Your Esophageal Cancer Surgery
You are having surgery to remove the tumor that is located either in your esophagus or where the esophagus and stomach meet (known as the GE junction). This surgery is called an esophagectomy.

There are several different surgeries that can be used to remove the esophagus. The right surgery for you depends on the location and size of your tumor and your overall health. Your surgeon will explain which surgery is right for you.

During the surgery, the surgeon will insert the medical instruments and camera through incision sites (known as ports). The number and sizes of incisions you will have depends on the type of surgery.

- **Robotic-assisted surgery**: you will have several small incisions in your abdomen and a slightly longer one in your neck.
- **Thoracoscopic-laparoscopic surgery**: you will have small incisions in your abdomen, the right side of your chest, and a slightly longer one in your neck.

The surgeon will remove most of the esophagus and surrounding lymph nodes. The surgeon will form a tube out of the stomach, move it, and connect it to the remaining esophagus.

This booklet explains what will happen during the surgery and what to expect during your hospital stay.
Location of Your Esophagus and Stomach

The esophagus is a tube of several muscle layers about 10 inches long. It passes food from your mouth to your stomach, where the food begins to digest.

The esophagus is located behind the breathing tube (trachea). The top part of the esophagus is located in your neck and the lower part in your abdomen, where it connects to the stomach. Most of your esophagus is located in your chest.

The esophagus is a tube, made of several muscle layers, that passes food from your mouth to your stomach, where digestion begins.
Location and Stage of Your Tumor

The results of your radiology tests and procedures will help your health care team determine the stage of your cancer. The final stage will be determined after surgery. The stage of your tumor is based on the TNM staging system:

- **T**: the size and depth of your tumor
- **N**: if the tumor affects nearby lymph nodes
- **M**: if the cancer has spread to other organs or distant lymph nodes.

The diaphragm separates the chest area from the abdomen area.
Robotic-assisted Laparoscopic Esophagectomy

Your surgeon will perform your surgery using the da Vinci® Surgical System. The drawing below shows how the surgery room will be set up for your surgery.
1. Laparoscopic Incision Sites

Before surgery you will receive anesthesia to make you fall asleep. You will lie on your back on a surgery table.

The surgeon will make 5 incisions in your abdomen, about the size of a dime. These incisions are called laparoscopic ports. The surgeon will use the video camera, robotic instruments and other medical instruments through the ports.

The exact locations of the ports in your abdomen can change. Yours may not be in the spots pictured.
2. Moving the Esophagus

Using the robotic instruments, the surgeon will loosen (or free up) the esophagus by going through the natural opening in the diaphragm (hiatus).

The robotic instruments and camera allow the surgeons to perform surgery in your chest through ports in your abdomen. This means you will not have chest incisions.
3. Creating the Gastric Tube

After the esophagus and lymph nodes have been freed up, the surgeon will start to divide the stomach. The section of stomach being divided to connect with the remaining esophagus is called the gastric tube.

The blood supply to the gastric tube is preserved.
4. Completing the Gastric Tube

The surgeon will finish dividing the stomach.

The upper part of the stomach will be removed with the esophagus.
5. Preparing for the Gastric Pull-up

The surgeon will attach a temporary Penrose drain from the esophagus to the gastric tube to help pull the gastric tube up to the neck.

The gastric tube will be in the space where the esophagus had been.
6. Removing the Esophagus and Completing the Gastric Pull-up

The surgeon will make an incision on the left side of your neck. Through this incision, the surgeon will remove the resected esophagus and upper stomach. The gastric tube will be connected to the upper portion of the esophagus.

A special stapling device is used to connect the gastric tube to the upper part of the esophagus.
7. The Esophago-gastric Connection

The stomach is attached to the esophagus. (The connection is known as the anastamosis.) The surgeon will insert a thin, flexible feeding tube into the upper part of the small intestine. This is called a jejunostomy tube and will be used to provide nutrition during your recovery. This completes the surgery.

