

Better, Faster Recovery After Liver Surgery

with the Enhanced Recovery After Surgery (ERAS) Program



STRONG
MEMORIAL HOSPITAL

What is the Enhanced Recovery After Surgery (ERAS) program?

Enhanced Recovery After Surgery is based on scientific evidence about surgical recovery. Our goal is to work with you to provide an improved surgical experience and to get you back to normal as soon as possible after your surgery.

How do we do this?

By changing the way we manage your care before and after surgery.

And including **you** as a very important part of the team.

This booklet will:

- Help you prepare for your surgery.
- Explain how you play an active part in your recovery.
- Give you daily goals to achieve.

Research shows that you will recover faster if you do the things explained in this booklet. There are instructions about eating and drinking, physical activity, and controlling your pain. These things will help you to feel better faster and go home safer and sooner.

Please bring this booklet with you on the day of surgery. Use it as a guide during your hospital stay. We may refer to it as you recover, and review it with you when you're ready to go home.

Having surgery can be stressful for you and your family. The good news is that you are not alone. We will support you each step of the way, Please ask us if you have questions about your care. We want to be sure to answer all your questions!

Use this space to write down your questions as you go through the booklet.

Your Surgical Care Team

You will see many different people from your team during your hospital stay. We work together to check your condition and plan the best steps towards returning your body to its normal state.

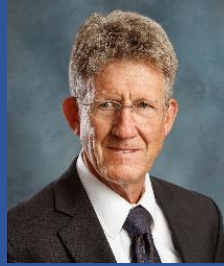
Transplant Team Surgeons and APPs:



Dr. Roberto Hernandez-Alejandro



Dr. Randeep Kashyap



Dr. Mark Orloff



Dr. Amit Nair



Dr. Karen Pineda-Solis



Dr. Koji Tomiyama



Jen Boehly
Nurse Practitioner (NP)



Jackie Cullen
Nurse Practitioner (NP)



Robyn Reis
Nurse Practitioner (NP)



Mike Grizzanti
Nurse Practitioner (NP)



Andriana Kobylanski
Nurse Practitioner (NP)



Allyson Zornow
Nurse Practitioner (NP)



Valarie Schiano
Nurse Practitioner (NP)



Alana Ramos
Nurse Practitioner (NP)

Surgical Oncology Team Surgeons and APPs:



Dr. Eva Galka



Dr. David Linehan



Dr. Luke Schoeniger



Dr. Darren Carpizo



Alexandra Clark
Nurse Practitioner (NP)



Joclyn Gaston
Nurse Practitioner (NP)



Kristina Leahy
Nurse Practitioner (NP)

Contact us

Division of HPB-GI
Surgery @ Sawgrass
160 Sawgrass Dr.,
Suite 120
Rochester, NY 14620

(585) 275-1611

Division of HPB-GI @
Strong- Wilmot
Cancer Institute, Suite
A and B
601 Elmwood Ave.
Rochester, NY 14642

(585) 275-1611

Division of Transplant
Surgery/HPB @ AC2
601 Elmwood Ave.
Rochester, NY 14642

(585) 275-5875




Before surgery

You can prevent many problems during and after your surgery by being as strong and as healthy as possible.

Here is how:

- ✓ Quit smoking.
- ✓ Exercise regularly. Staying physically active can help you recover after your surgery. We suggest you do at least one of the following every day to keep your stamina up:
 - 20 minutes of exercise
 - Walk 1 mile (brisk pace)
 - Take 7,500 steps a day
- ✓ Avoid alcohol. Drinking more than 2 alcoholic beverages a day (or more than 14 drinks a week) is considered high alcohol consumption. Alcohol use can weaken your immune system, weaken your heart, increase your stress response, and slow your healing. You can help decrease the chance of having complications from your surgery by not drinking alcohol for 4 weeks before your surgery. If you drink more than 2 drinks a day (or more than 14 drinks a week), we suggest you slowly reduce how many alcoholic beverages you are drinking and stop completely 4 weeks before your surgery.
- ✓ Eat a variety of healthy foods. Your body burns a lot of energy during and after surgery. Fuel up by increasing your calories from nutrient-packed foods.
- ✓ Discuss your surgery with family and friends. Who will help you when you get home?
 - Think about things like bathing, shopping, making meals, and housework.
 - Do you have pets? Will you need help walking the dog?
 - Think about how you will get home from the hospital and how you will get to your follow-up appointments.
 - You may find it easier to have more than one person help you.
- ✓ Review your pre-admission and medication instructions.

