leave hospital**

In case of emergency, dial 999.

If you have any concerns in the first few weeks following your surgery, please contact the ward or the thoracic oncology nursing team for advice. They may arrange for you to be seen at Royal Papworth or advise GP or local hospital review.

Try to stay active when you get home to aid your recovery and regain fitness. Return to your normal activity as you feel able and focus on twice daily walks, aiming to increase your distance and pace each day.

You can incorporate the exercises from the 'Stay active and exercise' section on pages 10, 11, 17 and 18 into your daily routine to aid recovery also.

Most people find that it takes around six to twelve weeks after the operation for them to make a full recovery.

Generally, people who have had a sternotomy and/or more extensive surgery, take longer to recover than people having a VATS thymectomy only. Age is also relevant; an older person may require a longer period of recovery than someone younger.

**Minimally invasive (keyhole) approach:**

Post-operative precautions for VATS procedures are one week of avoiding heavy lifting, pulling, or pushing through your operated side.

**Sternotomy approach:**

After you have had a sternotomy, you can perform all your regular movements if they are within a pain free range.

Perform load bearing movements (carrying, pushing, or lifting) with your arms close to your body and your elbows tucked in, as if you were wrapped inside an imaginary tube. If possible, use both hands to share the load.

If you have doubts about performing a movement, then don't do it and ask for help. Avoid doing anything that causes sternal discomfort, and make sure to protect your chest when coughing or sneezing. See next page for full details.

Perform all weight bearing activities with your arms close to your body as if your arms were wrapped around an imaginary tube. Perform activities only as your pain allows.

- **Getting in and out of bed:**

We advise you to roll onto one side and gently lower your legs off the edge of the bed, then push down through the elbow you are leaning on and come up into a sitting position on the edge of the bed.

For lying down the same process is followed in reverse.

- **Getting in and out of a chair:**

Sit on the edge of the chair with your arms crossed on your chest. Then with your feet firmly flat on the floor, rock gently backwards and forwards three times with your nose coming forward over your toes. On the third rock forward push up strongly through your legs and come up into the standing position.

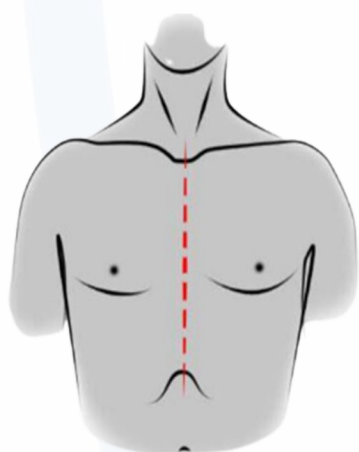
- **Ladies:**

should continue to sleep wearing their bra for a minimum of six weeks post their surgery to support the healing chest wound. You may have a bead at the top and bottom of your chest wound. These will need to be snipped off by your practice nurse.

# Keep Your Move in the Tube: sternal precautions

Your sternum (breastbone) will be opened during surgery. The bone is then pulled back together and held with wires. It takes time for that bone to heal.

Below there are some precautions you need to follow:



## Keep Your Move in the Tube™

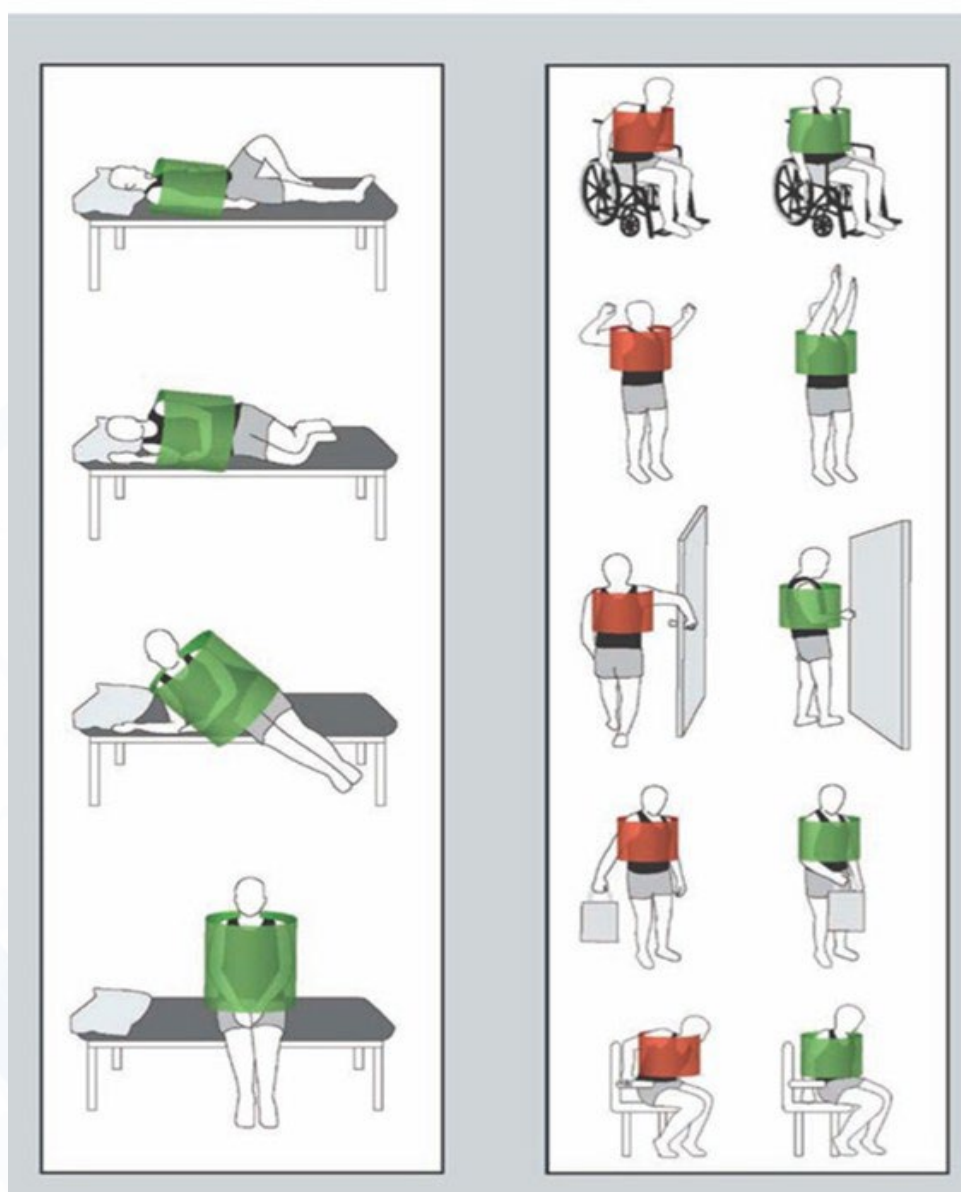
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### Goal:

To keep your sternum stable and pain free.

### Top tips:

- Keep your elbows tucked in when putting weight through your arms e.g. pushing from a chair or lifting heavier objects.
- There are no strict weight limits – listen to your body, **if it causes pain, stop.**
- You are allowed to move your arms freely in any direction when you are not putting weight through them.



If you are unsure, don't risk it - speak to a healthcare professional for further advice.



## Eat well

Eat regular, nutritionally balanced meals and drink at least eight cups of fluid every day. If you are eating less than normal, try to include some snacks between your meals until your appetite improves.

## Pain control

Your painkillers (analgesics) will be identified before you go home; take them regularly to allow you to cough and breathe deeply without discomfort. When you feel ready to cut them down, try taking one tablet instead of two (i.e. reduce the dose of medication before reducing the frequency).

When you feel ready to reduce the painkillers further stop the ones during the day first, continuing to take them when you get up in the morning and before you go to bed, as this helps to ensure a good night's sleep.

## Bathing

This can be done as soon as you feel strong enough. You may find it easier to use a shower if available, as getting in and out of a bath may be difficult. We do not recommend soaking in the bath or swimming until your wound is fully healed. You may find washing tiring at first, if so, wash before bedtime.

## Driving

- **if your surgery was via a keyhole (minimally invasive) approach:**

Please avoid driving for two weeks after leaving hospital. If after two weeks you are no longer taking opioid pain relief (e.g. codeine, tramadol or morphine) and you are pain free/feel well in yourself/can wear a seatbelt/can perform an emergency stop if needed - you should be fine to drive again.

Please remember it is illegal to drive without your seat belt on.

- **If your surgery was via sternotomy approach:**

Guidance is to avoid driving for 12 weeks for full recovery – but you can discuss with your surgeon at your follow up appointment (four to eight weeks post-op) if you feel ready to drive sooner.