The feeding tube will be placed into the jejunum (the upper part of the small intestine). See page 6 for the drawing.
Minimally Invasive Thoracoscopic Laparoscopic Esophagectomy

Sometimes it is necessary for the surgeon to go through the chest to free up the esophagus. You may need this type of surgery if:

- the location of your tumor is higher up in the esophagus
- you have certain medical conditions that would make this type of surgery better for you
- you have already had surgery in the chest or abdomen area.

Your surgeon will explain the reasons why this surgery is better for you.
1. Thoracoscopic Incision Sites

Before surgery, you will receive medicine (anesthesia) to make you fall asleep. You will be placed on your left side.

The thoracic (chest) surgeon will lead this portion of surgery. Your right lung will be deflated for a short time so the surgeon can have better access to your esophagus.

The surgeon will make four incisions, each about one-half inch, on the right side of your chest. These incisions, or ports, are used for the video camera and instruments used during your surgery.

The ports are placed between your ribs in your right side. Your ports may be placed in slightly different locations.
2. Moving the Esophagus

The surgeon will loosen (or free-up) the esophagus. When this part of the surgery is completed, a chest tube will be inserted to re-inflate your right lung. The chest tube will remain in place for several days after surgery to make sure your lung remains inflated and to drain any fluid that might collect.

Freeing up the esophagus is the first part of this surgery. You will then be placed on your back for the next part of the surgery. See pages 10 through 13 for information about the rest of the surgery.
Possible risks and/or complications of surgery can include the following:

- general anesthesia risks
- bleeding that requires a blood transfusion or another surgery
- leak from anastomosis (surgical connection)
- vocal cord injury causing voice changes or problems with swallowing (This is usually temporary.)
- infection at an incision site
- pneumonia
- other respiratory problems that require breathing support
- heart attack, stroke or blood clots
- weakness, loss of muscle strength that requires rehabilitation
- scarring or tightening of the new connection between the stomach and esophagus, known as stricture (Many patients need at least one — possibly several — stretching procedures to keep the connection open.)
- the possibility that the cancer can’t be removed
- other.

You may have others that are not on this list. Please talk with your surgeon about any concerns or questions you have.
Quit Tobacco for Your Surgery

Did You Know?
Tobacco products contain more than 7,000 chemicals. More than 70 are known to cause cancer.

Tobacco and surgery risks
Tobacco products include cigarettes, electronic nicotine delivery systems (ENDS, includes e-cigarettes and JUUL®), smokeless tobacco (dip or chew), cigars, hookahs and pipes.

Using tobacco increases your risk of the following during and after surgery:
- heart problems
- lung problems (complications) such as pneumonia
- infections such as infections of your surgery site (incision)
- blood clots
- slower healing of your surgery site
- higher levels of pain and more problems with pain control.

Tobacco use keeps oxygen from reaching your surgery site and it can increase your recovery time.

Benefits of quitting
- Research shows that quitting 4 weeks before surgery can reduce any problems after surgery up to 30 percent.
- People who quit smoking report having better pain control.
- Your body responds quickly to quitting:
  — 8 hours: the carbon monoxide level in your blood drops to normal. The oxygen level in your blood increases to normal.
  — 48 hours: Nerve endings start to grow again.
  — 2 weeks: Your circulation improves and your lung function increases. (Source: World Health Organization)

When you should quit
Ideally, you should quit as soon as possible. Research shows that:
- the harmful effects from cigarettes begin to go down about 12 hours after your last cigarette smoked
- at least 8 weeks without cigarettes is the best way to reduce problems almost as low as people who do not smoke.

The American College of Surgeons recommends at least 4 weeks without cigarettes.

Important
Secondhand smoke causes as much damage to healing as if you were smoking.
If you live with someone who smokes, ask him or her to smoke outside for at least the time of your recovery.