5 days before your surgery

	Stop taking aspirin or medicines that contain aspirin.
	Stop taking any non-steroidal anti-inflammatory agents (NSAIDs) such as ibuprofen (Advil®, Motrin®) or naproxen (Aleve®). Please check with your doctor or verify this with your surgical team, prior to stopping.
	Stop taking blood thinners, vitamins, and herbal supplements of any kind, unless your doctor tells you something different. Start drinking nutritional supplements such as Ensure® (3 cans/bottles each day). Other options include Boost® or Impact® nutritional supplements (3 bottles/cans each day). Liquid nutrition supplements are high in protein, contain vitamins and minerals, and are widely available. You can find these at Walmart, Target, drug stores, and supermarkets. Many stores have their own brands which have the same nutritional values.

Here are some of the nutritional drinks you can find at your local store. All drinks come in a variety of flavors.

Drink	Amount	Protein (grams)	Calories	For diabetic?
BOOST PLUS®	8 oz.	14	360	
Boost Glucose Control®	8 oz.	16	190	Yes
Boost Breeze®	8 oz.	9	250	
Carnation Instant Ready to Drink®	8 oz.	10	240	*
Carnation Instant Breakfast Powder®	1 pkt	5	130	*
Carnation Instant Breakfast Powder Light Start - No Sugar Added®	8 oz.	5	150	Yes
Ensure Plus®	8 oz.	13	350	
Ensure Enlive®	8 oz.	20	350	
Ensure Original®	8 oz.	9	220	
Ensure Clear®	10 oz.	8	180	
Ensure High Protein®	8 oz.	16	160	
Glucerna Shake®	8 oz.	10	180	Yes
Kellogg's Special K Protein Shake®	10 oz.	15	190	
Premier Protein®	11.5 oz.	30	160	
Premier Protein Clear®	16.9 oz.	20	90	Yes

*Available in "No Sugar Added."

3 days before your surgery

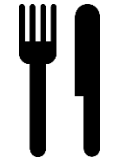


Start taking Colace[®] (docusate) twice each day unless directed differently by your doctor. You can get this medicine off the shelf at your local drug store or supermarket.

1 day before your surgery



Call to Strong Surgical Department at (585) 275-8256 between 2:30 p.m. and 7:00 p.m. to find out the time to arrive at the hospital and the time for your surgery. **If your surgery is on a Monday, please call the Friday before.**



For breakfast and lunch, eat healthy, normal meals.

For dinner, have something soft and easy to digest. Here are a few suggestions: eggs, baked or grilled chicken (skinless), salmon, white rice, toast, bananas, applesauce, yogurt, saltines.



Continue drinking your nutritional supplements.



At 10:00 p.m., if your doctor has told you to, drink 8 oz. of regular Gatorade or clear (no pulp) apple juice. This is called “carbohydrate loading.” It helps to control blood sugar, decrease thirst, and improve healing. If you are diabetic, follow your doctor’s specific drink and medicine guidelines.







Shower with one of the chlorhexidine scrub brushes we gave you.



Do not eat any solid foods after midnight. It’s OK to drink clear liquids.

On the day of your surgery

	<p>If you have sleep apnea and use a CPAP machine at home, bring your CPAP with you.</p>
	<p>You are encouraged to chew gum after your surgery. Please bring gum of your preference that you like to chew (at least 15 pieces).</p>
	<p>Please bring comfortable clothing that you can wear home (eg. loose fitting elastic waist pants and a loose fitting shirt, or a loose fitting dress that is easy to put on and take off).</p>
	<p>Do not eat any solid foods.</p>



Up to 2 hours before surgery, it is okay to drink clear liquids.

Examples include:

- Black coffee (no milk or creamer)
- Clear tea (no milk)
- Fruit juice without pulp
- Sports drinks
- Water

*****If you are the first surgical case of the morning, **STOP** drinking clear liquids by 5am*****

2

2 hours before to your arrival at the hospital, complete your carbohydrate loading by drinking 8 oz. of Gatorade or clear (no pulp) apple juice. Complete carbohydrate loading by 5am if you are the first surgical case.

If you are diabetic, you will get specific drink and medicine instructions from your doctor.



Shower with the second chlorhexidine scrub brush we gave to you.



Take only the medicines we told you to take, at the usual time, before going for the hospital. You may take TYLENOL® (acetaminophen), if needed.

