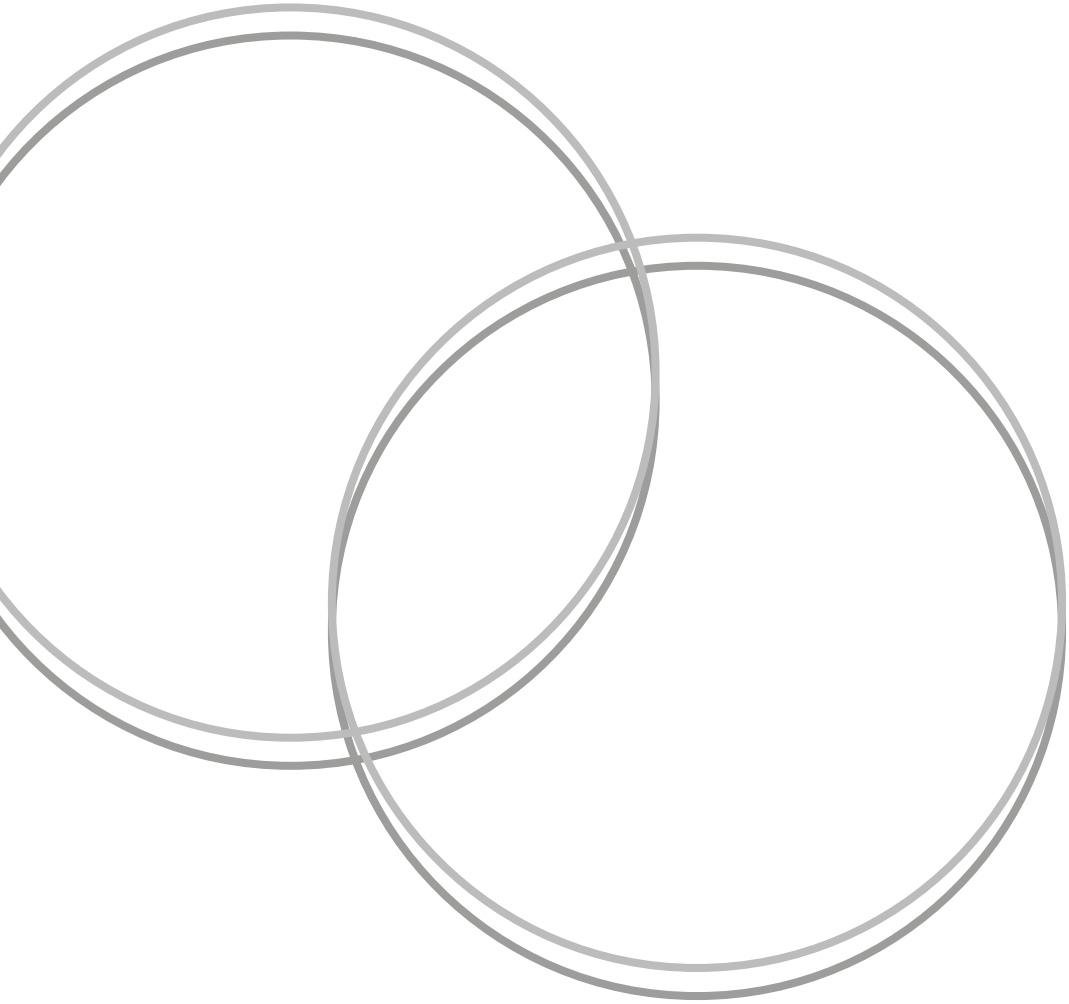
NHS
Oxford University Hospitals
NHS Foundation Trust

Thoracic surgery

Information for patients



Welcome to the Oxford Heart and Lung Centre

The information in this booklet will help you prepare for coming into hospital for your lung operation. If you need any extra information, please speak to any member of the team, contact numbers are at the back of this leaflet.

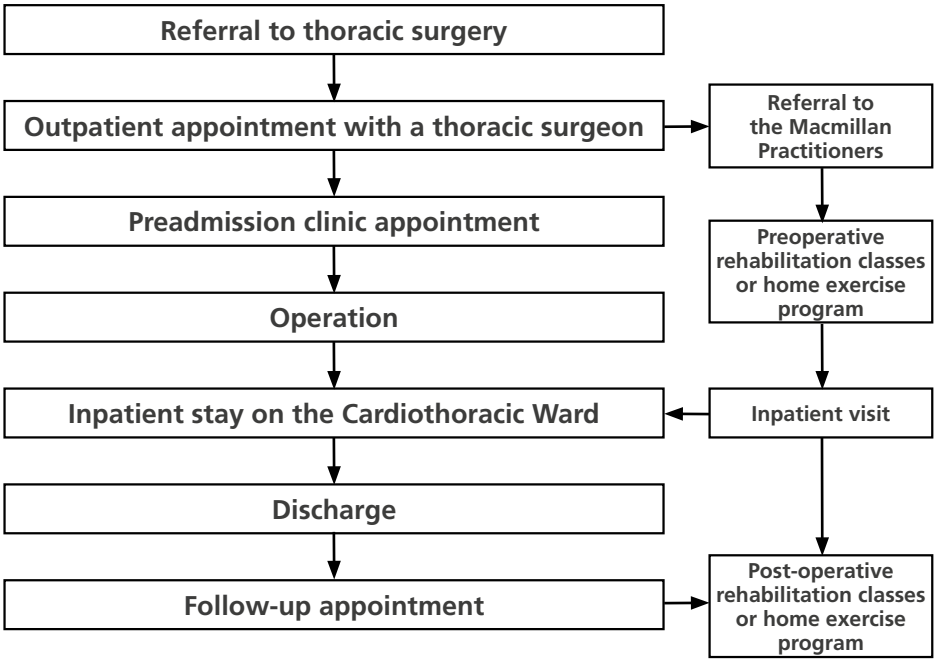
What is enhanced recovery?

Enhanced recovery is a modern, evidence-based approach that helps people recover quicker after surgery. Having an operation can be both physically and emotionally stressful. Enhanced recovery programmes try to get you back to full health as fast as possible.

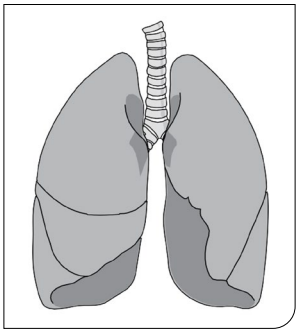
Research has shown the earlier a person gets out of bed and starts walking, eating and drinking after having an operation, the shorter their recovery time will be. As part of the enhanced recovery programme, you will play an active role in your care. You will be able to choose what's best for you throughout your treatment, with help and advice from the Doctors and Healthcare Professionals you meet.

This booklet contains a patient diary which is an essential part of your programme. It is a guide to use throughout your inpatient stay and includes what is expected of you on a daily basis. You can use it to record how you are progressing each day and to show us how you are recovering. If you need any assistance with the diary then please ask a member of staff.