Did You Know?
Tobacco products contain more than 7,000 chemicals. More than 70 are known to cause cancer.
You should not use tobacco the day of surgery up to 1 week after your surgery. Your doctor may tell you when to quit before your surgery.

If you quit for surgery, you double the chance of staying off cigarettes for good. Many people report they have no cravings while in the hospital.

Not ready to quit? Consider taking a break!

If quitting tobacco makes you feel nervous and seems overwhelming, consider taking a break or a vacation from tobacco use.

- You will get the physical benefits for the period of time that you are not using tobacco.
- You will reduce your risk of problems during surgery and still increase your chances of a smooth recovery after surgery.

If you can, set a goal to stop using tobacco for 1 month after your surgery. This will allow your body to heal the best after your surgery.

Ways to quit or take a break

- abrupt stop (cold turkey)
- nicotine replacement therapy* (gum, lozenge, patch or inhaler)
- medicines (Chantix® and Zyban®)
- behavioral strategies (such as calling a friend or going for a walk)
- aromatherapy (black pepper oil)
- take a break (vacation) from tobacco.

Any step you take without tobacco is going to help you. Small steps are better than nothing!

*Nicotine replacement therapy (NRT) can nearly double your chances of successfully staying off cigarettes. It works best if you use it with the help of a doctor or counselor. Ask your doctor about using NRT around the time of surgery. Go to quitforsurgery.com to learn more.
Resources

Allina Health

- Tobacco Intervention Program at Abbott Northwestern Hospital
  - 612-863-1648
- Tobacco Intervention Program at Mercy Hospital
  - 763-236-8008
- Tobacco Intervention Program at River Falls Area Hospital
  - 715-307-6075
- *United Hospital Lung and Sleep Clinic Tobacco Cessation Program
  - 651-726-6200
- *Penny George™ Institute for Health and Healing (LiveWell Center) tobacco intervention coaching
  - 612-863-5178

Other

- Minnesota Department of Health
  - health.state.mn.us/quit
- Quit Smoking Hotline
  - 1-800-QUIT-NOW (7848-669)
- online tobacco cessation support
  - smokefree.gov
- American Lung Association/Tobacco Quit Line
  - 651-227-8014 or 1-800-586-4872
- Chantix® GetQuit Support plan
  - 1-877-CHANTIX (242-6849) or get-quit.com
- financial aid for Chantix® or Nicotrol® inhaler
  - 1-866-706-2400 or pfizerhelpfulanswers.com
- *Mayo Clinic Nicotine Dependence Center’s Residential Treatment Program
  - 1-800-344-5984 or 1-507-266-1930
- Plant Extracts aromatherapy
  - 1-877-999-4236

*There may be a cost to you. Check with your insurance provider.
Preparing for Your Surgery

You will receive a call from your surgeon’s scheduler with the date and time of your surgery. He or she will give you other pre-surgery instructions.

If you have not received a call within two or three days of your surgery planning appointment, or if you have other questions about your surgery, please call 612-863-7770.

Activity

- During the days before your surgery stay active, walk or continue with your normal exercise routine. This will help your recovery while in the hospital.
- It is usually OK to take a short trip or vacation before surgery but please talk with your surgeon or nurse coordinator before making any travel plans.

Nutrition

Proper nutrition is important to help with recovery from your surgery.

- In the days before surgery try to eat a well-balanced diet, including food from all food groups. If you have lost weight you may want to use nutritional supplements to add extra calories.
- Your nurse can give you specific nutrition information.

Food and Liquid Directions Before Surgery

- Usually the night before your surgery you will not be able to eat or drink anything after midnight. (You will be able to take your medicines with a small amount of water. Follow your surgeon’s instructions.)
- Do not drink alcohol up to 24 hours before your scheduled arrival time.
- Do not smoke, vape, use chewing tobacco or use any other tobacco products up to 24 hours before your scheduled arrival time.
Health Care Directive

If you have a health care directive, please bring a copy with you to the hospital. If you don’t have one or if you have questions about how to get one, ask your nurse. (A copy of the health care directive is included in your patient packet.)

