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INTRODUCTION

You have recently learned that you need to have an operation and you’re probably feeling anxious about what is going to happen to you. If you’ve never had an operation (and even if you have), it’s an experience which might raise several questions in your mind. Your doctor will give you as much information as possible to help you understand why surgery is the best option for you.

Please feel free to ask any questions and discuss concerns with your health care team. Your family members are also welcome to speak with your health care team.

In order for you to recover quickly and return home as soon as possible, it is important that you are an active participant in your post-operative care. This booklet will explain what to expect before your surgery and during your stay at the hospital (who works with you, and how you can speed your recovery). This booklet is only a guide.

REMEMBER TO BRING THIS BOOKLET WITH YOU TO THE HOSPITAL.
Figure 1 is a picture of normal lungs. You have two lungs, which take up most of the space in your rib cage. The lungs are divided into sections called lobes. The right lung has three lobes and the left lung has two lobes. Air flows in and out through small tubes called bronchioles.

**COMMON REASONS FOR LUNG SURGERY**

**A Lung Mass:** If a mass has been found, a biopsy can help determine whether the growth is benign (not cancerous) or malignant (cancerous).

**A Collapsed Lung:** If a portion of the lung has ruptured, air may leak into the pleural space. This may cause the lung to collapse. This is known as a pneumothorax. During surgery, tubes can drain the air from the pleural space so the lung can re-expand and the wall can be repaired.
**Fluid Around the Lungs:** Fluid may collect around the lungs. A common cause of this is a lung infection. During surgery, tubes can be placed to drain fluid and help the lungs heal.

**Imaging Tests (X-Rays)**
The following tests are used to take pictures of your lungs. They can tell the doctors if there are problems such as a mass, an infection, or air in the pleural space. However, they can’t tell the doctor if a mass is benign or malignant (cancerous).

- Chest x-rays
- CT (computed tomography)
- MRI (magnetic resonance imaging)

Occasionally your doctor will send you for a test called a bone scan. A bone scan takes pictures of your body and lets the doctor know if there are any problems with the bones.

**Visualization and Biopsy Tests**
The following tests allow the doctors to look at your lungs directly.

**Bronchoscopy:** a lighted tube is inserted through your nose or mouth to examine the large airways at the entrance to your lungs.

**Mediastinoscopy:** a tube is inserted through an opening above the breastbone to look at the area between the lungs. The lymph nodes are biopsied at this time.

**Needle Biopsy:** a needle is inserted through the bronchoscope or chest wall to collect tissue or fluid.
PULMONARY FUNCTION TESTS
These tests measure how well your lungs are working.

Spirometry: measures how much air you can hold in your lungs.

Lung Volume Tests: measures how much air is left in your lungs after you exhale.

Lung Diffusion Tests and Pulse Oximetry: measures how much oxygen is passed from your lungs to your blood.

TREATMENT OPTIONS FOR LUNG CANCER
Your treatment will depend upon how large the cancer is and if it has spread. Your doctor will talk with you about your options. Three methods are available to treat lung cancer. One method or a combination of methods may be used.

Surgery: attempts to eliminate the cancer by removing part or all of a lung.

Radiation Therapy: uses high-energy rays to destroy cancer cells.

Chemotherapy: uses a combination of drugs to destroy cancer cells.

WHAT IS THORACIC/CHEST SURGERY?
A Thoracotomy is a type of surgery that involves making an opening in the chest. You will be asleep during the surgery. If a mass is found your surgeon may be doing one or more of the following procedures:
**Pneumonectomy:** removal of the whole left or right lung.

![Diagram of entire lung removed]

**Lobectomy:** removal of a lobe of a lung.

![Diagram of portion of lung removed]
**Wedge Resection:** Removal of a pie-section of a lobe.

