

Patient Guide to Pediatric Ventriculoperitoneal (VP) Shunt Surgery

About Your Surgery	3
Before Your Surgery.....	7
Information for Family and Friends for the Day of Surgery.....	17
After Your Surgery	19
Medications	25
Common Medications Containing Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs).....	26
Herbal Remedies and Cancer Treatment.....	29
Resources	31
MSK Support Services	32
External Resources.....	34

About Your Surgery

This information will help you prepare for your surgery to have your programmable or nonprogrammable ventriculoperitoneal (VP) shunt placed. For the rest of this resource, our use of the words “you” and “your” refers to you or your child.

A VP shunt is used to drain extra fluid that circulates around the brain and spinal cord. This fluid is called cerebrospinal fluid (CSF). It is found in the ventricles of the brain and the spinal canal. If too much CSF is in the ventricles, it puts pressure on the brain and skull. This is called hydrocephalus (see Figure 1).

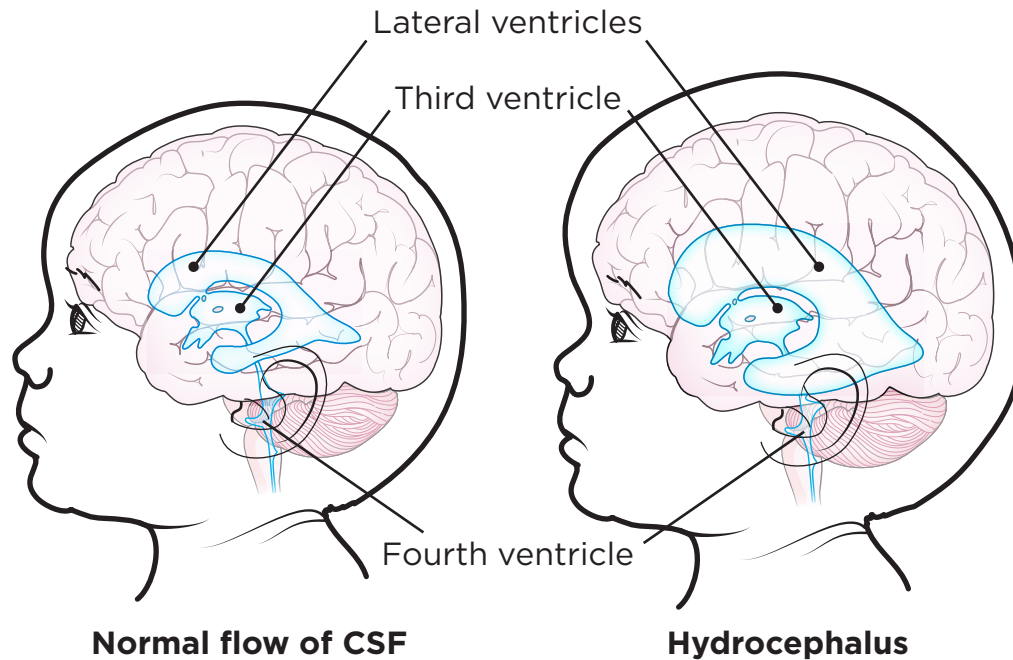


Figure 1: Brain with and without hydrocephalus

Symptoms of Hydrocephalus

The most common symptoms of hydrocephalus include:

- Headache
- Nausea and vomiting
- Fatigue and/or drowsiness
- Irritability
- Personality changes
- Problems with thinking and memory (i.e., confusion)
- Trouble with balance and walking
- Poor coordination
- Loss of control over urination
- Visual disturbances, including blurred vision, diplopia (double vision), or downward deviation of the eyes (also called “sun setting”; this is when the eyes turn downward, with the whites of the eyes showing above)
- Seizures
- Increased head size and bulging soft spot in infants
- High pitched cry in infants
- Poor feeding in infants

To help drain the extra CSF from the brain, a VP shunt is inserted into the head. The shunt takes the fluid out of the brain and moves it into the abdomen, where it is absorbed by the body. This decreases the pressure and swelling in the brain.

VP Shunt

A VP shunt has 3 parts (see Figure 2):

- A one-way valve with reservoir
- A short catheter (thin, flexible tube)
- A long catheter

The valve controls the flow of fluid. It is attached to the short catheter to drain the fluid away from your brain. The short catheter can be placed in the front, back, or side of your head. The long catheter is also attached to the valve. It is then tunneled under your skin, behind your ear, down your neck, and into your abdomen.

As the VP shunt drains excess CSF and decreases the pressure in your brain, it may relieve your symptoms. Some symptoms will disappear immediately after the VP shunt is inserted. Others will go away more slowly, sometimes over a few weeks.

The amount of fluid that is drained by your VP shunt depends on the settings on the shunt. With a **nonprogrammable VP shunt**, the settings are made in advance by your doctor and cannot be changed. With a **programmable VP shunt**, the settings can be changed by your doctor.

Your neurosurgeon will decide which type of VP shunt is best for you.

VP Shunt Surgery

The surgery to place your VP shunt is done in the operating room while you are asleep. Once you are asleep, the hair along your incision line will be shaved. Your entire head will not be shaved.

Small incisions will be made in your head. Sometimes, incisions are also made in the neck and abdomen. These incisions will be used to help guide the catheter so it can be placed correctly.

Your incisions will be closed with stitches or staples. You will not be able to see the catheter because it will be under your skin. However, you may be able to feel the shunt tubing along your neck.

