



Information for patients undergoing heart surgery at the University hospital of Umeå



In this brochure you will find information how to prepare for your surgery, your care during the postoperative period and what to expect after discharge.

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We recommend that you read as thoroughly as you can through this brochure, pay special attention to the headings *Preparing yourself for heart surgery*, *What items to bring to the hospital* and *Arrival at the hospital*. Besides this written information you will also receive verbal information from us after your arrival at the hospital.

To be able to help you in the best way possible, a good communication between yourself and the staff is important. We want you to tell us how you feel and what you experience during the process, meanwhile, we do our best to keep you informed and comfortable.



Heart surgery

Together with a team of physicians (cardiologists, thoracic surgeons and radiologists) you will undergo varied medical examinations and screenings that will help us assess the best treatment option for you.

The most common reason for undergoing heart surgery, is coronary artery disease. Second most common reason is heart valve disease. We also perform surgery for aortic disease.

Most heart surgery procedures are performed through median sternotomy. The sternum is divided to access the heart. After surgery the sternum is closed with stainless steel wires. During most open cardiac procedures, a heart-lung machine is used to support heart and lung function during surgery.

If you need specific information about physiology and disease

If you need more information about your condition and/or your procedure, talk with your health professional on how to get yourself best educated.



Preparing yourself for heart surgery

All major surgery can impose a potential stress on your body, and it's therefore important that you are in as good shape as possible before the operation. We recommend you begin by preparing yourself mentally and physically at home before the surgery. This reduces the risk of complications and helps with wound healing and easier recovery. Below are some recommendations.

Eat varied foods

Good eating habits are important both before and after surgery. Both your heart problem and the surgery itself stresses your body which in turn affects your energy levels and recovery. It is therefore important that you eat as adequate a diet as you can. Eat several meals evenly dis-

tributed over the day, breakfast, lunch, dinner and snacks. Vary your food choices. Eat potatoes, rice, pasta, bread and vegetables to load up on much needed energy. Eat fruits as a snack between meals. Meat, fish, eggs and milk are building blocks for your muscles and help to enhance recovery and wound healing.

If your appetite is low, or if you have difficulties chewing or swallowing, please contact the dietician at your health care centre. Dieticians can help to optimize your energy and nutrition and if needed, supply dietary supplements.

Alcohol-free surgery

Alcohol increases the risk for complications in connection to all types of surgery. Therefore, we recommend you to fully abstain from alcohol for four weeks before your heart surgery. A high use of alcohol leads to increased risk of infections and can lead to problems with the blood's ability to coagulate. Please talk to a health professional at your health care centre for support if you have a problem. It's important for us that you prior to the surgery tell us if you use alcohol excessively. We do not judge; this information helps us anticipate and reduce the risks for complications in connection with your surgery.

Smoke-free surgery

Smoking increases the risks for complications after surgery. You should quit smoking. If you quit smoking at least four weeks before surgery, it reduces the risk for pneumonia, blood clots and wound infections. Quitting also enhances wound healing and recovery.

You will get the best effect if you quit smoking eight weeks before surgery, and after surgery we recommend that you quit smoking permanently. Regardless of when you stop smoking, there are benefits to be gained from smoke-free surgery. If you need help to quit smoking before surgery, please contact your health care centre.

Continue to be physically active

It's important that you are as active as you are capable of before the surgery. In this way you can assist your post-operative rehabilitation. The surgery itself takes a lot of energy; therefore, it's recommended that you are in the best shape you can achieve before the operation.

You can also prepare yourself by learning the technique on how to get up from bed after you've had surgery. You'll find information under How to get up from bed after surgery in the end of this brochure.

Shaving before surgery

If you have a beard, we recommend shaving it off before you arrive at the hospital. The purpose is to minimize the risk of infections and to facilitate care during and after surgery. If you for some reason can't shave off your beard, you will have to wash it extra carefully when you shower before the operation. Hair removal in the surgical area will be performed by the staff at the ward.

Nurture your nails

Your nails must be short; dirt that accumulates under long nails can spread germs and cause infections. Remove nail polish and **leave your rings at home**.

Review your medications

The letter you received from us before the operation contains a list of medicines that you must stop taking before surgery. If you have questions about the medicines you take and whether you should stop taking them before surgery, please contact the staff in charge of, *Väntelistan*, the waiting list. The phone number to *Väntelistan* is in the summons you received or under the heading *Phone numbers* in this brochure.

Preparing for coming home after discharge

Plan for how you get to and from the hospital and what to bring. Also plan for what support you may need after being discharged from the hospital. One tip is to fill your freezer with extra food, so that you don't have to go shopping immediately when you get home. It is advised to have a relative or friend with you or in close contact the first period at home.