This is the typical thoracic surgery pathway our patients follow:



What do the lungs do?



As you breathe, air is drawn into your nose and/or mouth. It then passes down the back of your throat and into your windpipe (trachea). The trachea then divides into two bronchi, which are tubes that lead to the left and right lungs. Air passes down the bronchi, which divide into further, smaller tubes and into smaller airways called bronchioles. At the end of the bronchioles are tiny air sacs called alveoli. This is where oxygen and carbon dioxide pass to and from the blood stream, through tiny blood vessels.

The left lung has two lobes (the upper and lower lobes), and the right lung has three lobes (the upper, middle and lower lobes).

The surgeon will make one of the following types of incision to access your lungs:

Thoracotomy	This is an incision that will run below your shoulder blade at the back, then under your arm towards your nipple. A cut is made between two ribs, which are then spread apart. This allows the surgeon to see your lungs.
Video Assisted Thoracoscopy (VATS)	This is a form of keyhole surgery. The surgeon will be able to operate by inserting a telescopic camera and the surgical instruments through small cuts in your chest.
Robotic Assisted Thoracoscopy (RATS)	This is also a type of keyhole surgery. The surgeon uses a robot to control specialist instruments through very small incisions. The robot is always under the direct control of the surgeon. This provides a very clear view inside the chest and allows the surgeon to reach difficult to access areas.

Sternotomy	This is a cut is made through your breast bone to allow the surgeon to access your chest cavity.

A need may arise during the operation to convert to a larger incision when performing minimally invasive surgery

Please note that special restrictions and care are required following a sternotomy; these include lifting and driving restrictions (6 weeks) and careful wound care and monitoring. The nurses and doctors on the ward will provide you with all the relevant information before discharge.

What are the different types of lung resection surgery?

Lobectomy	This is the removal of one or more lobes of the lung. The remaining lobes should gradually expand to fill the space.
Segmentectomy or Wedge Resection	This is the removal of a small section of one of the lobes.
Sleeve Resection	This involves removing one lobe of the lung and part of the main airway (bronchus) and/or main artery. The remaining lobes of the lung are then attached to the remaining section of the airway (bronchus) and/or artery.
Pneumonectomy	This is the removal of the whole lung.

What are the benefits and risks of lung resection surgery?

Any operation requiring a general anaesthetic carries with it a risk of complications. Your surgeon will discuss with you the common risks and any specific risks that relate to you, before you are asked to sign that you are happy to have the operation (give your consent).

Make the most of all opportunities to discuss any questions or worries you might have. You need to feel confident that you understand what the operation involves, as well as the risks, before you sign the consent form.

Healthy steps to take before your lung surgery

Here is some brief advice on how to get in the best possible shape before your operation. This will contribute to a better recovery, less complications and potentially a shorter hospital stay. You will meet with our advanced nurse practitioner and/or our advanced therapist practitioner before your operation to discuss all the ways in which you could use the time prior to your operation to optimise your health and fitness. If you have not seen our team and would like to, please use the contact numbers at the end of this leaflet to arrange an assessment.

Eating and drinking

Good nutrition is always important, but it becomes even more so before and after surgery. By eating a healthy and balanced diet you are providing your body with all nutrients it needs to repair tissues and fight infections.

Before your operation you should try to eat as normally as possible, unless you have been told otherwise by a registered dietician, your doctor, or a member of our team:

- Eat regular meals containing protein such as meat, fish, eggs, cheese, lentils and milk.
- Include food containing carbohydrates each meal such as cereals, bread, rice, pasta and potatoes.
- If you are underweight or experiencing unintentional weight loss
- Avoid using low fat foods/drinks- instead use full fat milk, margarine/butter, cheese and yoghurts.
- Include extra snacks e.g. yoghurts, cheese and crackers, rice pudding etc. and nourishing fluids e.g. full fat milk.

Please inform us if you have experienced weight loss recently, as we can provide you with information and supplement drinks to help meet your additional nutritional needs prior to your operation.

Physical activity

Physical activity before and after your surgery is extremely important; it will help you maintain muscle mass, particularly that of your legs which can deteriorate quickly due to bed and chair rest/ reduced activity whilst you are in hospital.

Doing some exercise can help you clear chest secretions, sleep better, improve digestion and boost your mood and immunity to help you heal more effectively.

Evidence shows that if you do more regular activity before your operation you will have a better outcome after surgery, meaning you may have a shorter length of stay and reduced risk of complications.

By attending the thoracic surgery rehabilitation classes before and after surgery, you will improve your physical capacity and learn about the benefits of being more active and how to progress in a safe manner. A home rehabilitation programme is available if you are unable to attend the in-person rehabilitation classes.

Here are some lower body exercises you can do on the ward after your surgery to aid your recovery and the return to your usual activities.

- Breathe freely throughout the exercises; please avoid holding your breath.
- Start slowly; ideally warming up gradually over 5 minutes by doing some slower repetitions or slower paced walking.
- Do not make any sudden movements.
- Do not stop exercising suddenly – warm down again gradually over 5 minutes.
- Please ask a member of staff if you need advice for these or other exercises.
- Try to record the number of repetitions and sets of each exercise you do.
- Try to record the time spent walking, the number of laps and how you felt (Borg score) and any rests you had.

Modified Borg Dyspnoea (Breathlessness) Scale

This is a scale that asks you to rate the difficulty of your breathing. It starts at number 0 where your breathing is causing you no difficulty at all and progresses through to number 10 where your breathing difficulty is maximal. How much difficulty is your breathing causing you right now?

When you are exercising, try to exercise at a level that leaves you feeling moderate to somewhat severely breathless (3-4).

Borg G. Perceived exertion as an indicator of somatic stress. Scand J Rehabil Med. 1970; 2(2):92-8.

Borg Rating of Perceived Exertion scale

While doing physical activity, we want you to rate your perception of exertion. This feeling should reflect how heavy and strenuous the exercise feels to you, combining all sensations and feelings of physical stress, effort, and fatigue. Do not concern yourself with any one factor such as leg pain or shortness of breath, but try to focus on your total feeling of exertion.

Look at the rating scale below while you are engaging in an activity; it ranges from 6 to 20, where 6 means "no exertion at all" and 20 means "maximal exertion." Choose the number from below that best describes your level of exertion. This will give you a good idea of the intensity level of your activity, and you can use this information to speed up or slow down your movements to reach your desired range. Try to appraise your feeling of exertion as honestly as possible, without thinking about what the actual physical load is. Your own feeling of effort and exertion is important, not how it compares to other people's. Look at the scales and the expressions and then give a number.

Borg G. Perceived exertion as an indicator of somatic stress. Scand J Rehabil Med. 1970; 2(2):92-8.