Once all the parts of the shunt are connected, it will start draining the excess CSF as needed to reduce the pressure in your brain.

The surgery will take about 1 hour.

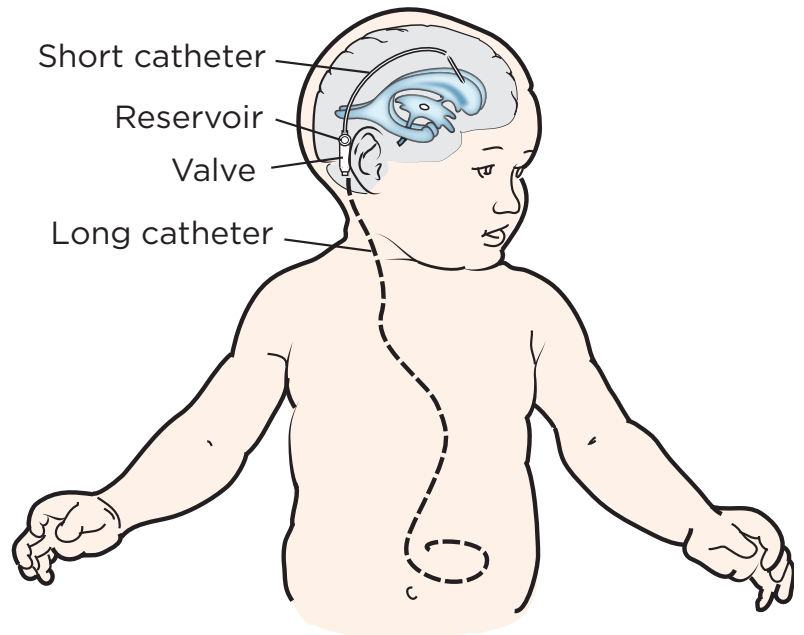


Figure 2: VP shunt

Possible Complications From Surgery

Possible complications from VP shunts and the surgery to place them can include:

- Infection
- Shunt malfunction that results in too much or too little drainage of CSF
- Bleeding

Your neurosurgeon will explain all the possible risks and complications before your surgery.

Notes _____

Notes

The information in this section will help you prepare for your surgery. Read through this section when your surgery is scheduled and refer to it as your surgery date gets closer. It contains important information about what you need to do before your surgery. Write down any questions you have and be sure to ask your doctor or nurse.

Preparing for Your Surgery

You and your healthcare team will work together to prepare for your surgery.

About Drinking Alcohol

The amount of alcohol you drink can affect you during and after your surgery. It is important that you talk with your healthcare providers about your alcohol intake so that we can plan your care.

- Stopping alcohol suddenly can cause seizures, delirium, and death. If we know you are at risk for these complications, we can prescribe medications to help prevent them.
- If you drink alcohol regularly, you may be at risk for other complications during and after your surgery. These include bleeding, infections, heart problems, greater dependence on nursing care, and longer hospital stay.

Here are things you can do to prevent problems before your surgery:

- Be honest with your healthcare provider about how much alcohol you drink.
- Try to stop drinking alcohol once your surgery is planned. If you develop a headache, nausea, increased anxiety, or cannot sleep after you stop drinking, tell your doctor right away. These are early signs of alcohol withdrawal and can be treated.
- Tell your healthcare provider if you cannot stop drinking.
- Ask us any questions you have about drinking and surgery. As always, all of your treatment information will be kept confidential.

Help us keep you safe during your surgery by telling us if any of the following statements apply to you.

- I take a blood thinner. Some examples are aspirin, heparin, warfarin (Coumadin®), clopidogrel (Plavix®), tinzaparin (Innohep®), and enoxaparin (Lovenox®). There are others, so be sure your doctor knows all the medications you're taking.
- I take prescription medications, including patches and creams.
- I take any over-the-counter medications, herbs, vitamins, minerals, or natural or home remedies.
- I have a pacemaker, automatic implantable cardioverter-defibrillator (AICD), or other heart device.
- I have sleep apnea.
- I have had a problem with anesthesia in the past.
- I have allergies, including latex.
- I am not willing to receive a blood transfusion.
- I drink alcohol.
- I smoke.
- I use recreational drugs.

About Smoking

People who smoke can have breathing problems when they have surgery. Stopping even for a few days before surgery can help. If you want to quit, call our Tobacco Treatment Program at (212) 610-0507. You can also ask your nurse about the program.

About Sleep Apnea

Sleep apnea is a common breathing disorder that causes a person to stop breathing for short periods while sleeping. The most common type is obstructive sleep apnea (OSA). This means that the airway becomes completely blocked during sleep, so no air can get through. OSA can cause serious problems when you have surgery. Please tell us if you have sleep apnea or if you think you may have it. If you use a breathing machine (such as a CPAP) for sleep apnea, bring it with you the day of your surgery.

Within **30** Days of Your Surgery

Presurgical Testing

Before your surgery, you will be given an appointment for presurgical testing (PST). Depending on your age, your testing can take place in different locations.

Use this area to write your PST appointment information:

Date: _____ Time: _____

Location:

- Pediatric Day Hospital (PDH)
1275 York Avenue (between East 67th and East 68th Streets)
Take the B elevator to the 9th floor
- Presurgical Testing (PST)
160 East 53rd Street (at Third Avenue)
Take the elevator to 7th floor

During your PST appointment, you will meet with a nurse practitioner who works closely with anesthesiology staff (doctors and specialized nurses who give you medication to sleep during surgery). You can eat and take your usual medications the day of your PST appointment.