**Segmentectomy:** each lobe is divided into segments. Single segments can be removed.

**Open Lung Biopsy:** removal of a sample of lung tissue to help with diagnosis.

Possible incision site and chest tube location for Thoracotomy.
The risks associated with Thoracotomy include the following:

- Risks of a general anesthesia
- Wound infection
- Bleeding
- Infection of the lungs (pneumonia)
- Air leak through the lung wall, requiring a longer hospital stay
- Worsening of any existing heart problems
- Blood clot
- Pain or numbness at the incision site

Occasionally, the surgeons will use a Thoracoscopy approach instead of a Thoracotomy. This approach uses small incision in the chest wall and a thoracoscope is used to do the operation.

Thoracoscopy is often used to repair a collapsed lung, to examine, biopsy, and stage a mass in the lung, or to drain fluid from around the lungs.

The risks of Thoracoscopy include the following:

- Risks of general anaesthesia
- Wound infection
- Bleeding
- Air leak through the lung wall, requiring a longer hospital stay
- Pain or numbness at the incision site
- Infection of the lungs (pneumonia)
Possible incision site and chest tube location for Thorascoscopy.

Before we go any further, let’s talk about some things you can do before your operation that will make your recovery smoother.

WHAT SHOULD I DO TO GET READY FOR MY OPERATION?

- Ask your health care team any questions and discuss any concerns that you may have
- Pack your personal belongings (you will really need items such as a robe, slippers and personal supplies like glasses, a comb, toothbrush)
- Leave your valuables at home (jewellery, large amounts of cash, expensive clothing, etc.)
- Practice your exercises at home - this will make them easier to do after surgery.

Please take a minute to consider what will happen after surgery:

- Will you be able to do your own grocery shopping, house cleaning, etc?
- Will you be able to prepare your own meals?
- Will you need assistance with bathing?
• Are you providing care for someone else?
• Do you have pet care needs?

Family members or friends are usually good resources for these types of needs. However, there are some community resources that are available to you. These are provided at a cost to you. A partial list can be found at the back of this booklet.

If, however, you need assistance with personal care, (i.e. bathing, getting dressed, etc.) the Community Care Access Centre (CCAC) can be of assistance to you. CCAC services are available, free of charge, to those clients who qualify for the program.

If you have concerns, please contact the hospital social worker prior to your discharge from hospital.

BEFORE YOUR SURGERY YOU NEED TO:

• Fill out the forms you get from the doctor.
• Have your tests and blood work done.
• Visit the Pre-Admission Centre at the hospital for assessment and blood work. You will also receive instructions regarding what medications to take on the day of surgery.
• Do not eat or drink anything after midnight before your surgery. You may have a small amount of water (5oz.) up to four hours before the time of your surgery.
• Do not take your usual medications unless otherwise instructed by your surgeon or anaesthetist.

THE DAY OF YOUR SURGERY: IN THE ASSESSMENT CENTRE

• You will be asked to arrive two hours prior to your surgery.
• Upon arrival, you will need to register for your surgery in the Pre-Admission Clinic, located on the 2nd floor, Barnicke Wing.
• The registered nurse will prepare you for your surgery.
• You will be given a hospital gown to change into – you must remove all other clothing.
• If you have dentures, you will be asked to remove them and place them in a labeled cup.
• An intravenous fluid line may be started so that medications can be given to you.
• Please let your family take care of your personal items such as canes, glasses, and dentures so that they don’t get lost.
• You will walk into the operating room when it is time for your surgery.

**AFTER SURGERY - IN THE RECOVERY ROOM**

You will wake up after surgery in the Recovery Room, where a nurse will check on you regularly. You will be sleepy and may feel sick to your stomach. You will have some pain but will receive medication for it.

Your family will be close by in the family waiting room on the 2nd floor, Barnicke Wing, where they can speak to the surgeon after your operation. There is also a volunteer in the waiting room that can check on your status for your family.
WHEN YOU ARE TRANSFERRED TO THE SURGERY FLOOR