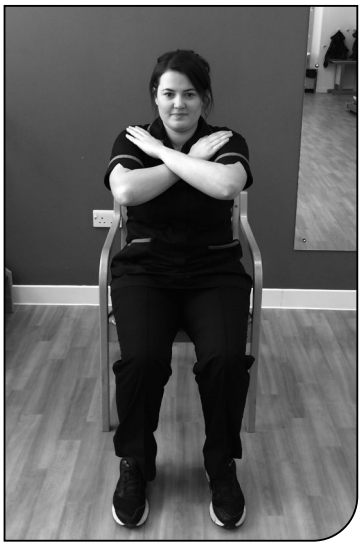
Rating	Description
6	No exertion at all
7	Extremely light
8	
9	Very light
10	
11	Light
12	
13	Somewhat hard
14	
15	Hard (heavy)
16	
17	Very hard
18	
19	Extremely hard
20	Maximal exertion

Borg G.A. Psychophysical bases of perceived exertion. Medicine and Science in Sports and Exercise. 1982; 14:377-381.

Sit to stand

Area of body worked: legs and bottom

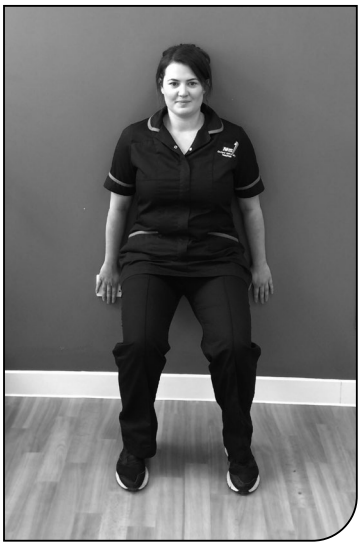
This daily activity is necessary to retain functional independence and can help to develop your leg strength and endurance. Find a stable chair with or without arms depending on your need. Sit on the edge of the chair and place your feet hip width apart and face forward, with your knees bent at 90 degrees. Lean slightly forward to transfer your weight over your knees and rock gently forward and push up from the chair (with or without your hands) to an upright standing position. Pause for a few seconds and then return slowly to a sitting position and repeat.



Wall slide to squat

Area of body worked: legs and bottom

Stand with your back against a wall (or with a Fit ball between your back and the wall) with both feet facing forward and hip width apart. Next, in a slow controlled movement, keep your torso pressed against the wall and slide your back down the wall until you reach a sitting or squatting position and then hold the position, feeling the contraction in your thighs, for up to 30 seconds and then slide back up the wall to the starting position. Repeat. To make it easier, slide only a small amount down the wall and more difficult try raising one foot off the floor and extend your leg.



Basic squat

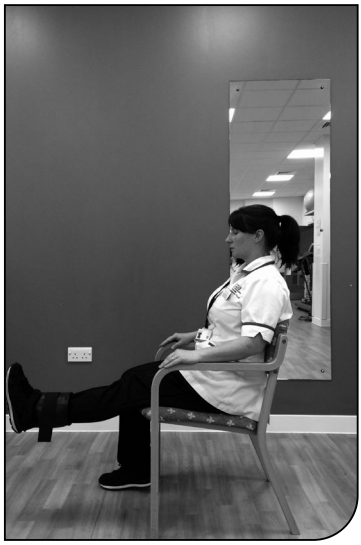
Area of body worked: legs and bottom, core

Stand with your feet slightly wider than hip width apart, with your toes pointing slightly outwards. Hold your hands in front of you to help you balance. Bend your knees, lower your hips and squat down as though you were going to sit down, keep your weight in your heels and your chest lifted. Look forward and keep your chin parallel to the floor. Do not let your knees pass over your toes. Pause and then push your heels into the floor to return to a standing position.

Knee extension

Area of body worked: thighs

In a sitting position keep one knee bent at 90 degrees and your back against the chair. Slowly contract your thigh muscles of your other leg and extend your foot towards the ceiling until your knee has almost completely straightened (do not fully lock your knee), point your toes towards the ceiling. Briefly hold the contraction and then slowly relax your leg and let your foot return to the floor and repeat on your other leg. To make this exercise harder use ankle weights for resistance.



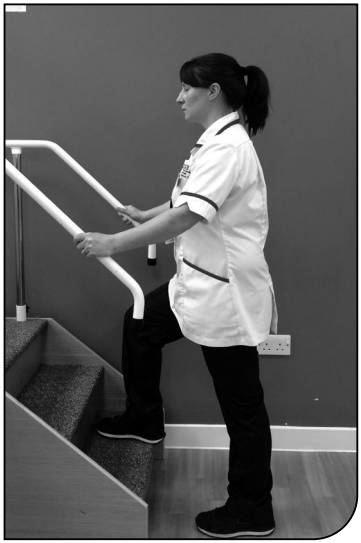
Seated walking

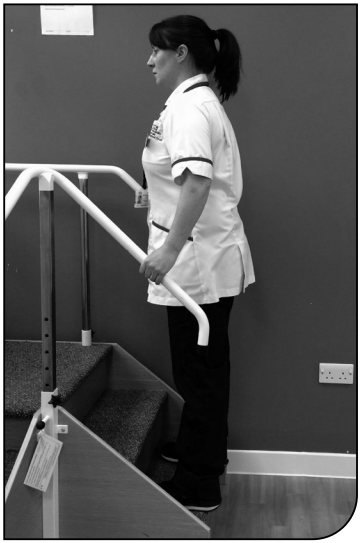
In a sitting position, with your feet and hips facing forward, your back straight, slowly raise one knee towards the ceiling, with your foot flexed. Hold this position for a few seconds and then lower your leg gently until your foot returns to the floor. Repeat this with your other leg and continue as you are able. To make this exercise harder, use ankle weights for more resistance, or increase the speed at which you perform the movement, or have a shorter rest period in between sets.

Stair climb or step ups

Area of body worked: legs and bottom

Place your hand on the rail for balance, look forward, and keep your chin parallel to the floor. Step up with the right foot on to the first step and bring the left foot up on to the step, pause and then step back down with the right foot, carefully followed by your left foot. Pause and then begin again with your left foot. Try to continue with this at a speed that leads you to feel moderately breathless (Borg scale 3-4 out of 10), pacing yourself and resting when you feel you need to. If you would like to progress this exercise, climb more stairs in the set or perform more sets and reduce the amount of time you spend resting before starting again. If you would like to progress this exercise, hold handheld weights, bottles or cans whilst stepping up and down.





Walking

Warm-up gradually by walking slowly to start with, preferably over five minutes so your heart and breathing have a chance to become accustomed to the activity.

Wherever you are walking, whether before surgery or around the ward after surgery, you should aim to walk at a steady pace, slowing or pausing to catch your breath if you need to do so. Try to walk at a speed that makes you feel moderately breathless (Borg scale 3-4 out of 10) so you can maintain or develop your endurance over time. Use your walking aids or oxygen if you usually use them when walking. You may need to walk more briskly to achieve the intended level of breathlessness.