During your appointment, your nurse practitioner will review your medical and surgical history with you. You will have tests, including an electrocardiogram (EKG) to check your heart rhythm, a chest x-ray, blood tests, and any other tests necessary to plan your care. Your nurse practitioner may also recommend you see other healthcare providers.

Your nurse practitioner will talk with you about which medications you should take the morning of your surgery. To help you remember, we've left space for you to write these medications down on page 13 of this guide.

It is very helpful if you bring the following with you to your PST appointment:

- A list of all the medications you are taking, including patches and creams
- Results of any tests done outside of MSK, such as a cardiac stress test, echocardiogram (echo), or carotid doppler study
- The name(s) and telephone number(s) of your doctor(s)
- Your insurance card

Please be aware that your presurgical appointment may take several hours.

Parking at the PDH

The PDH is located at the main hospital.

Memorial Hospital
1275 York Avenue (between East 67th and East 68th Streets)
New York, NY 10065
Take the B elevator to the 9th floor

Parking at the main hospital is available in the garage on East 66th Street between York and First Avenues. To reach the garage, enter East 66th Street from York Avenue. The garage is located about a quarter of a block in from York Avenue, on the right-hand (north) side of the street. There is a pedestrian tunnel that goes from the garage into the hospital. If you have questions about prices, call (212) 639-2338.

There are also other garages located on East 69th Street between First and Second Avenues, East 67th Street between York and First Avenues, and East 65th Street between First and Second Avenues.

Parking at PST

PST is located in the Rockefeller Outpatient Pavilion, also known as MSK 53rd Street.

Rockefeller Outpatient Pavilion
160 East 53rd Street (at Third Avenue)
New York, NY 10022

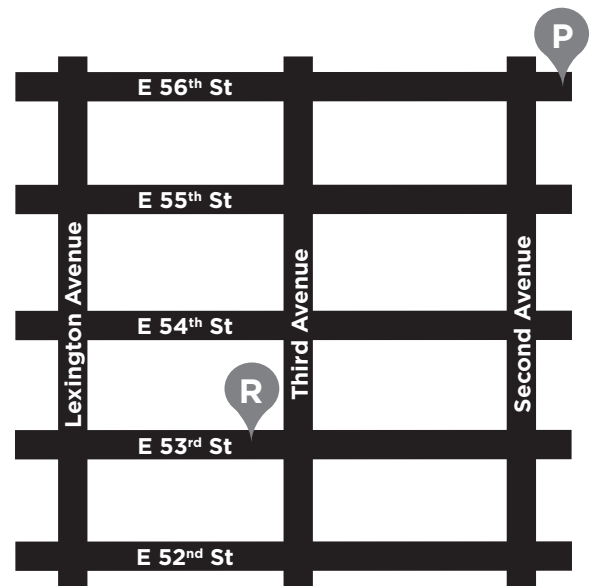
There are several options for parking during your PST appointment. The Bristol Garage offers discounts to patients. To receive the discount, have your parking ticket validated at the concierge desk in the Rockefeller Outpatient Pavilion. There is a shuttle that goes from the Bristol Garage to the Rockefeller Outpatient Pavilion every 20 minutes.

The Bristol Garage
300 East 56th Street (between First and Second Avenues)
New York, NY 10022

There are additional parking garages located at East 53rd Street between Second and Third Avenues and East 54th Street between Second and Third Avenues.



P = Parking
M = Memorial Sloan Kettering



P = Parking
R = Rockefeller Outpatient Pavilion

Housing

The Ronald McDonald House provides temporary housing for out-of-town pediatric cancer patients and their families.

MSK also has arrangements with several local hotels and housing facilities that may give you a special reduced rate. Your social worker can discuss your options and make reservations.

Tell Us if You're Sick

If you develop any illness before your surgery, call the doctor who scheduled your surgery. This includes a fever, cold, sore throat, or the flu.

10 Days Before Your Surgery

Stop taking aspirin, medications that contain aspirin, and vitamin E 10 days before your surgery. These medications can cause bleeding. If you take aspirin because you've had a problem with your heart, be sure to talk with your doctor, if you haven't already. For more information, please read *Common Medications Containing Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs)*, located in the "Medications" section of this guide.

7 Days Before Your Surgery

Stop taking herbal remedies or supplements 7 days before your surgery. For more information, please read *Herbal Remedies and Cancer Treatment*, located in the "Medications" section of this guide.

2 Days Before Your Surgery

Stop taking nonsteroidal anti-inflammatory drugs (NSAIDs), such as ibuprofen (e.g., Advil®, Motrin®) and naproxen (e.g., Aleve®), 2 days before your surgery. These medications can cause bleeding. For more information, please read *Common Medications Containing Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs)*, located in the "Medications" section of this guide.

1 Day Before Your Surgery

A staff member will call you after 2:00 pm the day before your surgery. He or she will tell you what time you should arrive at the hospital for your surgery. If you are scheduled for surgery on a Monday, you will be called on the Friday before. If you do not receive a call by 4:00 pm, please call (212) 639-7056.