Risks associated with heart surgery

Heart surgery, regardless of the cause, is associated with some risks. Your surgeon will discuss the level of risk for you personally since it differs between diseases and types of procedures. You will together with your surgeon finally decide if heart surgery is the best treatment for you. Below you find information about the most common complications associated with heart surgery and what we do to prevent and treat them.

Infections

We follow strict hygiene rules to reduce the risk of infections after surgery. You must not remove the wound dressings yourself. The staff at the ward will help you with the removal of the wound dressing and the care of the wound. After surgery it is important that you do regular breathing exercises prescribed to you by your physiotherapist. This reduces the risk of developing pneumonia. We recommend that you work on the breathing exercises the day/days before the surgery so that you are familiar with the technique. More information can be found under the heading *Breathing exercises*.

Bleeding/air leakage

After surgery you will have two drainage tubes in the chest which remove blood, fluid and possibly air from the surgical area. The drainage tubes will be removed as soon as possible, usually the day after the surgery. Sometimes the drainage tubes must be kept a few days extra. A post-operative bleeding may result in a second surgery, usually within the first six hours after the initial operation.

Blood clots

Major surgery increases the risk of blood clots. Research shows that you can prevent blood clots by early activity (sitting up, standing and walking) after surgery. You will receive anticoagulant medication after surgery to prevent blood clots.

Irregular heart rhythm

The heart can sometimes beat slowly or irregularly after surgery. You may require a temporary pacemaker if the heart rate is slow or irregular. You will have pacemaker wires coming out of your chest after the surgery. Pacemaker wires are placed routinely on all cardiac operations. These will be removed before discharge from the ward. If the heart rhythm is rapid and irregular, which often is caused by atrial fibrillation, it may require treatment with medical or electrical cardioversion. Electrical cardioversion is an electrical shock that can help reset the heart rhythm and is done under general anesthesia which means you will be unaware during the procedure.

Pain

All surgery results in pain and discomfort, this is normal. Therefore, you will receive analgesics both during and after the surgery. You may however still feel pain, tell us how severe your pain is so that we can optimize treatment. It is not unusual to feel some discomfort during the first months after surgery, which may require long term treatment.

Anesthesia

The risk for serious complications during anesthesia is relatively small. Some less serious complications can be damage to the teeth (occurs in about 1/4500 anesthesia), lip wounds (occurs in about 1/120 anesthesia).

Fluid may accumulate in pleura

Fluid may build in the chest cavity between lung and chest wall (pleura) after a heart surgery. You may experience dry cough and/or heavy breathing. In most cases the body itself absorbs the fluid. If it affects your general condition and your breathing, the fluid can be drained by using a drainage tube.

Delirium

Delirium is a very rapid reversible decline in brain function. Delirium is common in connection with an acute illness or surgery. It is also common in the intensive care unit and for people with preexisting dementia. However, delirium is not the same as dementia. Dementia generally develops gradually and is seldom curable. Delirium on the other hand develops under a short period of time and if the underlying cause is treated, delirium decrease. Delirium occurs randomly, and the factors involved are often unforeseeable.

Anyone can develop delirium, that is why it is important for you and your relatives to be aware of this condition. The risk for developing delirium increases for people with depression, stroke or in elderly people. The risk also increases with stress and for those who take certain medications. Research shows that 1 in 10 patients will develop delirium after heart surgery.

Symptoms of delirium

The symptoms often emerge suddenly and can vary over the day or from one day to another. They can be:

- Difficulties with focus and concentration.
- Affected short-term memory; you may experience difficulties remembering what's been said.

- You may experience difficulties remembering what day it is and what time of the day it is.
- You may experience a disrupted circadian rhythm and have difficulties sleeping at night and staying awake during the day.
- You may see and hear things that others do not.
- You may feel unsafe and suspicious towards the staff and the environment.
- You may feel that everything is wrong and incoherent.
- You may become restless, anxious and experience a desire to take your own initiatives.

How to prevent and treat delirium

We work actively to prevent you from developing delirium. We use a screening instrument to be able to early detect symptoms of delirium. You will be asked to count the weekdays or the months backwards, so that we can assess your memory and ability to concentrate. The treatment of delirium is focused on finding the underlying causes. If you are affected, you may sometimes need medication to be able to relax and to reduce symptoms.

What you can do yourself

- Let us know if you previously have experienced a delirium.
- It is important that you mobilize postoperatively, since bed rest may negatively affect your breathing and blood circulation.
- Make sure that you eat and drink properly. Tell the staff if you do not have appetite or feel nauseous.
- Use your glasses and hearing aid.
- Try to maintain a normal daily rhythm, stay awake during daytime and sleep at nighttime.
- Tell the staff what you are experiencing and if you feel insecure or scared.
- Tell the staff if you hear or see things that are out of the ordinary, since it could be a symptom of delirium.