Try to increase the distance you can walk and decrease the rests needed before you increase the speed. Make a note of the time you start and end, or the distance and see how this improves over the few days. You can use landmarks to help you to pace your walking and ask us for advice if you need to. If you are finding it difficult to walk as far as you want to and find breathlessness is limiting you, you can use interval training. To do this, alternate faster waking with periods of slower walking or rest.

Breathing exercises

Breathing exercises can help you feel more relaxed and reduce anxiety associated with breathlessness, prevent small areas of your lungs collapsing after your surgery and move phlegm (or sputum) that may build up and have the potential to cause a chest infection.

The active cycle of breathing is a technique which is used to clear phlegm and re-inflate your lungs. Please refer to

'The Active Cycle of Breathing Techniques' www.ouh.nhs.uk/patient-guide/leaflets files/11659Pbreathing.pdf booklet for instructions on how to complete these breathing exercises.

'Relax and breathe' CDs are also available; if you would like one, please contact our team of advanced practitioners who can send one out to you.

Smoking and alcohol

It cannot be emphasised enough that it is in your best interests to stop smoking as soon as possible before any major surgery. The longer you are smoke-free before the surgery the better, we advise a minimum of 4 weeks prior to surgery. There are various products available to help support your stop attempt and to reduce the symptoms associated with nicotine withdrawal including patches, gum, lozenges and nasal sprays.

Continuing to smoke before surgery can increase the risk of complications involving your heart, lungs and surgical wounds. All of these can result in a slower recovery period and a longer stay in hospital.

Our Macmillan specialists will discuss smoking cessation with you and offer information, support and referral to local services'. If you would like to refer yourself, you can find local contacts for your area on the opposite page:

- Your GP practice may have a smoking cessation advisor who can help you to stop smoking. Ask your GP for further information.
- Contact your local pharmacist, they can signpost you to your nearest stop smoking service.
- You can join the Roy Castle Foundation online stop smoking community at **www.healthunlocked.com/quitsupport**
- The NHS smoking helpline / website both give free advice and support. Call **0800 168 069** or visit **www.smokefree.nhs.uk** for online support.
- Contact your local stop smoking service for free advice and nicotine replacement, one to one help, or group sessions. Let them know you are going to have an operation soon so they can prioritise you. You are four times more likely to successfully quit with a support service.

Contact details are below:

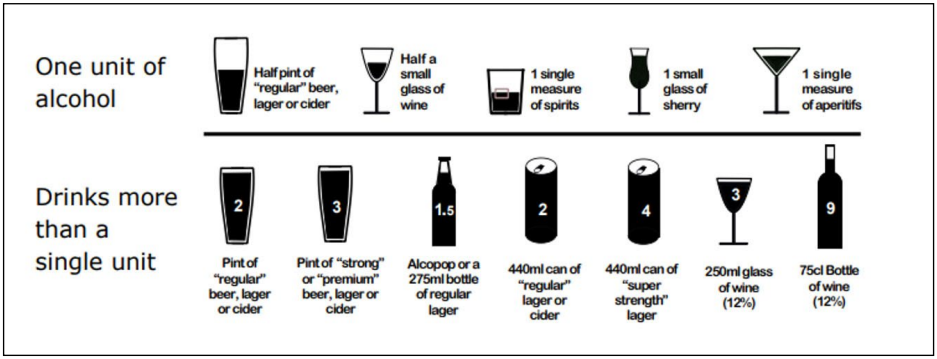
Area	Contact details
Oxfordshire: **Smoke Free Oxon**	0800 772 3673 Text 66777
Hampshire: **Smokefree Hampshire**	01264 563 039 or 0800 772 3649 smokefree.hampshire@nhs.net Text Quit to 66777
Buckinghamshire: **Be Healthy Bucks**	03332 300 177 https://bhb.maximusuk.co.uk/ behealthybucks@maximusuk.co.uk
North Northamptonshire	0300 126 5700 (option 2) https://www.northnorthants.gov.uk/health-and-wellbeing
West Northamptonshire	0300 126 5700 (option 1) https://www.westnorthants.gov.uk/stop-smoking-drug-and-alcohol-support

Swindon	https://www.swindon.gov.uk/info/20139/live_well_swindon_hub Swindon.stopsmoking@nhs.net Text 07881 281797

Walking

Limiting your alcohol intake will also help in your recovery.
The current recommendations are for no more than 14 units per week for both men and women, with 2-3 alcohol free days a week.

This diagram shows the number of units of alcohol in different types of drinks, use this to work out how much you drink.



If you are worried about the quantity of alcohol you drink then please contact your GP or the Hospital's Here for Health team on 01865 221429.

What tests will I have before my operation?

Before your operation you will have a range of tests to assess your health and fitness for surgery. The tests you will need will depend on the surgery you are having and any other health issues you may have. Some of these tests will be done at the pre-admission clinic, some will have been done before you see the surgeon.

Blood tests – These can tell us about your general state of health and fitness for surgery as well as giving us a baseline to refer to in the post-operative period.

Electrocardiogram (ECG) – This machine measures the electrical activity of your heartbeat and muscle function. Further investigations that might be requested to assess your heart include an Echocardiogram and a Myocardial Perfusion Scan (MPS), these are done routinely for some of our patients.

Lung function tests – These look at lung capacity (how much air you can hold in your lungs) and assess how your well your lungs are working.

Magnetic Resonance Imaging (MRI) scan or Computed Tomography (CT) scan – These scans give a 3-dimensional picture of your body and can help plan for surgery, so they might need to be repeated closer to the operation date. Both these scans are painless but may make you feel claustrophobic, as you have to lie still whilst the scanner moves you in and out of a large circular machine. However, the radiology staff will reassure you throughout the procedure.

Positron Emission Tomography (PET) scan – This scan creates pictures showing where there is active cancer throughout the body. You will need to have a PET scan before your lung surgery, to make sure that surgery is the most appropriate treatment for your cancer. During this test you will have an injection of special dye into a vein in your hand or arm, to highlight active cancer cells. You may be asked to not eat before this scan.

Bronchoscopy / EBUS – This involves passing a telescopic camera into your windpipe to look at the main airway of your lungs. Small samples of tissue called biopsies may be collected. These are then looked at in our laboratory.

Percutaneous Biopsy – This is carried out by the radiologist in the CT scanner. During this procedure a small sample is taken from your lungs through a fine needle, with the aim to obtain a diagnosis. This is not always feasible, and results can vary, if you didn't have one and would like to discuss the possibility to undergo it, please inform your Consultant or their team as soon as possible.

What kind of assessment will happen before my operation?

Before your operation you will be invited to come to the pre-admission clinic. This is run by the pre-admission nurses. This is to finalise what is needed for surgery and give you another opportunity to discuss any concerns.

At this clinic you will be assessed by:

A **Doctor or a Physician Assistant**, who will complete a physical examination of you and speak to you regarding your past medical history. Please bring with you any medications you are currently taking for them to review.