The most important part of a health care directive is naming someone (your health care agent) who can make decisions about your care for you if you are unable to speak for yourself. This person is usually someone you know and trust.

How to Wash Your Skin Before Your Surgery

Washing your skin with Techni-Care® or Hibiclens® before surgery removes most of the bacteria that is normally found on your skin. This helps prevent infections at the incision sites during your recovery.

Use the Techni-Care given to you at your pre-surgery appointment or buy an 8-ounce bottle of Hibiclens at your local drugstore or pharmacy.

You will need to take one shower or bath the night before surgery and one shower or bath the morning of surgery.

■ The night before surgery, shampoo your hair with your own shampoo and take a shower or bath using 4 ounces of the Techni-Care or Hibiclens.
  1. Gently cleanse your entire body for five minutes.
  2. Avoid getting the soap in your eyes.
  3. Rinse well. Pat dry with a clean towel and put on clean underwear and clothing.
  4. Do not apply skin lotions, oils, powders, perfumes or deodorant.

■ The morning of surgery take another shower or bath using 4 ounces of the Techni-Care or Hibiclens. Repeat steps 1 through 4. (You do not have to shampoo.)
What To Expect In The Hospital

Day of Surgery

The surgery takes four to six hours but can vary depending on your situation. Your family will be shown where the surgery waiting areas are located.

After surgery you will be taken to the Post Anesthesia Care Unit (PACU). You will be monitored closely. Later, you will be moved to the Intensive Care Unit (ICU). Most patients spend 1 to 2 nights in the ICU.

The surgeon will speak with members of your family when you are in the PACU. They will be able to visit with you when you are in the ICU.

During your hospital stay, some of the following equipment may be used:

- **Endotracheal tube.** This tube is put into your mouth and down your windpipe. It helps control your breathing during surgery. The tube will be removed as soon as you are able to breathe on your own.

- **Oxygen.** You will be given extra oxygen if needed. Oxygen is given through a small tube in your nose or through a face mask placed over your nose and mouth.

- **Heart monitor.** A heart monitor records your heartbeats. Three to five sticky pads will be placed on your chest. The pads are attached to wires and a monitor that records your heartbeats.

- **Nasogastric tube (NG tube).** This flexible tube is inserted through your nose and passes into your stomach. It will help drain fluid and air from your stomach.

- **Jejunostomy tube (J tube).** This feeding tube is used to give you liquid nutritional support after your surgery. It will be placed during your surgery.

- **Chest tube.** A chest tube may be inserted in your side during surgery. The tube is used to drain fluid, blood and air from your chest. The tube is removed when there is no longer an air leak or drainage.

- **Foley catheter.** This tube is inserted into your bladder to drain urine. The catheter will be removed when you can urinate on your own.

- **Incentive spirometer.** This breathing device helps maintain healthy lungs after surgery. Use it along with deep breathing and coughing exercises.
Patient controlled analgesia (PCA) machine. The PCA machine allows you to give your own pain medicine. It has safety features that reduce the risk of getting too much medicine.

Sequential compression device (SCD). These stockings are used to increase circulation and help prevent blood clots.

Your Recovery

The following is the average recovery time. Your overall health may affect your recovery time.