Take medicines with very little water, less than one oz. (that's 2 tablespoons).

After surgery



Be active. This is the most important thing you can do to help with a quick recovery. This will help speed up the return of bowel function, improve circulation, and prevent infection and blood clots. We will help you get out of bed just hours after your surgery. We expect you to walk several times per day, and be out of bed in a chair for all meals.



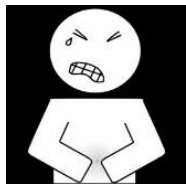
You can drink clear liquids as soon as you are awake, as directed by your team. Drink what you can without getting sick. Let your nurse know if you are feeling sick to your stomach.



We encourage you to chew gum for 20 minutes, 3 times each day. The gum (along with clear liquids) will help your bowels return to normal function faster.



On the day after your surgery, you can start a regular diet. Eat small portions and chew very well. Drink liquids between meals so you will not require IV fluids.



You've had major surgery and can expect some pain. We'll carefully monitor your pain and work with you to control it as best as possible. You may receive a nerve block from anesthesia. As soon as possible, we'll switch you from IV pain medicines to medicines you can take by mouth. Please speak up if your plan needs to be adjusted. If your pain level is too high, that'll slow your progress.



- You will wake up with a tube (catheter) in your bladder from surgery. We will remove this as soon as possible. This could be as early as the morning after surgery. But it depends on the surgery you had.
- You may wake up with a nasogastric tube. This is a temporary, flexible tube that is inserted through your nose and goes down to your stomach. This tube helps to prevent post-operative nausea, vomiting, and distention of your stomach. This tube is usually removed within 12-24 hours after surgery.
- You will wake up with a JP drain on your belly. This helps remove fluids that build up in areas of your body after surgery. It's made up of a thin rubber tube and a soft, round squeeze bulb. We'll probably remove this within a few days after your surgery.



Lovenox[®] is a medicine that helps prevent blood clots. We give this medicine to you as a shot. Your medical team may decide you need this medicine after you go home. If you do, we'll teach you how to give yourself this shot before you go home.



Every day, we will check your vital signs (blood pressure, heart rate, oxygen saturation, temperature, and respirations). For the first day or more, this will be done every 1 to 4 hours. We also will check your blood sugar every few hours. If you need insulin, we will give that to you.



You will have daily goals. These include targets for activity, diet, and any consultations you need with nutrition, home care, social work, and physical therapy.

Going home

How long you stay in the hospital will depend on the type of surgery you have. You can go home when you are medically ready and it's safe for you. This could be anywhere from two to five days after your surgery. We'll talk with you about going home (discharge) every day.

It's not safe for you to go home until:

- You're passing gas or stool (BM, feces, poop).
- Your pain is controlled with pills.
- You're eating without feeling sick.

You may need additional help from family and friends for the first few days. Please make plans for extra help at home.

I want to go home as soon as possible!

We get it. Here's what you can do to help make that happen:

- Do your leg and breathing exercises as directed. Use the examples in this booklet.
- Slowly increase your activity, as tolerated. If it hurts, stop.
- Remember to be up and walking at least four times each day. We encourage you to walk some stairs, too.
- Eat small, frequent meals throughout the day.
- Chew your food well.
- Little by little, start eating a variety of different, healthy foods.
- Remember to drink plenty of fluids.

Before you leave the hospital, your care team will review your discharge instructions with you. We'll cover things like:

- Signs and symptoms of infection and when to call your doctor.
- Home activity and how much weight you can safely lift.
- Showering and wound care, including care of your staples or stitches.
- Medicine changes, including the possible use of Lovenox®.
- Managing pain.
- Follow-up appointments.

Your doctor will let you know when it's safe for you to start driving again

How can I prevent infection?

Surgical site infections occur in the part of your body where surgery took place. These develop in about 1 to 3 out of every 100 patients who have surgery.

Things we do to prevent infections

- We may remove some of your hair immediately before surgery using electric clippers if the hair is in the area where the procedure will occur.
- Give you antibiotics before your surgery starts.
- Clean the skin at the site of your surgery with special soap that kills germs.

Things you can do to prevent infections before and after surgery

- Good hand-washing is the best way to prevent infection.
- Tell your doctor about other medical problems you may have. Problems such as allergies, diabetes, and obesity could affect your surgery and your treatment.
- Quit smoking. Patients who smoke get more infections. Talk to your provider about how you can quit. We can help!
- Do not shave near where you will have surgery. This can irritate your skin and make it easier to get an infection.
- Make sure that your healthcare providers clean their hands before examining you, either with soap and water or an alcohol-based hand rub.