The **Pre-admission Nurse**, who will discuss what will happen before and after your surgery, ask you questions about your daily activities and about any support that you may need when you go home. The nurse will take your blood pressure, heart rate, weight and height. They will also give you an opportunity to ask any questions you might have about your admission.

You may be asked to see an **Anaesthetist**, who will complete an assessment of your suitability to tolerate a general anaesthetic, they will explain how they will look after you during your operation and answer any questions you may have about having an anaesthetic.

You might be approached by Research Nurses working within the Trust to speak about current trials. You can decide whether to have the discussion and then if you choose to participate, knowing you would be able to withdraw from them at any point.

What will you leave with?

Leaflets: You will be given lots of information at your appointment, it is hard to remember all that is discussed therefore take your time to read over the leaflets you are given.

Antiseptic wash and nasal cream: Including instructions of how and when to use them before your admission.

Carbohydrate drinks: You will be given drinks to take before your surgery and instructions on when and how to take them.

- They contain carbohydrates and minerals, which help to reduce the impact the operation has on your body and optimise your recovery. It is safe for you to drink them up to 2 hours before your surgery.
- Having a high carbohydrate drink up to two hours before surgery improves the outcomes from the operation, reduces anxiety and improves hydration. This is because it helps to provide your body with energy at a time when you are not able to eat.
- **The drinks are not suitable if you have diabetes or delayed gastric emptying**.

Preparing to come into hospital

- Think about how you will travel into hospital – it might involve an early start.
- Think about what you will take into hospital with you. Make sure you have a pair of well fitting, flat, comfortable slipper or shoes. If you normally use a walking aid or have glasses, dentures or hearing aids, then please make sure you bring these with you
- Please bring all your medication in with you in their original packaging and, if possible a prescription list.
- Check you have enough support in place for when you go home. You may need extra help initially, especially with housework, gardening etc.
- Before going into hospital it is sensible to stock up your freezer so you do not have to worry about shopping immediately after you are discharged.
- If you are the primary carer for someone, think about how this person will be looked after whilst you recover from your operation.

Who will look after me during my hospital stay?

You will be admitted under the care of a Consultant Thoracic Surgeon who is assisted by other Doctors, including Registrars and Senior House Officers.

Nursing staff are fully qualified and many have specialist cardiothoracic qualifications. This means they specialise in the care and treatment of people with heart and lung problems.

The **Matron** manages the cardiothoracic unit. The Sister is responsible for the cardiothoracic ward.

Anaesthetists are doctors who will put you to sleep for your operation. They monitor your condition very carefully throughout your operation and make sure that you have enough pain relief during your recovery period.

Advanced Care Practitioners are nurses and other registered health care professionals who have undertaken advanced specialist training to extend their roles, often including prescribing drugs. They work as part of the multidisciplinary professional team.

Physicians Assistants have undertaken specialist training enabling them to work with the medical team, they work under the supervision of a doctor.

Physiotherapists will visit you after your operation. They will help you keep your lungs clear and will help to get you moving after your operation. This will speed up your recovery and get you back to a level of activity which allows you to go home.

Occupational Therapists are available to give you advice and information about going back to your daily activities after your surgery. They can also give you some useful items of equipment to use at home, if you need them.

A **Pharmacist** will visit the ward each day to review your prescriptions and advise the medical team. You may see them before discharge or ask to speak to them if you have any questions about your medications.

What happens on the day of my operation?

When to arrive: When you come to the pre-admission clinic you will be told what time to arrive at theatre direct admissions (TDA) on the day of surgery.

When to stop eating and drinking: You must not eat any food, chew gum or suck sweets for 6 hours before a general anaesthetic or sedation. You may drink clear fluids only (such as water or squash) up to 2 hours before having a general anaesthetic. Drink plenty of fluids (preferably water) the day before your operation to keep your body hydrated.

If you have been given carbohydrate drinks to take prior to surgery, please follow the instructions you were given in the preadmission clinic. You should have your normal evening meal. You can continue to eat up until 6 hours before your admission.

On the day of your surgery take the carbohydrate drinks you were given in the preadmission clinic; you should finish these 2 hours before your admission time to hospital. For example, if you are due to arrive at 7.30am take all the drink by 5.30am. If you are due to arrive at 11.30am take all the drink before 9.30am.

You should also continue to drink clear fluids (water, squash, tea and coffee **with no milk**) up until 2 hours prior to surgery.

The carbohydrate drinks are not suitable if you have diabetes or delayed gastric emptying.

The pre-admission nurses will advise you further on what to do about your medications.

What to bring with you:

- Pyjamas
- Slippers
- Glasses
- Hearing Aid
- Medication (including prescription list)
- Toiletries (Inc. antiseptic wash and nasal cream)
- Loose fitting clothes
- Dentures
- Walking Aid
- Something to pass the time or read
- Enhanced recovery documentation

Your belongings will be stored in a locker in the Theatre Direct Admissions unit during your operation and will be taken up to the ward with you following your operation. Your relatives/friends can bring other belongings in for you when they visit.

Valuables: Please do not bring valuables or large amounts of money with you. If you wear a wedding band this can be left on and will be taped over before you go to theatre. All other jewellery including piercings should be removed before your operation.

The hospital does not accept any responsibility for lost or damaged valuable items or money.

Please also remove any make up and nail varnish (from fingernails and toenails).

What happens in The Theatre Direct Admission Unit (TDA)?

On the morning of your operation you will be admitted to the theatre direct admission unit (TDA). This is a lounge area where you will be prepared for your surgery.

You will have the opportunity to discuss any concerns or issues you are worried about. Your surgeon or a member of their team will come to see you to talk about your operation and to answer any remaining questions you may have. The surgeon will then ask you to sign the consent form. This confirms that you understand the risks and benefits of the operation and are happy to go ahead. If appropriate, the surgeon may also mark the operation site on your body with a marker pen.

The anaesthetist will also see you before the operation and talk to you about the anaesthetic and pain relief after the operation.

When the theatre team are ready you will be asked to change into a clean hospital gown, and you will be fitted with surgical stockings. These will help prevent blood clots forming during the operation.

The nurse or operating department practitioner (ODP) will check some important details with you such as your name, date of birth, and any allergies you may have. They will also confirm that you have signed your consent form.

When it is time for your operation you will be taken to the anaesthetic room. We will help you to move onto a trolley and the nurses will then connect you to heart and pulse monitors. Your anaesthetist will insert a small needle in your arm to give you drugs to make you go to sleep.

Throughout the operation the anaesthetist will be looking after you and will give you medication to keep you asleep and relieve pain.

After your operation

At the end of the operation, your anaesthetist will gradually wake you up and you will be taken round to the recovery unit, where a designated nurse will continue to monitor you.