## Constipation

This is common following surgery and prevention is better than cure.

Try to:

- Increase the amount of fibre in your diet (whole grains, beans, bran, fresh/dried fruit and vegetables).
- Increase the amount of liquid you drink (this means water!).
- Limit high fat foods.
- Keep moving - the more you move your body the more the food moves through your body.
- Take preventative oral laxatives.
- Seek advice if you have not had a bowel movement for two to three days.

You should be discharged home with a simple laxative. Please check this before you leave the hospital.

## Thrombo-embolic deterrent stockings (TED) stockings

Please follow your nurse's instructions about wearing TED stockings and keeping active following discharge. You will likely be discharged on a two-week course of low-molecular weight heparin (LMWH) injections.

## Wounds

If you have had a sternotomy, the breastbone (sternum) will take up to 12 weeks to heal completely. You may feel pain, tingling or pins and needles in different places across your chest, back and shoulders for some time.

If you have had a minimally invasive operation, your wound site/s will be smaller and should heal much faster. Dissolvable stitches are now used in most operation wounds. These do not need to be removed following surgery.

However, if you have had any drains, you will have one stitch per drain that will need to be removed. This should be arranged with your practice nurse.

You may notice your wound is swollen at the lower end; this is normal, and the swelling will go down. Once you go home, if you notice that your wound begins to leak, becomes red or hot and tingly, or if you feel feverish, contact your GP for advice.

Should your wound require dressing after you have been discharged, this will be done either at your home by a district nurse or by the practice nurse at your doctor's surgery.

### Work

This depends on your job and on your recovery. Returning to work can be discussed with your clinical team. If you feel ready to start work sooner than advised, please ask your GP, surgeon or specialist nurse.

### Holidays and flying

Our advice is that you avoid flying or taking a holiday, particularly abroad, until after you have had your surgical review with your consultant.

### Sexual activity

Resume sexual intercourse once you feel confident to do so. If you remain relaxed and adopt a more passive role, you may return more easily to your normal routine. If you have had a sternotomy incision it would be advised to wait until fully healed (up to 12 weeks).

### Follow-up

You will be seen back at Royal Papworth Hospital by your surgeon about four to eight weeks following discharge. At this point we should have your post-operative histology.

If your surgeon wishes to see you beforehand you will be advised of this before you leave the hospital. Your final histology after surgery will determine whether you require any adjuvant (further) treatment. This could include:

- Radiotherapy
- Chemotherapy
- Targeted immunotherapy
- Or a combination of treatments

**If any further treatment is required or might benefit you – we will discuss this with you at your follow up appointment.**

If you have not received an appointment from Royal Papworth Hospital (or your referring hospital) please contact us.

Remember we are always here to help you.

### Contact details

#### Clinical nurse specialist team

Monday to Friday 09:00-17:00 (except bank holidays)

01223 638322 or call switchboard on 01223 638000 and ask for bleep 064.

#### Ward contact

5 South West - 01223 638515

5 South East - 01223 638535

5 North West - 01223 638525

5 North East - 01223 638520

#### Consultant secretaries

Monday to Friday 09:00-17:00 (except bank holidays)

Mr Aresu - 01223 639766

Mr Coonar - 01223 639874

Mr Peryt - 01223 639775



# Royal Papworth Hospital NHS Foundation Trust

A member of Cambridge University Health Partners



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[royalpapworth.nhs.uk](http://royalpapworth.nhs.uk)



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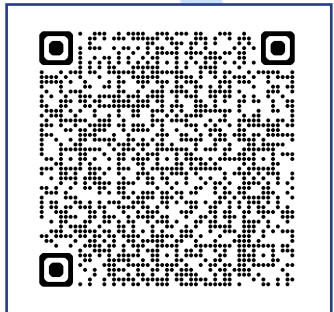
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As a member of Royal Papworth Hospital Foundation Trust, you could have your say on how the organisation is run, now and in the future. You will receive regular information and news from Royal Papworth and get invited to exclusive events. Membership allows you to vote for your representatives on the Council of Governors, talk to your Council of Governor representatives and stand as a governor.

Scan the QR code or head to [royalpapworth.nhs.uk/our-hospital/how-we-are-run/foundation-trust-members](http://royalpapworth.nhs.uk/our-hospital/how-we-are-run/foundation-trust-members) to find out more.



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