- It's OK to remind us about clean hands or glove use during your hospital stay.
- Family and friends who visit should not touch your surgical wound or bandages.
- Family and friends should wash their hands before and after visiting you.

Signs of infection include:

- You have a fever greater than 101° F.
- Your skin is tender and red around the place(s) where your surgical team made cuts.
- There's thick or bad-smelling drainage.
- You're vomiting for more than 8 hours.
- You're having a lot of pain or it's getting worse.
- You need to change your dressing every hour because blood is soaking through.

How can I prevent blood clots?

When a blood clot forms in a deep vein, usually in the leg, it's called venous thromboembolism or VTE, for short. And it includes pulmonary embolism (PE), when the clot breaks off and travels from the leg up to the lungs. VTE and PE are serious, life-threatening conditions.

Surgery, being less active, being overweight, and smoking increase your chances of developing blood clots. To prevent blood clots:

- Wear IPC (intermittent pneumatic compression) devices or knee-high sleeves on your legs. IPCs inflate and deflate regularly to help circulate blood. The devices use cuffs around the legs that fill with air and squeeze your legs, much like a blood pressure cuff. Then the cuff deflates and relaxes. The process then repeats over and over. This increases blood flow through the veins of your legs and helps prevent blood clots. Wear these unless you are walking.
- Continue to do ankle and foot exercises regularly.
- You might need a daily shot to prevent blood clots. We'll give this to you in the hospital. If you need this medicine after you go home, we will teach you how to give yourself the shot.

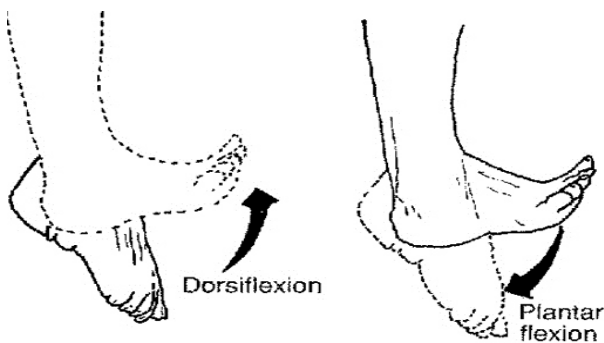
Exercises

One way that you can help prevent blood clots is to keep your calf muscles moving.

- ✓ Sit while doing these exercises.
- ✓ Sit up straight; no slouching!
- ✓ Start by repeating each exercise 2 to 3 times.
- ✓ Work up to doing each exercise 10 times.
- ✓ Try to do the exercises several times each day.
- ✓ Do all exercises slowly.

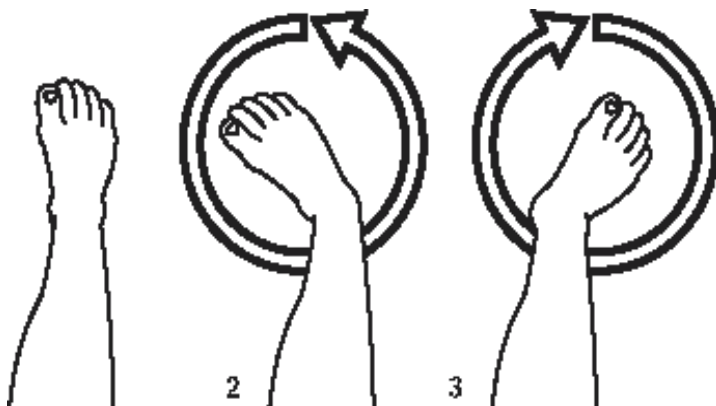
Ankle pumps

Move each foot up and down like you are pressing down and lifting up on a car's gas pedal.



Ankle circles

- ✓ Make circles with your ankles by moving your toes in one direction.
- ✓ Now, make circles in the other direction.



Ankle alphabet

- ✓ Act like you are writing the alphabet with each foot.
- ✓ Do not move all your leg to do this, just move your ankle.
- ✓ Complete the alphabet, taking short rests if you get tired.



How can I prevent lung infections or other complications?