What you can do as a relative

Tell the staff if you experience that your relative is confused or behaves strangely, in a way that you do not recognize. Being in the company of a relative can create security. A photo of relatives can also be helpful for a person who becomes affected.

Responding to a person affected by delirium

- Speak concisely and concretely.
- Create a calm atmosphere around the person.
- Tell what day and time it is, and where they are and why they are there.
- Avoid disagreements; accept your relative's experiences without enhancing them.
- During visits, keep the numbers of visitors in the room to a minimum.

We understand that delirium can be a difficult experience for you and your relatives. Therefore, it is important to us that you and your relatives share your experiences with us.

Other risks

The risks for complications during and after a heart surgery depend on several factors. Among other things, the type of surgery and your pre surgical health will affect the outcome. A major surgery increases the risk of complications. It is rare, but heart surgery may be fatal. Depending on what kind of procedure you've undergone, the mortality risk within 30 days after the heart surgery is between 1–3 percent.



What items to bring to the hospital?

We recommend that you ahead of time pack a small bag with what you will need at the hospital.

- Bring your identification card or driving license. The free card (Swedish Frikort), if you have one.
- Medication list and medications you use, consumption for about a week, including eye drops.
- Bring this brochure.
- Toiletries, such as toothbrush, toothpaste, shaver – preferably in a toiletry bag.
- Bring your glasses with case, hearing aid with case or earplugs if you use those.
- Bring your slippers or comfortable soft shoes to use indoors, socks and soft clothes that don't sit tight.
- You only need to bring one change of clothes to use when you go home. During your stay at the hospital you'll use our patient clothes.
- Bring your neck pillow or other special pillow if you use one at home.
- Bring your CPAP (device that you use if you have sleep apnea) if you use one.
- Bring your cellphone and charger and phone numbers to your relatives.

Do not bring valuables

We have lockers where we put your belongings, but do not bring any valuables to the hospital. Do not bring jewelry or larger sums of money, because we cannot take responsibility for these during your stay.



Arrival at the hospital

Admission

During admission you will receive information about your stay and how to best prepare for the surgery. Do not hesitate to ask staff if you have any questions.

One or two days before the surgery you will arrive at the thoracic admission (ward E 31) to get prepared for surgery. At the thoracic admission you will meet nurses,

the admitting physician, anesthesiologist, thoracic surgeon and physiotherapist.

The first day we will take blood samples, an ECG, your height and weight and check your oxygen saturation. Sometimes additional examinations will be performed. You will also receive verbal information before the surgery. When your admission is complete, you will receive a room at the ward or a room at the patient Hotell Björken, (see *Accommodations*).

On the second day the staff at the admission ward will provide preoperative information. Also, the physiotherapist will inform you and other patients that also are about to undergo thoracic surgery, (see *Information from the physiotherapist*) You get to meet the anesthesiologist and your surgeon. Hair removal on and around the surgical area will be performed by the staff at the thoracic ward. If you arrive at the hospital on a Sunday, there will be no staff at the admission ward, and therefore the staff at the thoracic ward (E 33) will welcome you instead.

Completing admission takes up most of the day and it is important that you don't leave the admission ward without informing the staff. The thoracic surgeon and the anesthesiologist will explain the procedure and inform about the risks and benefits associated with it.

If you have any questions, please do not hesitate to ask them. It is normal to feel nervous before a surgery, verbalizing thoughts and questions can alleviate nervousness.

Accommodation

Some patients may stay at Hotell Björken during the days of admission, before receiving a room on the ward. We will arrange your hotel accommodations for you. We provide hotelroom booking for you as a patient and only in exceptional cases for relatives. If you live close to the hospital, you can sleep at home during admission. The rooms at the ward are mixed, that is, men and women can be sharing rooms. Drapery separates the beds.

Accommodation and parking for relatives

Information about accommodation, parking facilities and contact information to the University hospital in Umeå is available at 1177.se. The information in English about parking facilities is at <https://www.regionvasterbotten.se/informationsmaterial-och-riktlinjer/andra-sprak/engelska-eller-english> and information about the Hotell Björken nearby the hospital at <http://www.sodexomeetings.se/bjorken/en/>

Visiting hours

Your relatives are welcome to visit you during your stay with us. They can also call us and talk to the nurse who is responsible for your care. We request that contact between the staff and your relatives is mediated if possible, through one of your relatives. The ideal time to contact the staff is after 10 am. Before 10 am, examinations, treatments and doctors' rounds are carried out. Staff may not be able to receive calls at this time. However, they will call back when they can.

The thoracic ward has visiting hours between 13.00–16.00 and 18.00–20.00 on weekdays, and between 13.00–20.00 on saturday and sunday. Changes in

visiting hours may occur, please contact the ward before visiting.