Use this area to write in your surgery information:

Date: _____ Time: _____

Location:

- Pediatric Day Hospital (PDH)
1275 York Avenue (between East 67th and East 68th Streets)
Elevator to 9th floor
- Presurgical Center (PSC)
1275 York Avenue (between East 67th and East 68th Streets)
Elevator to 6th floor

The Night Before Your Surgery

Shower

Unless you are given other instructions, you can shower and wash your hair. **Do not apply any hair products such as hair spray or hair gel.**

Sleep

Go to bed early and get a full night's sleep.

Eating

NPO (nothing by mouth) guidelines require that you not eat or drink anything for a certain amount of time before your surgery. This exact period of time is based on your age and any other medical problems that you may have. Your nurse practitioner will tell you what you can and cannot eat before surgery.

If you do not follow the NPO guidelines, your surgery may be cancelled.

Write down your NPO guidelines below:

The Morning of Your Surgery

Take Your Medications

If your doctor or nurse practitioner instructed you to take certain medications the morning of your surgery, take only those medications with a sip of water. Depending on what medications you take and the surgery you're having, this may be all, some, or none of your usual morning medications. **Do not take any medications 2 hours before your surgery.**

Medication	Dose	Doctor/Nurse
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Medication	Dose	Doctor/Nurse
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Medication	Dose	Doctor/Nurse
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Medication	Dose	Doctor/Nurse
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Do not eat or drink anything the morning of your surgery. This includes water, hard candy, and gum. Take any medication as instructed with a sip of water.

Things to Remember

- Wear loose-fitting clothing.
- Do not put on any lotion, cream, deodorant, makeup, powder, or perfume.
- Do not wear any metal objects. Remove all jewelry, including body piercings. The equipment used during your surgery can cause burns if it touches metal.
- Leave valuables, such as credit cards, jewelry, or your checkbook, at home.
- Before you are taken into the operating room, you will need to remove your eyeglasses, hearing aids, dentures, prosthetic device(s), wig, and religious articles, such as a rosary.
- _____
- _____
- _____

What to Bring

- CD player and CDs or an iPod, if you choose. However, someone will need to hold these items for you when you go into surgery.
- Only the money you may need for a newspaper, bus, taxi, or parking.
- Your breathing machine for sleep apnea (such as your CPAP), if you have one.
- If you have a case for your personal items, such as eyeglasses, hearing aid(s), dentures, prosthetic device(s), wig, and religious articles such as a rosary, bring it with you.
- If you usually wear contact lenses, wear your glasses instead. Remember to bring a case for them.
- This guide. Your healthcare team will use this guide to teach you how to care for yourself after your surgery.
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Parking When You Arrive

Parking at MSK is available in the garage on East 66th Street between York and First Avenues. To reach the garage, enter East 66th Street from York Avenue. The garage is located about a quarter of a block in from York Avenue, on the right hand (north) side of the street. There is a pedestrian tunnel that connects the garage to the hospital. If you have questions about prices, call (212) 639-2338.

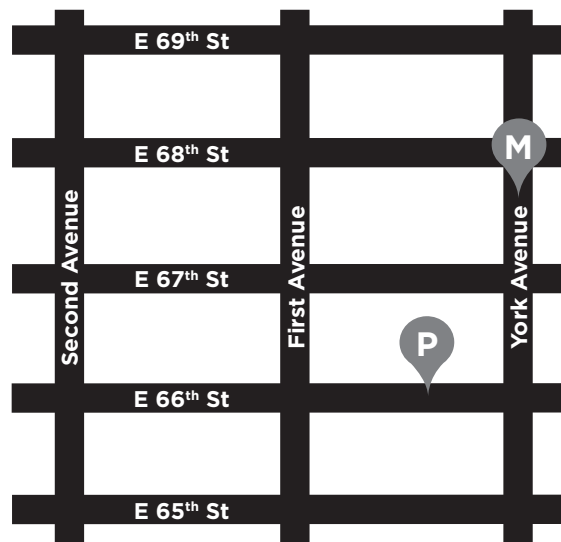
There are also other garages located on East 69th Street between First and Second Avenues, East 67th Street between York and First Avenues, and East 65th Street between First and Second Avenues.

Once You're in the Hospital

You will be asked to state and spell your name and date of birth many times. This is for your safety. Patients with the same or similar name may be having surgery on the same day.

Get Dressed for Surgery

You will be given a hospital gown, robe, and nonskid socks. Do not bring anything extra with you. Storage space is very limited.



P = Parking

M = Memorial Sloan Kettering

Meet With Your Nurse

Your nurse will meet with you before your surgery. Tell him or her the dose of any medications (including patches and creams) you took after midnight and the time you took them.

Meet With Your Anesthesiologist

He or she will:

- Review your medical history with you.
- Talk to you about your comfort and safety during your surgery.
- Talk to you about the kind of anesthesia (medication to make you sleep) you will receive.
- Answer any questions you may have about your anesthesia.

Prepare for Surgery

Once your nurse has seen you, 1 or 2 visitors can keep you company as you wait for your surgery to begin. When it is time for your surgery, your visitor(s) will be shown to the waiting area. Your visitors should read *Information for Family and Friends for the Day of Surgery* on page 17 of this guide.

During your surgery, you will receive medication through your IV, MediPort, or central line. The medication may make you feel drowsy and will control your pain.

You will be brought into the operating room. Once you are asleep, your surgery will begin. You will not feel any pain during your surgery.

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Notes



Information for Family and Friends for the Day of Surgery

This information explains to your family and friends what will happen on the day of surgery at Memorial Sloan Kettering Cancer Center (MSK).