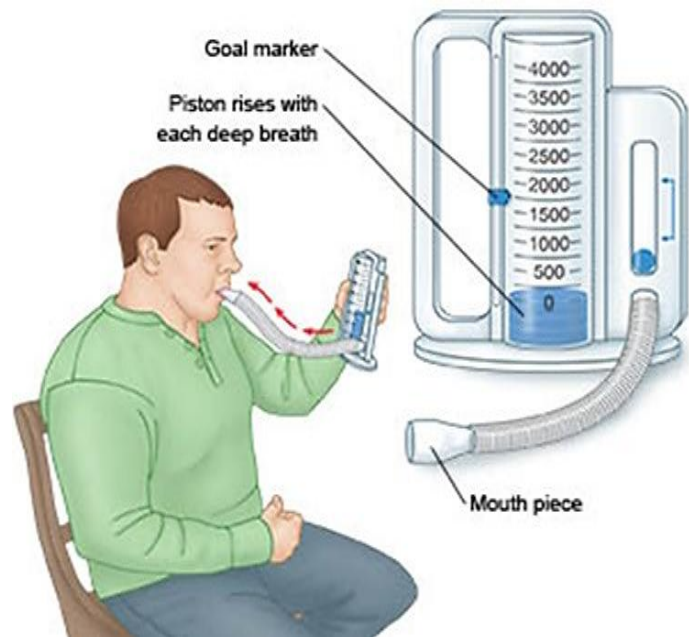
Lung infections can occur when you have lung problems to begin with, have just had surgery, or if you're less active than usual. To prevent this:

- Use your incentive spirometer every hour while you're awake.
- Practice deep breathing and coughing, if possible. While coughing, support your incision for comfort. Place your hands flat on top of each other and apply slight pressure to the surgical site. Or you can firmly hold a pillow across the surgical site to help you breathe deeply and cough. Ask for pain medications if necessary.

How to use an incentive spirometer

An incentive spirometer is a tool that helps you do breathing exercises. It measures how deep you inhale or breathe in. Your surgery team will ask you to do deep breathing exercises every hour to help your lungs.

- ✓ Sit up as straight as you can. You may sit in a chair or in your bed.
- ✓ Hold the spirometer in an upright position.
- ✓ Place the goal marker on the level you need. This is your goal - to make the piston rise to that level.
- ✓ Breathe out normally. Place the mouthpiece into your mouth and tightly seal your lips around it.
- ✓ Breathe in slowly and deeply through your mouth. Breathe in as deeply as you can. This will make the indicator rise. Try to raise the indicator as high as you can to reach your goal. If you are having trouble getting the indicator to rise up, make sure your lips are sealed fully around the mouthpiece. Try thinking about sucking up the last bit of milkshake with a straw when breathing in.
- ✓ When you cannot breathe in any longer, hold your breath for 2 to 5 seconds.
- ✓ Remove the mouthpiece from your mouth. Then, breathe out slowly.
- ✓ Rest and breathe normally. The indicator (piston) will return to the bottom.
- ✓ Repeat as many times as ordered by your doctor.



When you're done, try to cough a few times. This will help remove fluid in your lungs and keep your lungs clear.

The Jackson-Pratt Drain

The Jackson-Pratt (JP) drain is a special tube that prevents body fluid from collecting near the site of your surgery. The drain pulls fluid (by suction) into a bulb. You'll be measuring and emptying the fluid collected in the bulb.

Empty the bulb when it is half full, approximately every 8 to 12 hours.

How to empty the bulb

Before you start, wash your hands well with soap and water.

1. Pull the plug out of the bulb.
2. Do not touch the inside of the stopper or the inner area of the opening in the bulb.
3. Turn the bulb upside down.
4. Gently squeeze the bulb and pour the fluid into the measuring container we gave you.
5. Turn the bulb right side up.
6. Squeeze the bulb flat in a fist, until you feel your fingers in the palm of your hand.
7. Continue to hold the squeeze while re-plugging the stopper.
9. Check to see if the bulb is still flat, to ensure gentle suction.
10. Pin the drain to the inside of your clothing.
11. Write the amount of fluid you collected in the log we gave you.
12. Flush the fluid down the toilet and rinse the measuring container with water.

At first, the fluid is bloody. Then, as your wound heals, the fluid changes to light pink, light yellow, or clear.

Bring your log with you to your follow-up appointment.

Sample JP Drain Log				
Date/Time	8 am	2 pm	9 pm	Total
Jan 2	55 ml	45 ml	40 ml	140 ml
Jan 3				
Jan 4				

Anatomy of the liver