The stepdown unit (IM) and The cardiothoracic intensive care unit (Thiva). We do not recommend any visits during the day of surgery. The day after surgery, your loved ones are welcome. We have visiting hours Monday–Sunday at 14.00–16.00 and at 18.00–20.00. Before the visit, the responsible healthcare professional is contacted to agree on a suitable time for the visit. Since there are several patients being treated in the same room, you need to ring the bell before entering the room. Sometimes as a relative, you may have to wait outside if examinations or treatments are to be carried out on patients in the room. At Thiva and IM, it is advisable to have two visitors per person and occasion. Children or grandchildren of patients who are being cared for a longer period of time are also welcome to visit.

Phone numbers

Units	Phone number	Phone hours
Hotell Björken	090-10 87 00	Around the clock
The counselor at Hjärtcentrum	090-785 36 44	Weekdays
IM, the stepdown unit	090-785 36 39	10.30–11.15 15.00–16.00 19.00–20.00
Thiva, the cardiothoracic intensive care unit	090-785 36 30	If you have a relative who is cared for at Thiva, you can call us at any time of the day.
The thoracic ward Nurse expedition	090-785 36 22	10.00–11.00 13.00–15.00 18.00–19.00
Staff at the Vätelistan	090-785 36 21	09.00–10.00

Students

The University hospital in Umeå is a teaching hospital. Therefore, you may meet medical students who are receiving their clinical education during your stay. If you would prefer for students not to participate when you undergo examinations or receive treatments, please inform the staff.

Quality registers

Your patient information may be reported to national quality registers. The quality registers are used to evaluate and improve the healthcare. Your participation in quality registers is important to us, but it is voluntary. You have the option to refrain from participating and it will not affect the care you receive. If you participate, your information will be classified. If you want to know more about quality registers, please ask the staff at the ward.



The day before heart surgery

Information from the physiotherapist

You'll receive information from the physiotherapist the day before the surgery. If you are scheduled to have surgery on a Monday, you will meet your physiotherapist on Friday. You will be informed about breathing exercises and PEP-devices, and you will receive the opportunity to try out your post-thorax vest if you need one after the operation. You can find more information about the PEP-devices under the heading breathing exercises in this brochure.

Food and drink

You can eat and drink as usual until 12 pm before the day of the surgery. We recommend eating a meal in the night before to provide energy. If you don't want to eat solid food, you can drink oral nutritional supplements instead.

Medications

Take your medication as planned, until the day of the surgery. From the morning of the operation and thereafter we provide you with all the medicines you will need.

Activity

We recommend that you go for walks in the corridor if you are able, remember to always inform the staff if you leave the ward.

Hand hygiene

Good hygiene and clean hands protect both you and others from infections. It is important that you wash and use hand disinfectants before meals and after bathroom visits.

Your belongings

Your belongings will be marked with your name and will be stored in a locked compartment when you undergo the heart surgery. You will have to pack a bag with the things you need after the surgery, such as your toiletry bag, slippers or soft shoes, glasses and hearing aid and PEP-aid.

Hygiene preparation before the surgery

Hair removal

Hair removal on and around the surgical area will be performed by the staff with a special shaver. You are not allowed to do this shaving yourself. Jewelry, wristwatches and nail polish must be removed the night before the surgery.

Double shower

Showering is important to avoid postoperative infections arising from bacteria which are normally found on your skin. Showering is done according to a procedure that we call double shower, in Swedish *dubbeldusch*, where you wash systematically twice in succession. The double shower must be performed in the evening before the surgery and in the morning of the surgery.

A special sponge, called *Descutansvamp*, is used with

the shower. It contains chlorhexidine that reduces the number of bacteria on your skin.

It is important that the shower is carried out carefully; therefore, we have instructions for how to proceed. You should always start the shower with first cleaning the upper body and then continue with cleaning your lower body. If you have difficulties showering, staff can help you.

You are not allowed to use other cleaning products, as hair shampoo, soap, shower cream, or skin lotion during the double shower and after. Those products can impair the effect of the chlorhexidine.

Double shower the night before surgery

Follow these instructions:

- Shower your hair and body.
- Turn off the water.
- Use the sponge in your hair until lather forms.
- Wash your face, be extra careful around the nose but avoid getting the substance from the sponge in your eyes or ears.
- Wash your whole body so that lather forms. Pay special attention to your armpits, navel and nails.
- Wash your back, the staff will help you if you have difficulty doing it yourself.
- Wash your genitals; pay special attention to the foreskin, labia, groin and anus.
- Wait a few minutes before you rinse your entire body with water.
- Now repeat the procedure described above with a new sponge.
- Rinse thoroughly to remove any soap residue.

After the shower:

- Use a clean towel.
- You receive a clean patient shirt and clean underwear to put on.
- Don't walk barefoot after the shower, always use your slippers or soft shoes.
- The staff will make your bed and put on clean sheets while you shower.