Before the Surgery

Upon arrival to the hospital, the patient will be asked to provide contact information for the person who will be speaking to the surgeon after the surgery. If the patient is having an outpatient procedure, he or she will also be asked to provide contact information for the person who will be taking the patient home.

Once the patient is checked in, he or she will go to the Presurgical Center (PSC) to be examined before surgery. One person may come along, but others should wait in the concierge waiting area. If the patient wishes, other people may join him or her when the nurse has finished the examination.

When the operating room (OR) is ready, the surgical team will take the patient there. They will prepare the patient for surgery, which usually takes 30 to 90 minutes, then the surgery will begin.

Please remember the following:

- Do not bring food or drinks to the waiting area or the PSC. Patients are not allowed to eat or drink before their surgery or procedure.
- If the patient brought any valuables, such as a cell phone, iPod, iPad, etc., please keep it safe for them.
- Children under the age of 11 are not allowed to go into the PSC. They must wait in the main lobby on the 1st floor with a responsible adult.

During the Surgery

After the patient is taken to the OR, all visitors should go to the main lobby on the 1st floor.

- Food and drinks are available on the 1st floor in the cafeteria and in the gift shop. You can also bring your own food and eat it in the cafeteria.
- The coat-check room is at the bottom of the escalator on the ground level. It is open Monday through Friday from 11:00 am to 4:00 pm.
- Wireless Internet access is available in most areas of the hospital. You may also use the computers in the rooms off the main lobby.
- Please use the designated cell phone area to accept and make calls. It may be useful to bring your phone charger to the hospital. Please be courteous and mindful of others while using your cell phone.
- The Mary French Rockefeller Chapel, an interfaith chapel near the main lobby on the 1st floor, is open at all times for meditation and prayer.
- The Patient Recreation Pavilion is open daily from 9:00 am to 8:00 pm for patients and their visitors over the age of 11. Arts and crafts, a library, an outdoor terrace, and scheduled entertainment events are available in this area. To get there, take the M elevators to the 15th floor.

A clinical nurse specialist (CNS) will make rounds in the main lobby about every 2 hours to:

- Give you information about the patient
- Prepare you for your meeting with the surgeon
- Prepare you for visiting the patient in the Post-Anesthesia Care Unit (PACU)



You can contact the CNS between his or her regular visits in the lobby.

- From inside the hospital, use a hospital courtesy phone. Dial 2000 and ask for beeper 9000. Please be patient; this can take up to 2 minutes.
- From outside of the hospital, call (212) 639-2000. Ask for beeper 9000.
- You may also ask the information desk staff to contact the CNS for you.

After the Surgery

When the patient's surgery is done, we will call you to come back to the concierge desk. Please take the B elevator to the 6th floor and check in at the concierge desk. The concierge staff will bring you to a private consultation room to speak with the surgeon.

After you have met with the surgeon, you should return to the concierge desk and tell them that you have finished your consultation.

After surgery, the patient will be taken to the PACU. It can take up to 90 minutes before the patient is ready to have visitors. You can use this time to take a walk or just relax in the waiting area until the patient is ready to see you.

Once the patient is ready for visitors, a nurse will take you to the PACU. Please remember that a limited number of visitors can go into the PACU. This is to keep the area quiet and avoid crowding.

While visiting in the PACU

- Silence your cell phone.
- Apply hand sanitizer before entering.
- Keep noise to a minimum. All patients in the room need to rest.
- Do not wander away from the patient's bedside. It's important to respect each patient's right to privacy.
- Do not bring food or flowers into the PACU.
- Limit the time of your visit so that the patient can rest and recover.
- You may be asked to leave if there is an emergency, x-rays need to be done nearby, or patient care is being interrupted.

The nurse will update you on the patient's condition. He or she will also explain the plan of care for the patient, such as whether the patient is staying overnight and when he or she will be moved to an inpatient room. You should feel assured that you can leave the hospital after your visit. We will give you a card with the PACU phone number. Please appoint one person to call for updates.



The information in this section will tell you what to expect after your surgery, both during your hospital stay and after you leave the hospital. You will learn how to safely recover from your surgery. Write down any questions you have and be sure to ask your doctor or nurse.

What to Expect

When you wake up after your surgery, you will be in the Post Anesthesia Recovery Unit (PACU). You may have a special mask over your face with air coming out, which will help you wake up after surgery. You will be attached to machines that will monitor your vital signs (body temperature, heart rate, blood pressure, and oxygen level). It is normal to feel very tired after surgery. Your PACU nurse will make sure you are comfortable and answer all of your questions. As soon as you are settled in the PACU, a nurse will bring your family members in to be with you.

Once your anesthesia has worn off, you will be taken to your hospital room. Depending on your age and condition, you may be taken to the Pediatric Observation Unit (POU), the Pediatric Intensive Care Unit (PICU), the Adult Intensive Care Unit (ICU), or the Neurology Observation Unit (NOU) for close observation and monitoring. After 24 hours, you will mostly likely be taken to the pediatric or neurology floor for continued care.

You will have dressings over your incisions. Your doctor will take them off 24 to 48 hours after your surgery and they will be left uncovered.

You will frequently be asked to move your arms, fingers, toes and legs. Your nurse will check your pupils with a flashlight and ask questions such as “What is your name?”

Depending on your treatment plan, a physical therapist may visit you and begin to work with you. Over the next few days, you will increase your activity until you are ready to go home.

Commonly Asked Questions

Will I have any pain?