<table>
<thead>
<tr>
<th>After Surgery Day 1</th>
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<tbody>
<tr>
<td>When your surgeon thinks you are ready, you will be moved to a regular medical surgical unit.</td>
</tr>
<tr>
<td>A hospitalist (a doctor) will join your health care team. He or she will assist in the follow up of any other health issues you may have (such as diabetes or high blood pressure).</td>
</tr>
<tr>
<td>You will receive an intravenous (IV) pain medicine to keep you comfortable.</td>
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<tr>
<td>You will not be able to drink or eat anything. You can use a sponge to keep your mouth moist.</td>
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<tr>
<td>You will have a nasogastric (NG) tube in your nose.</td>
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<tr>
<td>You will have a Foley catheter in your bladder.</td>
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<tr>
<td>You will need to take deep breaths and cough every one to two hours to keep your lungs clear and help oxygen flow. You should have an incentive spirometer at your bedside. You may need extra oxygen during this time.</td>
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<tr>
<td>The nursing staff will help you to dangle your legs at the bedside or get up in chair.</td>
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<tr>
<th>Day 2</th>
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<tbody>
<tr>
<td>Continue with IV pain medicine and breathing exercises. Use the incentive spirometer every one to two hours.</td>
</tr>
<tr>
<td>Continue with nothing to eat or drink. Your tube feedings will be started through the feeding tube placed in your abdomen during surgery.</td>
</tr>
<tr>
<td>Increase your activity. Walk in the hall with help.</td>
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<tr>
<td>Day 3</td>
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<tr>
<td>- Same as day two.</td>
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<tr>
<td>- Continue to increase activity. Walk in halls with help three to four times.</td>
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<th>Day 4</th>
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<tr>
<td>- You will have a swallow study to make sure there is not a leak at the location where the esophagus and stomach are connected. (You will be asked to swallow a small amount of contrast.) This test is done in the Radiology Department. If the radiologist doesn’t see any evidence of a leak you will be able to have the NG tube removed and start on a clear liquid diet.</td>
</tr>
<tr>
<td>- Either today or in the next few days the dietitian will teach you about the recommended diet to follow. The tube feedings will continue until you are able to eat at least half of the recommended amount of food.</td>
</tr>
<tr>
<td>- If you are getting out of bed with little or no help you may have your Foley catheter removed.</td>
</tr>
<tr>
<td>- You may meet with a social worker to begin to talk about your discharge arrangements.</td>
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<tr>
<th>Days 5 to 10</th>
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<tbody>
<tr>
<td>- Depending on how you tolerate food by mouth, your diet will be advanced to a full liquid diet then a soft regular diet. Food is OK to eat if you can cut it with a fork. Right now, avoid hard, chewy breads and food, and crunchy vegetables. If you are unsure about what is OK to eat, ask your nurse.</td>
</tr>
<tr>
<td>- Continue to increase your activity. If you have had problems regaining your strength you may meet with physical therapy staff.</td>
</tr>
<tr>
<td>- The nursing staff will show you and your family how to care for your feeding tube and how to give the tube feedings (if needed).</td>
</tr>
<tr>
<td>- The social worker will meet with you to talk about home care plans.</td>
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<tr>
<td>- Your esophageal nurse coordinator will help in your discharge planning and follow-up appointments with your surgeon.</td>
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</table>

Integrative Medicine therapies are available to you during your hospital stay. These therapies include massage, reflexology (foot massage), healing touch, acupuncture, guided imagery, relaxation techniques and music therapy.

Please talk to your nurse if you are interested in receiving any of these therapies and meeting with the Integrative Medicine staff.
Your Recovery After Your Hospital Stay

Diet and Nutrition

- A dietitian will meet with you and your caregiver to talk about diet recommendations.
- In general:
  - eat several smaller meals a day (6 instead of 3)
  - avoid sugary and sweet foods.
- For the first few weeks after surgery, you should eat only food that is easy to cut with your fork. That means it is tender.
- For four weeks after surgery, avoid hard, chewy breads and crunchy vegetables.

Feeding Tube

- The nurses will teach you and your caregiver how to care for the feeding tube and the skin around it.
- If you will be going home with the tube feedings, a hospital social worker will meet with you and help you make arrangements for delivery of supplies and formula.
- You will receive instructions from home care staff on how to manage your feedings at home.