Mouth rinse

You will rinse your mouth with an antibacterial mouth rinse both in the evening before the surgery and in the morning the day of surgery. This reduces the risk of postoperative pneumonia. Gargle for a minute and then spit it out.

Sleep

If needed, you can get a sleeping pill the night before surgery.

Fasting

You are not allowed to eat any solid food after 12 pm on the day of the surgery. You can drink water, tea or coffee without milk until 6 am. The nurse at the ward will give you the preoperative medication in the morning of surgery. You might also receive a nutritional drink that you must drink two hours before the operation.



The day of the surgery

Double shower in the morning on the day of surgery

In the morning on the day of surgery, staff will wake you up early for the shower. The showering procedure is repeated the same way as the night before, but this time without washing your hair. Thereafter you will put on a clean operation shirt with the opening at the back and clean underwear. You will then stay in your bed, as you're not allowed to walk around the ward.

Preparations at the ward

Before surgery, we will give you preoperative medications. Then staff transfer you in your bed to the operating ward. On your way there, the bag you packed is left at the cardiothoracic intensive care unit (Thiva).

If your surgery is postponed

Sometimes, on short notice surgery must be rescheduled. The most common reason for rescheduling is that we must prioritize a patient in need of acute surgery. In rare cases your surgery can be rescheduled to be performed earlier than planned.

At the operating theatre

The anesthesia staff will greet you, check your identity and help you to move over to the operating table. Thereafter they will transfer you to the operating room in preparation for surgery. You will get a nasal cannula, a clip on your finger that measures the oxygen levels in your blood and adhesive ECG electrodes to monitor your heart rate.

You will also get two or three intravenous lines in your hand or arm. One of them is used to measure your blood pressure, and in the other we will give you fluids. You will also get a central venous catheter (CVK) in the area below your neck where we give you medications.

When the preparations are done, you will receive sedatives. The anesthesiologists will remain at your side during the surgery to make sure that you sleep well and that you're not in pain. When you've fallen asleep, you will get a soft breathing tube in your airway. It will then be connected to a ventilator which helps you breathe. You will also get a urinary catheter after you've fallen asleep.

How long will the surgery take?

The duration of the surgery can vary, it normally takes between 5–7 hours to complete, but can sometimes take longer. When surgery is completed, you will be transferred to the thoracic intensive care unit (Thiva). The anesthesia nurse will call your designated relative to inform them that the surgery has been completed.



After surgery

Thiva

You will still be sedated when you are transferred to Thiva. When we have made sure that your condition is stable and you are about to wake up, we will remove the breathing tube.

What can you expect when you wake up?

- You will have a nasal cannula that delivers oxygen.
- You will have a surgical wound and wound dressing on your sternum. If you've done a coronary bypass, you will have a surgical wound and a support stocking on one or both of your legs.
- You will have two drainage tubes behind your sternum to make sure that excess blood/exudate or air is removed. The drainage tubes are connected to a suction box that makes a slightly noisy swishing sound.
- You should get up and stand on your feet briefly after you arrive at the Thiva/IM.
- You will receive pain relief so that you are comfortable. In some cases, you might feel shoulder pain, which can be caused by one of the drainage tubes behind your sternum. Sometimes you can also feel as if your breaths are constricted, but this will pass.
- You can feel nauseous after surgery, if so, you will get medications to reduce your nausea.
- There are a lot of devices and machines in the room that can beep or make other noises. You do not have to worry about them, the noises have an important function for the staff during your monitoring.
- You will be tired after surgery, but the Thiva environment can be difficult to sleep in. The staff are aware of this and will try as much as possible to optimize your comfort.

After the surgery our goal is to help you recover quickly and get back to your normal life. Therefore, it is important that you follow instructions, mobilize yourself, eat to maintain energy levels and sleep and rest as able. We encourage you to be as active as you are capable of during daytime, this helps recovery. Good communication with staff throughout is important. Tell us how you feel.

Pain relief

It is normal to experience pain after the operation. However, the way pain is perceived differs from person to person. It is therefore important that you tell us when you are in pain and how much pain you are experiencing.

In order to estimate your pain and evaluate if your pain relief is sufficient, we use a pain scale. This means that we ask you how much pain you are in on a scale from 0 to 10. Zero stands for no pain at all and 10 for the worst pain you can imagine. We scale your pain both when you are active and when you are at rest.

We aim to keep pain below 4 on the scale. After surgery you will get slow release pain pills that you continue taking as long as needed. You can also receive extra pain relief as needed.

Food and drink

As soon as you have woken up after surgery, you will be able to drink small amounts of water. It is common that you feel very thirsty after the surgery. However, we recommend that you just rinse your mouth to begin with.

Nausea is common. If you feel nauseous, you will get treatment for it.

Sometimes you will experience poor appetite. We recommend that you try to eat and drink in order to maintain good energy levels. This helps with recovery and wound healing.