You may have a mild headache or feel discomfort from your incision lines for the first few days after your surgery. Your nurse will give you pain medication. Please tell your nurse if the medication is not helping your pain.

You may have a sore throat after your surgery. This is caused by the breathing tube that was used during your surgery. You will be given cool liquids to drink and lozenges to suck on to help with the discomfort.

How long will I be in the hospital?

Most people stay in the hospital 1 to 3 days, but this will depend on your recovery.

Can family and friends visit me in the hospital?

Your parents, other family members, and friends are welcome to visit you during your hospital stay as long as they are in good health. No one with any signs of sickness, such as fever, cough, congestion, sore throat, or rash, is allowed to visit.

Since visiting hours may vary depending on where you will be staying, please check with your nurse regarding the visitation policy. Visitors on the Pediatric Unit are limited to parents and 2 other visitors per day.

Parents can call the inpatient unit at any time. Ask your nurse for the phone number. Because of privacy concerns, staff will only give information to parents or spouses.

Please tell friends and other relatives not to call the inpatient unit for information.

When will I be able to eat and drink?

You will be given ice chips to eat after your surgery. You will start with a liquid diet and then progress to solid food.

When will my stitches or staples be removed?

The stitches or staples in your incisions will be removed 7 to 10 days after your surgery. They may need to stay in longer if this is a repeat surgery. Your doctor or nurse practitioner will remove them during your follow-up visit at the clinic.

How do I care for my incisions?

- Check your incisions daily for any signs of redness, swelling, or drainage.
- Keep your incisions clean and dry for 5 days after your surgery. Do not shower for 5 days after your surgery.

When can I shower?

- You can shower 5 days after your surgery. When you wash your hair, use a gentle shampoo, such as baby shampoo.
- Do not let your incisions soak in water. Avoid baths, hot tubs, and swimming pools for at least 2 weeks after your surgery.
- Do not use a hair dryer, creams, ointments, or hair products on your incisions until they are completely healed. This takes about 6 weeks.

When can I go back to work?

Your doctor will tell you when you can go back to work. This depends on your age, type of work, medical condition, and other factors.

When can I go back to school?

You can go back to school as soon as you feel ready. Tell your school nurse that you have a VP shunt.

When can I go back to my normal activities?

You can participate in all noncontact sports (i.e., swimming, running), exercise, and go to the gym 2 weeks after your surgery. You cannot participate in any contact (collision) sports (i.e., football, boxing, wrestling). Remember to wear a helmet to decrease the risk of head injury, if needed. Ask your neurosurgeon for specific guidelines on wearing a helmet.

When can I swim?

Do not swim for at least 2 weeks after your surgery. If your incisions need more time to heal, you may need to wait longer. Your neurosurgeon or nurse practitioner will tell you when it's okay to swim at your first follow-up appointment after your surgery.

When can I travel?

Do not travel on an airplane until your doctor says it's okay.

What follow-up care will I receive?

You will have regular visits with your neurologist, neurosurgeon, or both. They will monitor the function of your VP shunt over time.

What precautions do I need to take if I have a programmable VP shunt?

Magnets

The pressure setting of some programmable VP shunts may accidentally change if you come too close to a magnet. This depends on the model.

Ask your neurosurgeon if you need to take precautions when coming into contact with magnets. Be sure to follow the manufacturer's guidelines for magnetic field precautions specific for your type of shunt.

Here are some general rules for many shunts:

- Keep all products with magnets at least 2 inches away from the valve implant site.
- Do not use magnetic therapy pads and pillows.
- Do not use the iPad 2 if you have a Medtronic Strata® programmable VP shunt.
- Do not use audio headsets without checking the shunt manufacturer's guidelines.

Magnetic resonance imaging (MRI)

If you are having magnetic resonance imaging (MRI), you must tell your MRI technologist that you have a programmable VP shunt **before you have the procedure**. Your technologist will need to know the model of your shunt and the setting. Your nurse will give you a wallet card with this information. Carry it with you at all times. You can show your technologist the wallet card.

Depending on the model of your programmable VP shunt, the magnet in the MRI scanner may change your shunt's pressure setting. **After your MRI, the pressure setting will need to be checked and/or reprogrammed by your neurosurgeon or nurse practitioner.** You may need to have x-rays to help determine if the pressure setting has changed.

Before you have your MRI, you must make arrangements with your neurosurgeon or nurse practitioner to have your shunt reprogrammed after your MRI. Your shunt should be reprogrammed within 4 hours after your MRI.

Some types of programmable VP shunts are not affected by MRI. Ask your neurosurgeon or nurse practitioner if your shunt will need to be reprogrammed after an MRI.

You do not need to take any precautions if you are having a computed tomography (CT) scan or x-ray.

MediAlert® jewelry

You should always wear a MediAlert® bracelet or necklace stating that you have hydrocephalus with a programmable VP shunt. If you are ever seriously ill or hurt and need medical help, it will inform emergency

services workers about your programmable VP shunt. You can purchase this type of bracelet or necklace at most drug stores. For more information, visit the MedicAlert® website at: www.medicalert.com

Abdominal surgery

If you ever need to have abdominal surgery, you must tell your neurosurgeon so that precautions can be taken. Tell your neurosurgeon if you have peritonitis or diverticulitis requiring emergency surgery or antibiotic treatment.

What precautions do I need to take if I have a nonprogrammable VP shunt?

You do not need to take any precautions if you have magnetic resonance imaging (MRI), a computed tomography (CT) scan, or x-rays.