Reflux

- After surgery, your stomach is located higher in your chest. Because your stomach can’t hold as much food as it did before, you are more likely to have reflux.
- To prevent reflux, try these suggestions:
  - Eat smaller meals more often during the day.
  - Do not eat two to three hours before going to bed.
  - Avoid lying flat. Keep the head of your bed elevated (raised) or use several pillows.
  - Ask your doctor about medicine to prevent reflux.
Activity

- It may take several months before you regain your normal energy level. For your recovery, it is important to get regular exercise.
  - Walk every day at a pace that is comfortable to you.
  - You may climb stairs as tolerated.
  - You can go outdoors.
  - Take rest periods during the day. If you sleep too much during the day it can affect your sleep at night.
- Do not drive until your surgeon says it is OK.
- Do not lift more than 20 pounds for the first 4 weeks after surgery.

Returning to Work

- Talk with your surgeon or nurse about when you can return to work.
  - The time away from work will depend on your situation. In general, you will need at least 4 to 6 weeks to recover from surgery.

Support

- You may feel down or depressed. This is normal. You have been through a lot and have some lifestyle changes to make.
- Sharing meals with friends and family is important. If you are planning to eat out, you may want to plan what you will eat and how much.
- You may wish to share some of your eating changes with your dining partners.
- If you have other concerns, please talk with your surgeon or nurse coordinator. There is help available, such as:
  - Coping With Change Support Group
  - licensed psychologists
  - licensed social workers
  - The Penny George™ Institute for Health and Healing.
Follow-up Appointments

- Your nurse coordinator will help you set up your follow-up visit with the surgeon.
- Your first visit is usually within two weeks after you left the hospital.
- If you have questions about your appointment, call the Virginia Piper Cancer Institute at 612-863-0200, Monday through Friday from 8 a.m. to 4:30 p.m.

When to Call the Surgeon

The surgeon’s office has a surgeon on call at all times. If you have any of the following symptoms during your recovery, call the surgeon’s office at 612-863-7770.

- swelling of your neck or upper chest
- new or worsening shortness of breath
- new or worsening cough
- swelling, warmth, redness or pain at the incision sites
- new or worsening pain
- temperature of 101.5 degrees Fahrenheit
- vomiting
- uncontrolled diarrhea
- unable to eat or drink recommended amounts
- feeding tube problems (not able to get the formula in, tube falls out, or pain or skin irritation around the tube.

Tip

For problems with the pump or supply issues, please call the home care agency that provides your equipment.
Get better communication and faster answers online with your Allina Health account.

Health is a journey that happens beyond the walls of your clinic or hospital and we will be there to help you – whether it’s a question that pops into your head at midnight or recalling the date of your last tetanus shot. When you sign up for an Allina Health account online, you get better communication with your clinic, hospital and provider; faster answers and your (and your loved one’s) health information organized and at your fingertips anytime.

Sign up for your account at allinahealth.org

*Availability varies by location. Ask your clinic or hospital if this service is available.
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Allina Health:

- provides free aids and services to people with disabilities to communicate effectively with us, such as:
  - qualified sign language interpreters, and
  - written information in other formats (large print, audio, accessible electronic formats, other formats)
- provides free language services to people whose primary language is not English, such as:
  - qualified interpreters, and
  - information written in other languages.

If you need these services, ask a member of your care team.

If you believe that Allina Health has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, gender identity or sex, you can file a grievance with:

Allina Health Grievance Coordinator
P.O. Box 43
Minneapolis, MN 55440-0043
Phone: 612-262-0900
Fax: 612-262-4370
GrievanceCoordinator@allina.com

You can file a grievance in person or by mail, fax or email. If you need help filing a grievance, the Allina Health Grievance Coordinator can help you.

You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at https://ocrportal.hhs.gov/ocr/portal/lobby.jsf, or by mail or phone at:

U.S. Department of Health and Human Services
200 Independence Avenue, SW Room 509F, HHH Building
Washington, D.C. 20201
1-800-368-1019, 800-537-7697 (TDD)