If your appetite is poor, we can offer small meals during the day. Oral nutritional supplements containing extra energy can be provided.

It is common to have dry mouth from the medications. It can cause difficulties swallowing and taste sensation may change. There are tablets available that stimulate the production of saliva or oral spray that can be used to moisten the mouth. Ask the staff at the ward for help.

Elevated bloodsugar levels after surgery

After surgery, your blood sugar levels may be elevated – even if you do not have diabetes. This is how your body reacts to the stress caused by surgery. Because of this, we will monitor your blood sugar levels, and may sometimes need to give you insulin.

If you do have diabetes, we may need to give you insulin for a short period after surgery even if you usually only take oral medications. Your blood sugar levels will stabilize as you recover from surgery.

Activity after the surgery

As soon as you wake up after the operation, it is very important to start what we call mobilization. The first mobilization usually takes place within the first hour after you have woken up. With the help of the staff, you will then sit on the edge of the bed and stand on your feet for a short while.

After this, we continue with regular mobilization throughout your hospital stay. Already on the day of surgery, we encourage you to sit on the edge of the bed or in an armchair several times. The day after surgery, you will also take short walks in the corridor together with staff, often using a walking frame. When you are being cared for in the Thiva and IM units, we want you to always ask for help when getting out of bed.

Those who assist you with mobilization are physiotherapists, nurses, and assistant nurses.

Physical activity program

You can participate in the physiotherapist's physio-program every weekday at 1 pm. Continuing the physio-program after discharge is strongly advised. You will meet the physiotherapist daily during your stay and they can give individual adjustment of the exercises if needed. Please see the last page in this brochure.

Breathing exercises

There is an increased risk of pneumonia after surgery. It is therefore important to exercise your lungs. You do that by using a Positive Expiration Pressure device (PEP-device). The most common PEP-device is a Pep-bottle but can also be a PEP-tube or a PEP-mask. All of them have the same purpose and effect.

You breathe through the device with a technique that the physiotherapist teaches you before surgery. It is advised to do the breathing exercises as often you can, preferably once every hour. By using the PEP-device you will help your lungs to expand the small alveoli that sometimes collapse during surgery. It also makes it easier to mobilize mucus that may have accumulated in the lungs.

Follow these instructions:

- Breathe in the device ten times at a calm and even pace. Do not empty your lungs completely and try not to breathe so quickly through the device that you feel dizzy.
- After breathing ten times you must huff as if you are trying to breathe mist on a mirror. Coughing while huffing is good and coughing up mucus is even better. You might feel pain in the sternum when coughing, but it is not dangerous.
- Repeat the exercise, breathe ten times and huff.
- The third and final round when you breathe through the device you do not end with a huff.

Sleeping at night

Vivid dreams or nightmares are common after heart surgery. If this occurs, please let the staff know. It is not unusual to have difficulties sleeping after surgery. This may be due to pain, discomfort or sleeping in a different environment than you are used to. The first nights we check your blood pressure, oxygen levels and heart rate regularly which may disturb your sleep. If you have had or think you will have difficulties sleeping, let us know and we can give you sleeping medication or earplugs if you need them. It is important to try and maintain a normal sleep routine. Being active during the day, will help you to sleep better at night.



When do you get discharged?

A normal stay at the ward is 4–5 days after surgery. If you live in Umeå you will be discharged to your home.

If you are from another hospital, we will transfer you there on day four. There you will stay for a couple of days before you are discharged and can return home.

Sometimes patients need a longer hospital stay to recover. If you're in need of home care or other services, we or your local hospital will make the arrangements.



When you get home

The aim with your heart surgery is to relieve and cure your symptoms. This means that you should return to an active, and as normal life as possible after the heart surgery. Below are some things that are good to have in mind.

Common and transient symptoms after heart surgery

Recovery depends on what type of surgery you've undergone; in what condition you were in before the surgery and how well you can activate yourself after surgery. It is individual how you will be affected. These reactions are a natural part of recovery and they will decrease when your fitness improves. Some of the symptoms you can experience are listed below.

Energy/sleep

It is common to have less energy after the surgery, but it will gradually improve. Sometimes, but not always, it can take several weeks before you have the same energy levels as before the surgery. At times you might need to rest or take a nap in the middle of the day. Vivid dreams and nightmares may still be apparent, but almost always disappear over time.

Common psychological reactions

Heart surgery can affect your mood, which can be a difficult experience for you and your relatives. Rapid mood changes are common, depression can occur. Most often the reactions are transient but if the symptoms are severe or remain, you can seek help from a counselor at your health care centre.

Appetite

Poor appetite is common and normalizes after some time. You can freeze in meals before surgery to more easily prepare when you come home. If it is difficult for you to eat or drink or if your appetite doesn't improve after a week at home, you must contact a dietician at your health care centre.