MedicAlert® jewelry

You should always wear a MedicAlert® bracelet or necklace stating that you have hydrocephalus with a nonprogrammable VP shunt. If you are ever seriously ill or hurt and need medical help, it will inform emergency services workers about your VP shunt. You can buy this type of bracelet or necklace at most drug stores. For more information, visit the MedicAlert® website at: www.medicalert.com

Abdominal surgery

If you ever need to have abdominal surgery, you must tell your neurosurgeon so that precautions can be taken. Tell your neurosurgeon if you have peritonitis or diverticulitis requiring emergency surgery or antibiotic treatment.

When should I call my doctor or nurse practitioner?

Call your doctor or nurse practitioner if you are having any of the following signs and symptoms that your VP shunt is not working properly:

- Vomiting with little or no nausea
- A constant, unrelieved headache
- Vision problems (blurry, double vision, or loss of vision)
- Irritability
- Fatigue
- Personality changes
- Loss of coordination or balance
- Swelling, redness, or both, along the shunt path
- A bulging soft spot on an infant's head
- Difficulty waking up or staying awake
- Decrease in school performance

Call your doctor or nurse practitioner if you are having signs and symptoms of a VP shunt infection. A VP shunt infection develops when bacteria infect the tissue around a VP shunt. When the tissue is infected, it can cause the VP shunt to stop working properly and increase pressure in the brain. The signs and symptoms of a VP shunt infection include:

- A temperature of 100.4° F (38° C) or higher
- Redness, swelling, or both, of the skin that runs along the shunt path
- Pain around the shunt or around the shunt tubing from the head to the abdomen

These warning signs can appear quickly. **If any of these symptoms develop, call your doctor or nurse practitioner immediately.**



If you cannot wake your child, call 911, or go to the nearest emergency room immediately.

Contact Information

If you have any questions or concerns, please talk with your doctor or nurse. You can reach them Monday through Friday from 9:00 am to 5:00 pm at (212) 639-7056.

After 5:00 pm, during the weekend, and on holidays, please call (212) 639-2000 and ask for the pediatric neurosurgery fellow on call.

The information in this section contains important information about what medications, herbal remedies, and other dietary supplements you will need to stop taking before your surgery. Read through this section before your surgery so that you are prepared. Write down any questions you have and be sure to ask your doctor or nurse.

Common Medications Containing Aspirin and Other Nonsteroidal Anti-inflammatory Drugs (NSAIDs)

This information will help you identify medications that contain aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs). It's important to stop these medications before many cancer treatments.

Medications such as aspirin and other NSAIDs, vitamin E, and COX-2 inhibitors can increase your risk of bleeding during cancer treatment. These medications affect your platelets, which are blood cells that clot to prevent bleeding. If you take aspirin or other NSAIDs, vitamin E, or a COX-2 inhibitor such as celecoxib (Celebrex®), tell your doctor or nurse. He or she will tell you if you need to stop taking these medications before your treatment. You will also find instructions in the information about the treatment you're having.

If you're having surgery:

- Stop taking medications that contain aspirin or vitamin E 10 days before your surgery or as directed by your doctor. If you take aspirin because you've had a problem with your heart or you've had a stroke, be sure to talk with your doctor before you stop taking it.
- Stop taking NSAIDs 48 hours before your surgery.
- Ask your doctor if you should continue taking a COX-2 inhibitor.

If you're having a procedure in Radiology (including Interventional Radiology, Interventional Mammography, and General Radiology):

- If you take aspirin because you've had a problem with your heart or you've had a stroke, be sure to talk with your doctor before you stop taking it. If your doctor instructs you to stop taking aspirin, you should stop 5 days before your procedure or as directed by your doctor.
- Stop taking other NSAIDs 24 hours before your procedure.
- Stop taking medications that contain vitamin E 10 days before your procedure, or as directed by your doctor.

Chemotherapy can decrease your platelet count, which can increase your risk of bleeding. Whether you're just starting chemotherapy or you've been receiving it, talk with your doctor or nurse before taking aspirin or other NSAIDs.

Medications are often called by their brand name, which can make it difficult to know their ingredients. To help you identify medications that contain aspirin, other NSAIDs, and vitamin E, please review the list of common medications in this leaflet. While this list includes the most common products, there are others. Please check with your healthcare provider if you aren't sure. Always be sure your doctor knows all the medications you're taking, both prescription and over-the-counter.

The following common medications contain aspirin:

Alka Seltzer®	Cama® Arthritis Pain Reliever	Gensan®	Roxiprin®
Anacin®	COPE®	Heartline®	Saleto®
Arthritis Pain Formula	Dasin®	Headrin®	Salocol®
Arthritis Foundation Pain Reliever®	Easprin®	Isollyl®	Sodol®
ASA Enseals®	Ecotrin (most formulations)	Lanorinal®	Soma® Compound Tablets
ASA Suppositories®	Empirin® Aspirin (most formulations)	Lortab® ASA Tablets	Soma® Compound with Codeine Tablets
Ascriptin® and Ascriptin A/D®	Epromate®	Magnaprin®	St. Joseph® Adult Chewable Aspirin
Aspergum®	Equagesic Tablets	Marnal®	Supac®
Asprimox®	Equazine®	Micrainin®	Synalgos®-DC Capsules
Axotal®	Excedrin® Extra-Strength Analgesic Tablets and Caplets	Momentum®	Tenol-Plus®
Azdone®	Excedrin® Migraine	Norgesic Forte® (most formulations)	Trigesic®
Bayer® (most formulations)	Fiorgen®	Norwich® Aspirin	Talwin® Compound
BC® Powder and Cold Formulations	Fiorinal® (most formulations)	PAC® Analgesic Tablets	Vanquish® Analgesic Caplets
Bufferin® (most formulations)	Fiortal®	Orphengesic®	Wesprin® Buffered
Buffets II®	Gelpirin®	Painaid®	Zee-Seltzer®
Buffex®	Genprin®	Panasal®	ZORprin®
		Percodan® Tablets	
		Persistin®	
		Robaxisal® Tablets	