• Your nurse will frequently check your heart rate, breathing and blood pressure.
• You will have an intravenous (IV) line in your arm. This line is used to give you fluids, medications (that may include antibiotics to prevent infection) and your pain medication.
• You will have one or two tubes in your chest. They are there to remove any drainage, so that your lungs can re-expand. They are attached to a collection device and connected to a suction pump. When the tubes stop draining and provided your lungs have re-expanded, the doctor will remove them. You will have a chest x-ray each day while they are in and once after they are removed.
• You may have an epidural catheter in your back or a Patient Controlled Analgesia (PCA) pump connected to your IV to help control your pain.
• You will have oxygen either by nasal prongs or by face-mask.
• You will have a tube in your bladder which will be connected to a drainage bag. It will drain your urine for a few days after your operation.
• Work hard on your coughing, breathing exercises, foot and ankle exercises and incentive spirometer exercises every hour.
• Tell your nurse if you have pain, itching, numbness or nausea.
• Plan on sitting up in a chair for one hour on the first day after your operation.
• Plan on walking with assistance on your second day.
• You will have blood tests and chest x-rays done regularly.
• Members of your health care team include physicians, nurses, physiotherapists, dieticians, occupational therapists, social workers and chaplains. All will be available to you if needed.
GUIDE FOR PAIN MANAGEMENT

Good pain control is very important after chest surgery. Good pain control allows you to walk more, use the incentive spirometer, do your exercises and return home as quickly as possible. Your nurse will ask you to rate your pain on a number scale from 0 to 10, to see how well your pain medicine is working.

0 means no pain ———— 10 means unbearable pain

Do not wait for your nurse to ask you if you are in pain. You should tell your nurse as soon as you begin having pain. If you cannot take a deep breath or turn over without pain it is time to ask for pain medication. Do not wait until it is unbearable.

EPIDURAL CATHETERS

You may have an epidural catheter placed in your back. Pain medication flows through the catheter or tube, to the area of pain. Let your nurse know if you have a headache, sudden sharp back pain or if you have numbness or tingling in your arms or legs. The epidural catheter is removed in two to three days.

PATIENT CONTROLLED ANALGESIA (PCA)

PCA allows you to give yourself pain medicine. When you feel pain you push the button and the machine gives you pain medication through your IV line. The PCA machine has preset limits so you cannot get too much pain medication no matter how many times the button is pushed. Your family should not push the button for you. Let your nurse know if you still have pain even after pushing the button a couple of times.
Pain pills help control the pain when taken on a regular basis. Pain pills work best when taken before the pain is severe.

The following activities may also help to ease your pain:

- Practicing slow, deep breathing.
- Holding a pillow against your incision.
- Changing body position often.
- Listening to your favorite music.
- Watching a movie or TV show.

If you are getting up for a walk or for a wash you should ask your nurse for pain medication. You should also ask for medication before you go home, to make the ride more comfortable.

**TUBES/DRESSINGS:**

You will have a daily chest x-ray while your chest tubes are in. Your nurse will frequently check the tubes attached to you and your doctor will decide when the tubes should be removed. Your staples will be removed before you go home and small tapes will be placed over your incision. Leave the tapes on until they peel off on their own.

**DIET:**

Soon after your surgery, you will begin drinking sips of water. Your diet will be increased as tolerated.
**ACTIVITIES AND LUNG EXERCISES**

*Practice the deep breathing and coughing exercises before your surgery to you get used to them. You’ll be performing them frequently after the operation to help clear your lungs.*

Most people get up in a chair within 12 to 24 hours after surgery. You will progress from this to short walks. Getting up and moving is important to:
- Prevent breathing problems
- Prevent blood clots
- Prevent constipation
- Keep your muscles strong

You will be encouraged to do a number of exercises every hour, which are described in the following pages. These simple exercises will help keep your lungs working to their full capacity. Your nurse and physiotherapist will encourage you to do these exercises regularly in order to keep your lungs fully inflated and to help clear out any mucus in your lungs. Your lungs occupy almost all the space within your ribs. The movement of your ribs allows the air to move in and out of your lungs. As you breathe in slowly through your nose, air moves to all areas of your lungs and your ribs move outward. As you breathe out slowly through pursed lips, air moves out through your mouth and nose and your ribs move inward.
Initially after receiving an anaesthetic, you will be very sleepy. Your breathing may be shallow when you are lying in bed. Because of this, the lower parts of your lungs do not fill with enough air. Mucus will be more likely to collect in these areas of your lungs.