When you wake up from your surgery:

- Some pain is to be expected but you should be comfortable overall; you will be asked about your pain levels and offered pain relief accordingly.
- You may experience nausea, however this can be treated with medication and should improve within a few hours.
- You may feel disorientated due to the anaesthetic and the unknown environment, however, this should settle over a short period of time and our team will reassure and orientate you.
- You will have a cannula (a small plastic tube in your hand/arm) through which fluids can be administered.
- You will have a chest drain in the side of your surgery (occasionally more than one drain is used).
- You will be asked to sit upright against a rigid board for a chest x-ray, this can be uncomfortable but it is quick and an essential part of our post-operative checks.
- You will be able to drink water as soon as you feel able to and the nurse thinks you are awake enough.
- You should start deep breathing exercises at this point. These can be found in the ‘active cycle of breathing’ booklet.

Cardiothoracic Ward (CTW)

Once the recovery staff are happy that you have recovered from your anaesthetic, you will be moved up to CTW. The first hour is very busy for the nursing staff as they are setting up the monitoring equipment, drips and checking your painkillers. Once the nurses have set everything up and you are comfortable, your relatives may wish to see you for a short while. You should aim to sit out of bed and walk a short distance with a staff member once you are back on CTW, this will boost the beginning of your recovery.

CTW has 25 beds for patients undergoing cardiac and thoracic surgery. Patients, if needed, can receive very close monitoring after their operation. All rooms are single side rooms with an en suite bathroom.

Visiting times are currently **8am to 8pm**, but please see the ward staff on admission to clarify these. If there are any queries regarding visiting then please ask the nurse in charge of CTW.

Please be aware that mornings are very busy times for patients and staff, as patients are getting washed and dressed, and instructions from the doctors rounds will be carried out e.g. X-rays and removal of lines and drains.

Over the following days you will be encouraged to gradually increase the amount of walking you do, along with doing some lower limb exercises. Use the advice on pages 7-12 to make sure you are optimising your recovery and the patient diary (page 27) to track your progress over time.

Try to walk regularly throughout the day and to tell the nurse and/or physiotherapist who are looking after you if you are experiencing any pain which may limit your activity, deep breathing or ability to cough effectively to clear any secretions.

There is an exercise bike on the ward which you can use to help you recover. Please ask a member of staff to help you set it up and guide you the first time and until you are confident to use it alone.

Pain relief

Optimal pain control is essential for a good and prompt recovery. We will dispense tablets for you to take in hospital and at home every 6 hours, but you are encouraged to ask for additional painkillers as required and can normally have breakthrough medications 2-4 hourly.

There are additional modalities the anaesthetist might discuss with you for pain relief, which include:

Local and regional blocks

This is an injection of local anaesthetic around nerves to numb the area and reduce pain. It can be given by the anaesthetist or surgeon in theatre. You may have a continuous infusion of local anaesthetic during your first few days on the ward if your surgeon thinks this is required.

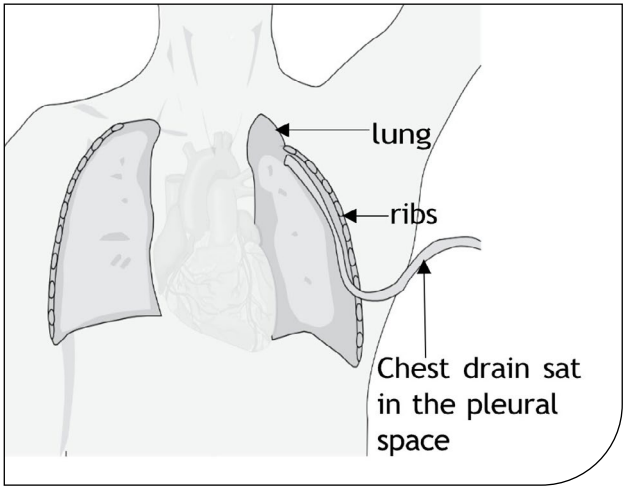
Patient controlled analgesia (PCA)

With the use of PCA, pain relieving medication is given through veins via a pump. You will be able to control your medication by pressing a button and the dosage is set so there is no risk of overdosing.

It is important that you are comfortable enough to carry out your deep breathing and coughing exercises. Please tell us if you start to have any pain so we can make changes to your medication if needed.

Chest drains

Chest drains are necessary after lung surgery. Their job is to remove any fluid and air which can collect in the chest cavity.



The drain is a one-way system that draws fluid and air out and stops it from going back into the chest. The chest drain is a tube which has one end in your chest cavity and the other attached to a chest drain pump. The tube is held in place by a stitch.

The drain pump controls the amount of suction applied to the drain and measures how much air is leaking out. The amount of suction applied to your chest drains may be changed as you recover from your operation.

You can help to re-expand your lungs by moving or walking around and by deep breathing and coughing.

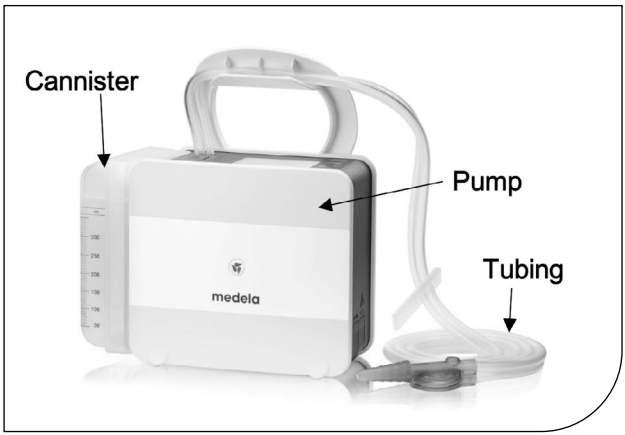
Chest drains are removed when the doctors are happy that they are no longer required.

How do I look after my chest drains?

Always remember to carry the pump with you and rest it on the floor when you are sitting or lying in bed.

Try not to pull on the tubing as this may cause pain or discomfort. Try to avoid bending and folding the tubing, as this slows down drainage.

If the tubing comes out of your body or disconnects, ask for help immediately. Your nurse will need to reconnect the tubing to the pump, and you may need to have a new chest x-ray to check that there have been no complications.



Eating and drinking after surgery

Unless otherwise stated by your consultant you will be allowed to eat and drink as soon as you are awake enough after your operation. It is important that you start doing this as early as possible.

You will need more calories (energy) and protein from your diet to help your body heal and regain strength. It is common after an operation to lose your appetite, and you may not wish to eat large meals. Most people find that eating 'little and often' is best. Try to ensure you focus on high protein food if you have a reduced appetite; you need protein to heal.

Your nurse can give you high calorie drinks to supplement your meals if necessary.

Your nutritional intake (how much and what types of food you eat) will be monitored during your admission, and you will be referred to the dietitian for assessment if you are not able to eat enough food.

Patient Diary

The next few pages are broken down into a day-by-day diary for you to fill in. The purpose of this diary is for you to record your progress with the enhanced recovery principles of early nutrition and early mobilisation. It also gives you an opportunity to document your thoughts and feelings throughout your hospital stay.

This diary sets out guidelines of what to expect on the days after your surgery, however, as everyone is an individual, you may vary slightly from the pathway set out - this does not mean you have failed; it is purely a variation to the programme.