Pain

Discomfort and pain from the surgical site can occur. Tensions in the muscles and back-, shoulder- and arm pain are common. To reduce the tension, follow the exercise program you received from the physiotherapists.

Swollen legs

Light swelling in the leg or legs is common and can remain up to three months. Put your leg/legs in high position to reduce the swelling or use support stockings. If you have had surgery on your coronary arteries (CABG), you have received a support stocking. You should use it daily the first month after the surgery.

At your follow up at the physiotherapist or nurse, they will examine the swelling, and can arrange for you to have

a shorter support stocking at knee-length if needed. You can also purchase a support stocking in knee-length at the pharmacy. The staff at the pharmacy can help you to pick out the right size and type of stocking for you.

Surgical wounds and wound dressing

Itching, tingling and numbness might occur in the wounds since small nerves have been cut during surgery. If you still have a bandage over the surgical wound when you leave the hospital, remember to remove it before showering. At home, you do not need a bandage over the surgical incision. Removal of bandage and showering should be done within the next three days after returning home. The sutures are absorbable and do not need to be removed.

To avoid getting discolored scars you should protect them from sunlight the first year or until the scars have turned pale. Use wound tape or sun block when needed.

Signs of infection

Do not hesitate to contact your health care centre or the hospital if you get any of the symptoms listed below! It is of utmost importance that you quickly get help from a specialist if an infection should occur in your sternum.

If you get any of these symptoms, please contact the hospital or your health care centre:

- Sudden increased pain in the wounds or chest.
- If the wound area become red or the wound starts to exudate.
- You experience unusual sounds or instability from the sternum.
- You get a fever without having a cold.
- Your hands or feet swell.
- You get breathing difficulties.
- You get angina.

Be careful with your sternum

The sternum takes **up to three months** to heal. Don't do any one-sided movement and avoid vacuuming since there is a risk that the sternum can be subject to uneven torsion.

A good recommendation is to use both hands when you lift something heavy (with heavy we mean above 5 kilograms) and try to work as close to the body as possible. This means you should not shovel snow, chop wood, walk with hiking staffs or carry heavy objects.

Another good recommendation is to work a bit slower than usual.

After three months your sternum is completely healed, and you can perform labor-intensive tasks. Just remember to rebuild your muscles in your arms, shoulders and chest before you strain yourself as you may have done before the surgery.

Post-thorax vest

In some cases, the thoracic surgeon may prescribe that you need to wear a post-thorax vest after surgery. If it is assessed that you need a post-thorax vest, you will be informed about it at the hospital.

Breathing exercises

Continue to breathe in your PEP-device during the first time period at home. It is important to do if you have difficulty mobilizing in other ways and/or have an underlying lung condition.

Physical activity and exercise

It is important that you're active. We recommend you take walks, which you can begin with the day after coming home. Begin with a short distance on level ground and then gradually increase the distance as your energy returns. The normal recovery takes between three months and one year but can vary depending on individual circumstances. It's normal to have good and bad days. Adjust the intensity of the exercise according to your daily stamina and exercise in your own pace. Eventually you will be able to return to your normal regular activities including more intense exercise

Walking aids

Exercise and activity are important after surgery. If you need walking aid's use a walker instead of crutches or a cane that can cause oblique strain on the sternum.

Activity programs

Keep on doing the activity program for at least 1 1/2 months after the surgery. The exercises are designed to reduce stiffness in the chest, neck and shoulders.

Exercise groups

You will be called to see the physiotherapist and will be offered supervised training at your health care centre or at your local hospital. At your local hospital (and in some health care centres) there may be exercise groups with versatile training for people that have undergone heart surgery. These exercise groups are led by physiotherapists. You will receive more information about the groups when you visit your physiotherapist.

Shower, bath and sauna

It is allowed to shower as usual. Avoid swimming pools and bathtubs for the first two weeks until the surgical wound has healed. You can use the sauna 4–6 weeks after the procedure, we recommend starting with mild heat and spending only short moments in the sauna.

Driving

You should not drive any vehicles during the first four weeks after your surgery. Your concentration, movement and reaction time can be impaired during this time. Note that you can use a seat belt as usual.

Sex

Sexual activities can be resumed as soon as you feel you have the strength and desire.