Breathing exercises are very important, as they help prevent the collection of mucus in your lungs. You need to perform the following breathing exercises every hour while you are awake.

**Deep Breathing: Exercise #1**

- Assume a comfortable position.
- Relax your shoulders.
- Place your hands on your upper abdomen at the fleshy area just below the breast bone.
- Breathe in slowly through the nose and breathe out slowly through pursed lips, as you would if you were blowing out candles on a cake.

You should feel your stomach rise up against your hands as you breathe in and fall to the resting position as you breathe out.

*Deep Breathing Exercise 1: Assume a comfortable position and breathe in and out slowly, keeping your hands on your stomach.*
DEEP BREATHING: EXERCISE #2

• Do as you did for exercise #1 (assume a comfortable position and relax your shoulders) but instead of placing your hands on your upper abdomen.
• Place your hands on the lower border of your rib cage.

You should feel your ribs move out against your hands as you breathe in and feel your rib cage get smaller as you breathe out. Another way to clear excess mucus, which may collect in your lungs, is to cough strongly. When you have an incision, coughing can be uncomfortable.

Your nurse or physiotherapist will show you how to support your incision with a little pressure from your hands or a pillow.
COUGHING EXERCISE:

- Sit or lie with your knees bent.
- Support your incision area with your hand or a pillow.
- Have tissues handy.
- Take a deep breath in and **COUGH** as strongly and as loudly as you can. Just clearing your throat is not enough.


**INCENTIVE SPIROMETRY**

Depending on your surgery and previous medical conditions, you may be given an incentive spirometer to be used in addition to the above exercises. A deep breath, held for a couple of seconds, is needed to open the little air sacs in your lungs.

- Hold the spirometer in an upright position, exhale normally and place your lips tightly around the mouthpiece.
- Inhale at a sufficient rate to raise only the ball in the first chamber, while the ball in the second chamber remains at rest.
- It is important to try and hold the ball up for three seconds.
- If you are able to hold the ball up for three seconds, try raising the first two balls, while the ball in the third chamber remains at rest.
- Exhale normally after each attempt.
- Following each prolonged deep breath, take a moment to rest and breathe normally.

*Spirometer Exercise 1: Take a deep breath and blow into the tube.

*Spirometer Exercise 2: Try to get each ball up by breathing into the tube and holding for three seconds. Make sure to rest and breathe normally after each attempt.*
CIRCULATION, MUSCLE AND JOINT EXERCISES:

During and after the surgery, lack of movement makes your circulation slow down. You will be asked to do a few simple exercises in bed to prevent blood pooling in your legs, prevent your joints from getting stiff and your muscles from getting weak. You should perform these exercises ten times every hour after your surgery. **Begin practicing the exercises now so that you will be prepared and know how to do them after your surgery.**

EXERCISE #1

- Lie in bed with your knees straight.
- Point your toes up toward your head.
- Point your toes towards the end of the bed.

You should feel a pulling then a relaxing of your calf muscles.

*Exercise 1a): Start the exercise with your toes pointed upward.*

*Exercise 1b): Finish with your toes pointed forward.*
EXERCISE #2

• Lay down in bed.
• Clasp both hands together.
• Raise your arms above your head, stretching towards the wall behind you.
• Lower your arms to your sides.
• Take a break and rest.
• Breathe in as you raise your arms and breathe out as you bring them down.

Exercise 2a):
Begin exercise with extending arms over your head.

Exercise 2b):
Finish exercise by bringing your arms back down and lowering them at your sides.
GOING HOME

When your doctor feels that you are well on your way to recovery, he/she will arrange your discharge. If you anticipate any problems with your discharge home, please try and let any member of your health care team know in advance.

At this point, you may have several questions that you would like to have answered. Provided below are answers to frequently asked questions that you can use as general guidelines. Please be sure to discuss any other questions or concerns you may have with your doctor.

CONTROLLING YOUR PAIN AFTER YOU ARE DISCHARGED

It is normal to have pain, numbness or tingling around your incision. This will improve with time. You will have a prescription for pain medicine that you can take up to every four hours (if you need it) when you go home. As your pain lessens, you will only need to take over-the-counter pain medication such as regular strength Tylenol.