Day 0

Day 0 aim: to sit out in the chair and mobilise to the bathroom with assistance.

Day 1

Day 1 aim: to sit out of bed for **1-2 hours** both in the morning and afternoon and walk for **4 minutes** in total throughout the day.

	Minutes of Walking	Number of laps	How I felt
1			
2			
3			
4			
5			
6			
7			

- Spread your exercise regularly throughout the day.
- If you are in too much pain or are feeling very breathless, alert a nurse immediately.
- You should aim for your pain score to be 0 whether you are resting or moving around. If you feel the pain is not well controlled, then speak to your nurse about your pain.

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

- Don't forget to do your lower body exercises throughout the day.
- Have you done some deep breathing exercises today?

It is really important to keep your calorie intake up as you recover from your surgery. Make a note of everything you have eaten and drunk today.

If you feel sick, please speak to your nurse about anti-sickness medication.

Supplement drinks are available for those struggling with their appetite.

	Food	**Drink**
Breakfast		
Snack		
Lunch		
Snack		
Dinner		

Day 2

Day 2 aim: to sit out of bed for **1-2 hours both in the morning and afternoon** and walk for a minimum of **8 minutes** in total throughout the day.

	Minutes of Walking	Number of laps	How I felt
1			
2			
3			
4			
5			
6			
7			

- Spread your exercise regularly throughout the day.
- If you are in too much pain or are feeling very breathless, alert a nurse immediately.
- You should aim for your pain score to be 0 whether you are resting or moving around. If you feel the pain is not well controlled, then speak to your nurse about your pain.

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

- Don't forget to do your lower body exercises throughout the day.
- Have you done some deep breathing exercises today?

It is really important to keep your calorie intake up as you recover from your surgery. Make a note of everything you have eaten and drunk today.

If you feel sick, please speak to your nurse about anti-sickness medication.

Supplement drinks are available for those struggling with their appetite.

	Food	**Drink**
Breakfast		
Snack		
Lunch		
Snack		
Dinner		

Day 3

Day 3 aim: to sit out of bed for **3 hours both in the morning and afternoon** and walk for a minimum of **12 minutes** in total throughout the day.

	Minutes of Walking	Number of laps	How I felt
1			
2			
3			
4			
5			
6			
7			

- Spread your exercise regularly throughout the day.
- If you are in too much pain or are feeling very breathless, alert a nurse immediately.
- You should aim for your pain score to be 0 whether you are resting or moving around. If you feel the pain is not well controlled, then speak to your nurse about your pain.

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

- Don't forget to do your lower body exercises throughout the day.
- Have you done some deep breathing exercises today?

It is really important to keep your calorie intake up as you recover from your surgery. Make a note of everything you have eaten and drunk today.

If you feel sick, please speak to your nurse about anti-sickness medication.

Supplement drinks are available for those struggling with their appetite.

	Food	**Drink**
Breakfast		
Snack		
Lunch		
Snack		
Dinner		

Day 4

Day 4 aim: to sit out of bed for **3 hours both in the morning and afternoon** and walk for a minimum of **16 minutes** in total throughout the day.

	Minutes of Walking	Number of laps	How I felt
1			
2			
3			
4			
5			
6			
7			

- Spread your exercise regularly throughout the day.
- If you are in too much pain or are feeling very breathless, alert a nurse immediately.
- You should aim for your pain score to be 0 whether you are resting or moving around. If you feel the pain is not well controlled, then speak to your nurse about your pain.

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

- Don't forget to do your lower body exercises throughout the day.
- Have you done some deep breathing exercises today?

It is really important to keep your calorie intake up as you recover from your surgery. Make a note of everything you have eaten and drunk today.

If you feel sick, please speak to your nurse about anti-sickness medication.

Supplement drinks are available for those struggling with their appetite.

	Food	**Drink**
Breakfast		
Snack		
Lunch		
Snack		
Dinner		

Day 5

Day 5 aim: to sit out of bed for **3 hours both in the morning and afternoon** and walk for a minimum of **20 minutes** in total throughout the day.

	Minutes of Walking	Number of laps	How I felt
1			
2			
3			
4			
5			
6			
7			

- Spread your exercise regularly throughout the day.
- If you are in too much pain or are feeling very breathless, alert a nurse immediately.
- You should aim for your pain score to be 0 whether you are resting or moving around. If you feel the pain is not well controlled, then speak to your nurse about your pain.

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

- Don't forget to do your lower body exercises throughout the day.
- Have you done some deep breathing exercises today?

It is really important to keep your calorie intake up as you recover from your surgery. Make a note of everything you have eaten and drunk today.

If you feel sick, please speak to your nurse about anti-sickness medication.

Supplement drinks are available for those struggling with their appetite.

	Food	**Drink**
Breakfast		
Snack		
Lunch		
Snack		
Dinner		

Discharge

Transport and discharge home

We ask you to plan for your discharge and transport home in advance. You will need to make arrangements for a relative or friend to take you home. We recommend you travel home by car as this will be more comfortable. You should not go home on public transport when discharged home.

If you have specific medical needs, you may qualify for hospital transport. You will need to discuss and arrange this at your pre-operative assessment appointment.

When will I be able to go home?

Patients will normally be deemed medically fit for discharge 1-3 days after minimally invasive (VATS) surgery and 3-5 days after open surgery (thoracotomy or sternotomy). We will make sure your pain is well controlled, and we will send you home on the same painkillers you have taken in hospital.

You need to be independently mobile on the ward and able to look after yourself before going home, the physiotherapists will help you achieve these goals and confirm that you can be discharged safely.

Plans for discharge are reviewed daily and you will be involved and asked when you feel ready to go home.

If you have achieved the above but your chest drain is required for a longer period of time, the pump might be changed to an ambulatory bag to enable you to be discharged. If this does happen you will be given specific instructions and training on caring for the chest drain, and you will be asked to attend the nurse-led chest drain clinic weekly until the drain can safely be removed.

It can be daunting and frightening to be discharged from hospital after a major operation; however most patients will do better at home once medically fit, and we remain available to be contacted should you need support or have any concerns.

What will I be given before I go home?

- **Medications**: the hospital will ensure you have two weeks supply of the medicines you take regularly, and those prescribed during your hospital admission. Your ward nurse or pharmacist will discuss with you how and when to take your medicines. You may need to contact your General Practitioner before the end of the two weeks for a review and to arrange further supplies of your medicines.
- **Discharge letter**: This will contain a summary of your operation and inpatient stay with any follow up arrangements which have been made and a list of the medications you have been discharged with. An electronic copy will be sent to your GP.
- Chest drain information (if you are going home with a drain).
- Useful contact details

Wound care

Your surgical wound and your chest drain wound sites will be starting to heal by the time you leave hospital. You will still have pain and some bruising, swelling and numbness, but this is quite normal, and may take some weeks to improve. Try not to touch your wound(s), as this will increase the chances of infection. Use a mirror or get a relative/friend to check your wound(s) daily. If wounds are clean and dry, they should be left without a dressing. Do not worry about the scabs-they will fall off in time.