Sick leave

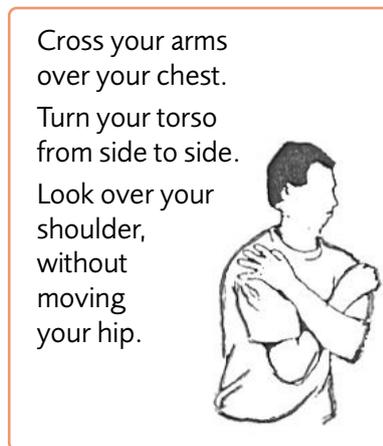
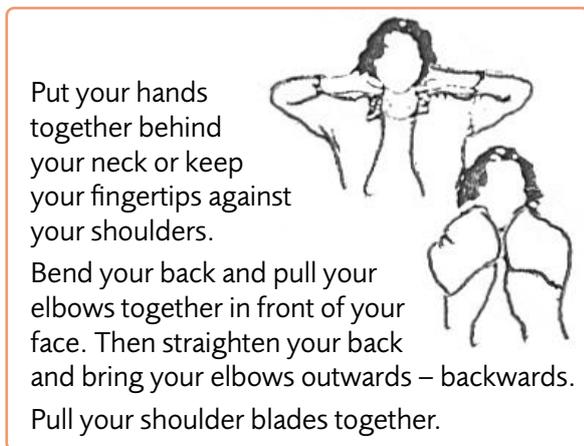
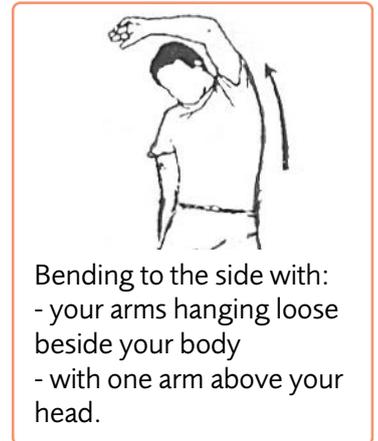
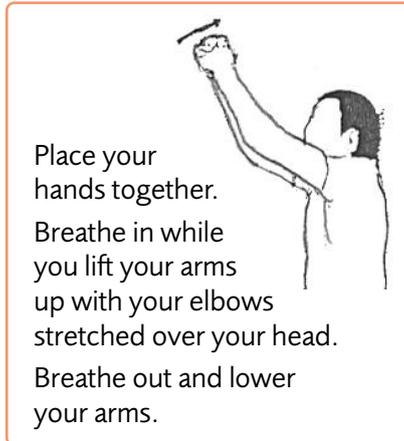
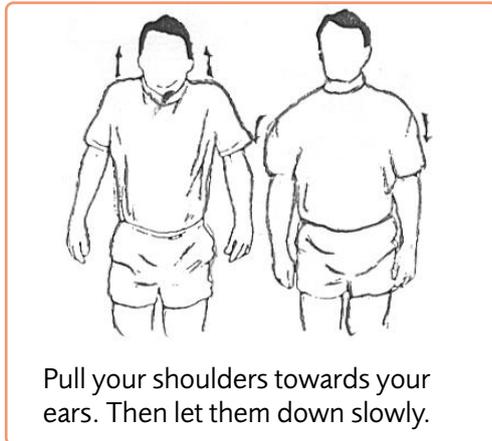
Two months of sick leave after the surgery is a normal time period. It depends on the requirements of your profession which profession you have and how well you have recovered after the surgery.

Protect your health and prevent relapse

- Quit smoking and using snuff (snus).
- Drink alcohol in moderation.
- Exercise regularly.
- Feel free to eat fish often. Eat fruits, vegetables and root crops daily and choose foods rich in fiber.
- Choose soft fats, for example rapeseed oil and olive oil, or margarine.
- Reduce sugar and salt in your diet.
- Strive to live harmoniously with appropriate levels of stress and recovery.

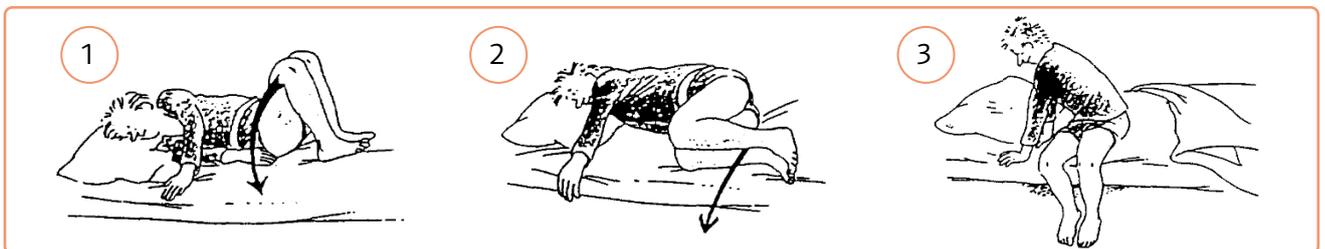
Activity program after thoracic surgery

Sit on a chair without armrests or stand on the floor. Repeat every exercise 3–5 times, at least twice a day. Continue with the program for at least one and a half months after surgery, to avoid stiffness in your joints.



How to get up from bed after surgery

The first days after surgery it might feel a bit difficult to get up from bed. Usually, it feels better to use the following technique. You can practice this technique before you undergo surgery, so you know how to use it afterwards.



Notes

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