PAIN MEDICATION TIPS

• Take pain medication with food to prevent stomach upset.
• Take pain medication in the morning with breakfast if you wake up with pain.
• Take pain medication 30 minutes to one hour before you walk or exercise.
• Take pain medication before your pain is unbearable.
• Take pain medication at bedtime so you get a good night’s rest.
• A warm shower at bedtime can relax stiff muscles and allow better sleep.
• Take pain medication only as ordered. Call your surgeon if you cannot get your pain under control.

**CONSTIPATION:**

Pain medications can be constipating. Getting up, eating a high fibre diet, and drinking extra fluids will help. Tell your nurse if you have problems keeping your regular bowel routine.

**BATHING AND SHOWERING AFTER DISCHARGE:**

There are no restrictions to showering once you return home. After your shower, pat your incision dry with a towel but don’t rub it. You can resume bathing after your incision has healed.

**WHAT SHOULD I EAT AT HOME?**

Unless your doctor tells you otherwise, no special diet is required. Your appetite may be poor at first, but it will improve in time. Eating nutritious, high-calorie, high-protein foods will help your healing. You may find that small frequent meals are more appealing until your appetite returns. A problem you may have is constipation due to side effects of pain medication and inactivity. Eating foods high in fibre and increasing the amount of liquids will help, although you may need a laxative.

**HOW MUCH REST DO I NEED?**

For the first few weeks you may get tired easily. A nap in the morning and afternoon may help. You will feel less need for extra rest as the weeks pass. You must continue your exercises to regain your strength. Remember to take it easy at first - don’t overdo it!
WHAT ABOUT MY INCISION?

Your incision may be sore for as long as eight to 12 weeks, particularly near your shoulder blade and breast. Often the area feels numb for several months, especially on cold or damp days. There may be a bulge along the wound. Like the soreness and numbness, it will decrease in time. Once the stitches are removed in hospital, you can treat the incision area like any other part of your skin.

WHAT ABOUT GOING BACK TO WORK?

Many people can return to work within four to six weeks, depending on their condition and what their job involves. Please discuss this with your surgeon.

WHEN CAN I RESUME MY USUAL ACTIVITIES?

Generally, you should not do anything that makes you short of breath or makes your incision uncomfortable when you first go home. As you continue to recover, you will become more active and will be able to do more things. Some activities are restricted for a few weeks after surgery, including:

• Swimming (wait two to three weeks)
• Driving (wait four to six weeks)
• Travelling (wait four to six weeks)
• Running, jogging and other physical fitness activities (wait four to six weeks)
• Heavy lifting (more than 10lbs. - wait four to six weeks)

There are no restrictions on sexual activity.
WHAT SHOULD I CALL MY DOCTOR ABOUT?

Call your **surgeon** if you notice any of the following:

- Breathing difficulties
- Leg numbness, weakness or tingling
- Difficulty or inability to urinate
- Continuing fever
- Continuing weight loss or poor appetite
- Redness, swelling, or drainage from your incision
- Increased pain around your incision
- Stiffness of your shoulder (on the operated side) that causes you problems

*Call your surgeon if you have any concerns related to your surgery.*

It is recommended that you make an appointment about one month after your discharge from the hospital to see your **family physician**. He or she will want to assess your condition. Your surgeon may give you a letter about your hospitalization and medications for you to give to your family physician.

WHAT ELSE SHOULD I DO BEFORE I LEAVE THE HOSPITAL?

Please check that you have the following:

- All your belongings.
- Prescriptions, for pain medication (if needed) and any long-term medications you may be on.
- Blue hospital card, to be shown whenever you come to the Health Centre.
- Return appointment slip if you are seeing your doctor at the Health Centre.
• Your doctor’s office number, if you will see him/her there, so that you can make an appointment as soon as you get home.