You will usually have at least one drain site stitch which should be removed seven to ten days after drain removal. The practice nurse/ district nurse will do this, please let the ward staff know if you need assistance with booking an appointment. Some swelling is normal and should settle over the next few weeks.

If you notice any of the following you must seek urgent medical advice from your GP:

- The amount of pain in your wound increases
- The wound becomes redder
- The wound becomes warm to touch
- The wound becomes swollen
- The wound has discharge coming from it
- The wound has an odour to it
- Any part of the wound appears to be coming apart.

Washing

You can shower at home. We advise to avoid bathing for the first couple of weeks after surgery, as this can lead to wound breakdown and infection.

Having a shower will ensure the skin and the wound are kept clean, pat the wound dry with a clean towel. Try not to use soap or perfumed detergents on the wound and avoid spray deodorants until the wounds are fully healed.

Eating and drinking

It is important to try and eat well to minimise weight loss once you are discharged from hospital. It is not unusual for your appetite to be poor in the early weeks so try to include regular, small nourishing meals, snacks and nutritious drinks in your diet. Have softer foods if you feel these go down easier and stick to plain food and drink if you feel sick.

Bowels

Constipation is common after general anaesthetic and with the use of strong painkillers (opioids). If constipation has been a problem, try to ensure you are eating regularly enough for your bowels to function and are drinking enough water. You can stop taking the laxatives prescribed by the hospital when your bowel habits return to normal.

Breathlessness

This will depend on how much lung has been removed and your underlying general health, however; some shortness of breath is expected. To help improve your lungs we recommend that you complete the breathing exercises included in the '**active cycle of breathing**' booklet.

If your breathlessness is concerning you or your family, then please contact the advanced practitioner team, the cardiothoracic ward or your GP.

Remaining active

Through daily physical activity you can improve your emotional and mental wellbeing as well as reducing feelings of fatigue. It can take up to 6 months for your lungs to fully recover, depending on what type of surgery you have had. It is really important that you continue with your breathing and general exercises after you have been discharged from hospital. We recommend that you do not try to lift, pull or push heavy weights until 6-8 weeks after surgery; however, you should continue to do your everyday functional activities like washing, dressing, cooking and walking.

We recommend that you gradually develop the amount of exercise you do, and this can include swimming (after 6 weeks), walking, cycling light jogging and light resistance exercise. If you would like advice and support with remaining active after your surgery, then please get in touch with our advanced practitioner team.

Rest and sleep

It is very common to find you tire easily during your first few weeks at home. Depending on your needs, you may benefit from a rest in the afternoon for a couple of hours, or after exercising. Ensure you give yourself more time in the mornings to get ready and plan ahead for any activities.

A good night's sleep is very important, you may find that your normal sleeping routine is disturbed or that the position you normally sleep in is now uncomfortable. It is recommended you take pain relief at night to help you achieve a good rest period.

Pain relief

Good pain control is key to enable mobility. Exercise plays a role in preventing complications such as chest infections and deep vein thrombosis. As a result, we strongly recommend that you continue to take your prescribed painkillers for the first couple of weeks at least.

It is common to experience numbness or shooting pains around the wound, this is due to the damaged nerves repairing themselves.

If your pain is not getting any better, despite taking your regular pain killers then please contact our team or your GP.

Resuming sexual relationships

It is not unusual to feel apprehensive about resuming sexual relationships after undergoing surgery. There are no definite rules surrounding this, we recommend you wait 2-4 weeks, giving the wounds some time to heal. It is unlikely you will cause any damage but take sensible measures, avoid extensive strain on the wound, choose a comfortable position which does not restrict your breathing and do not take your own or your partners weight on your arms.

Driving

It is important to notify and discuss this with your insurance company as many have different rules. It is generally recommended that you wait to return to driving for 4-6 weeks after your surgery. You will have to be off strong painkillers such as tramadol or codeine and should be able to do an emergency stop without causing yourself too much discomfort, when you do start driving.

Work

When you can return to work may be determined by the emotional and physical demands of your job. It is best not to start work until you feel completely well as you may feel tired and unable to concentrate for a period of time. Your employer may allow you to return over a phased period to build you back up to a full working week. The options available to you should be discussed with your employer. If you are self-employed or do heavy jobs, you may need to assess more fully what you are able to do. Please discuss with your consultant surgeon who can give you advice. Macmillan offers employment and benefits advice.

Holidays and flying

If you have planned a holiday, you should only go once you feel ready to travel. Holidays involving flying should not be taken until around six weeks after your operation and you will be assessed for fitness to fly at your first outpatient appointment following surgery.

If you go away within the first 6 months after your surgery it is advised to plan a relaxing holiday with minimal travelling. Use complete sun block over the actual scar for the first six months. It is also advised that you get holiday insurance; the cost of insurance may alter due to your treatment. There are specialist insurance companies which can help you with this.

Signs and symptoms to look out for

If you have any of the following problems, please see your GP or our team (contact details are at the end of the leaflet):

- Continued problems with constipation despite taking regular laxatives and eating a high fibre diet.
- An increase in the amount of pain you have, despite taking regular painkillers.
- Your wound becoming redder than before, swollen, warm to touch or leaking fluid.
- Any part of your wound coming apart.
- Your breathlessness becoming worse and you or your family are concerned.

If you are admitted to your local hospital within six weeks from surgery we ask that you or your family contact us directly, on the numbers at the end of this booklet, to inform us of your admission as soon as possible. This allows us to provide the best advice to your local hospital.

Contacts

If you have any questions or concerns, please contact one of the numbers below.

Macmillan Advanced Physiotherapist Practitioner, Thoracic Surgery

Tel: 01865 221 736

Macmillan Advanced Nurse Practitioner, Thoracic Surgery

Tel: 01865 223 874

Advance Nurse Practitioner, Thoracic Surgery

Tel: 01865 572 653

Cardiothoracic Ward

Tel: 01865 572 662

Co-ordinator (if the Ward are unable to answer the phone)

Tel: 01865 572 657

Further resources

Macmillan Cancer Support

www.macmillan.org.uk

0808 239 75 65

Macmillan Prehabilitation Videos

https://www.macmillan.org.uk/cancer-information-and-support/stories-and-media/videos/prehabilitation-videos

or:

Roy Castle Lung Cancer Foundation

www.roycastle.org

0333 323 7200

Hospital Chaplaincy

01865 857 921

Patient Advice and Liaison Service (PALS)

PALS@ouh.nhs.uk

01865 221 473

Further information

If you would like an interpreter, please speak to the department where you are being seen.

Please also tell them if you would like this information in another format, such as:

- Easy Read
- large print
- braille
- audio
- electronic
- another language.

We have tried to make the information in this leaflet meet your needs. If it does not meet your individual needs or situation, please speak to your healthcare team. They are happy to help.

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