EXERCISES TO DO AT HOME

You should do these exercises twice daily for at least two weeks after you are discharged from the hospital and once daily for another six to eight weeks. Remember to keep your head central and your shoulders level - complete the exercises in front of a mirror to ensure your form is correct. Take it slow and easy at first, sitting if you wish.
EXERCISE #1

• Complete the same deep breathing exercise described on page 19. Assume a comfortable position, relax your shoulders, place your hands on your upper abdomen at the fleshy area just below the breast bone, breathe in slowly through the nose and with your hands on your stomach, breathe out slowly through pursed lips, as you would if you were blowing out candles on a cake. Repeat 10 times.

Exercise 1: Place both your hands on your stomach and breathe in and out slowly.

EXERCISE #2

• Complete the same deep breathing exercise as described above but with your hands on your rib cage. Repeat 10 times.

Exercise 2: Place both your hands on your rib cage and breathe in and out slowly.
EXERCISE #3

• Bend your elbows so that your hands are on the tips of your shoulders. Circle your elbows forward and back. Repeat 10 times for each.

EXERCISE #4

• Lift your arms straight out from your body, keeping your elbows straight, palms facing up. Clap your hands above your head. Repeat 10 times.
**EXERCISE #5**

- Touch hands behind your back with one hand reaching down from your neck and the other reaching up from the lower back. Switch the position of your arms. Repeat five times for each side.

![](image1)

*Exercise 5: While standing, reach both arms behind your back.*

**EXERCISE #6**

- Lift your arms up in front of you with your elbows straight. Repeat 10 times.

![](image2)

*Exercise 6: Begin with your arms in front of you. Link your hands together and lift your arms over your head.*
EXERCISE #7

• Lift your arms out from your sides with your elbows straight. Pull arms back as far as possible. Repeat 10 times.

Exercise 8a): Start with your arms crossed in front of you, at chest level, facing forward.

Exercise 8b): Twist your upper body from side to side and return to the original position.

EXERCISE #8

• Cross your arms in front of your chest. Turn your upper body to the left, then to the right. Repeat six times.
EXERCISE #9

• Stretch your right arm over your head, bending the arm loosely at the elbow and wrist. Lean from the waist over to the left, letting your head follow the body. Count three seconds and relax.
• Come up to the center position for a few seconds. Repeat the procedure with your left arm up, bending to the right.
• Do not lean forwards or backwards at any time during the exercise. Repeat five times on each side.

Now that your operation has been completed, if you are a smoker, the best thing you can do for yourself right now is to STOP SMOKING. It won’t be easy, but now that you have had a few days of rest from smoking your lungs will perform better. Try taking a walk, talking to someone, reading a magazine or practicing your exercises when you crave a cigarette. If you must have one, go to a designated area so your room air stays clear, and remind yourself that every time you don’t smoke, you are helping yourself to an easier and successful recovery. Smoking will only delay your recovery.
AVAILABE SUPPORT GROUPS

INTERLINK: COMMUNITY CANCER NURSES
Phone: 416-599-5465

CANADIAN CANCER SOCIETY
Web site: www.ontario.cancer.ca
E-mail: info@csont.org
Phone: 416-488-5400
Toll Free: 1-800-268-8874

THE CANADIAN LUNG ASSOCIATION
Toronto Area
Phone: 416-922-9440

Peel Area
Phone: 905-602-8388

York Region
Phone: 905-947-8577

LIFELINE (PERSONAL RESPONSE AND SUPPORT SERVICES)
Phone: 416-530-6453

WEST TORONTO SUPPORT SERVICES FOR SENIOR CITIZENS AND THE DISABLED
Phone: 416-653-3535
VISITING HOMEMAKER’S ASSOCIATION
Phone: 416-489-2500

COMMUNITY CARE ACCESS CENTRE (HOME CARE)
Phone: 416-506-9888

STOREFRONT HUMBER
Phone: 416-259-4207

SENIOR FOR SENIORS
Phone: 416-481-2733

C.A.N.E.S. (CENTRAL AND NORTHERN ETOBICOKE HOME SUPPORT SERVICES)
Phone: 416-743-3892

SECOND MILE (SENIORS IN ACTION)
Head Office Phone: 416-597-0841
QUESTIONS TO ASK YOUR HEALTH CARE TEAM

Use the next few pages to write down any questions you may want to ask any member of your health care team.

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