The following common medications are NSAIDs that do not contain aspirin:

Advil®	Diclofenac	Meclofenamate	Orudis®
Advil Migraine®	Etodolac®	Mefenamic Acid	Oxaprozin
Aleve®	Feldene®	Meloxicam	PediaCare Fever®
Anaprox DS®	Fenoprofen	Menadol®	Piroxicam
Ansaid®	Flurbiprofen	Midol®	Ponstel®
Arthrotec®	Genpril®	Mobic®	Relafen®
Bayer® Select Pain Relief Formula Caplets	Ibuprofen	Motrin®	Saleto 200®
Celebrex®	Indomethacin	Nabumetone	Sulindac
Children's Motrin®	Indocin®	Nalfon®	Toradol®
Clinoril®	Ketoprofen	Naproxen	Voltaren®
Daypro®	Ketorolac	Naprosyn®	
	Lodine®	Nuprin®	

Most multivitamins contain vitamin E, so if you take a multivitamin be sure to check the label. The following products contain vitamin E:

Amino-Opt-E	Aquavit	E-400 IU	E complex-600
Aquasol E	D'alpha E	E-1000 IU Softgels	Vita-Plus E

Acetaminophen (Tylenol®) is generally safe to take during your cancer treatment. It doesn't affect platelets, so it will not increase your chance of bleeding. The following common medications contain acetaminophen; those in bold require a prescription:

Acephen®	Naldegesic®
Aceta® with Codeine	Norco®
Acetaminophen with Codeine	Panadol®
Aspirin-Free Anacin®	Percocet®
Arthritis Pain Formula® Aspirin-Free	Repan
Darvocet-N 100®	Roxicet®
Datril®	Talacen®
Di-Gesic®	Tempra®
Esgic®	Tylenol®
Excedrin P.M.®	Tylenol® with Codeine No. 3
Fiorcet®	Vanquish®
Lorcet®	Vicodin®
Lortab®	Wygesic®
	Zydone®



Read the labels on all your medications.

Acetaminophen (Tylenol®) is a very common ingredient found in over-the-counter and prescription medications. It's often an ingredient in pain relievers, fever reducers, sleep aids, and cough, cold, and allergy medications. The full name acetaminophen is not always written out, so look for these common abbreviations, especially on prescription pain relievers: APAP, AC, Acetaminoph, Acetaminop, Acetamin, and Acetam.

Acetaminophen is safe when used as directed, but there is a limit to how much you can take in one day. It's possible to take too much acetaminophen without knowing because it's in so many different medications. Taking more acetaminophen than directed can lead to liver damage. You should never take more than 3,250 mg of acetaminophen in one day.



Herbal Remedies and Cancer Treatment

One week before you have surgery or start chemotherapy or radiation therapy, you must stop taking any herbal or botanical home remedies or other dietary supplements because they can:

- Interact with other drugs
- Increase or lower blood pressure
- Thin the blood and increase the risk of bleeding
- Make radiation therapy less effective
- Lower the effects of medications that suppress the immune system
- Increase the effects of sedation or anesthesia

Below are examples of common herbs and a description of their effects.

Echinacea

- Can cause an allergic reaction such as a rash or difficulty breathing
- Can lower the effect of drugs used to suppress the immune system

Garlic

- Can lower blood pressure, fat, and cholesterol levels
- Can prevent platelets (the blood cells that help stop bleeding) from sticking together, which increases the risk of bleeding

Ginkgo (also known as ginkgo biloba)

- Can change how platelets function, which can increase the risk of bleeding

Ginseng

- Can act as a stimulant, which can decrease the effects of anesthesia or sedation
- Can interfere with platelet function, which can increase the risk of bleeding
- Can lower blood glucose (sugar) level

Turmeric

- Can reduce the antitumor action of chemotherapy drugs

St. John's Wort

- Can interact with medications given during surgery
- Can make the skin more sensitive to laser treatment

Valerian

- Can have a sedative effect, which can increase the effects of anesthesia or sedation

Herbal formulas

- Many herbal formulas contain different herbs. We don't know their side effects. You must also stop taking these products 1 week before and during treatment

For more information about herbs and botanicals, visit: <http://www.mskcc.org/aboutherbs>.
You can also download the Memorial Sloan Kettering About Herbs app from the App Store at:
<https://itunes.apple.com/us/app/about-herbs/id554267162?mt=8>

This information does not cover all possible side effects. Please share any questions or concerns with your doctor or nurse.



This section contains a list of support services available at MSK, as well as the resources that were referred to throughout this guide. These resources will help you prepare for your surgery and recover safely. Write down any questions you have and be sure to ask your doctor or nurse.

MSK Support Services

Admitting

(212) 639-5014

Call to discuss private room or luxury suite options. If you want to change your room choice after your presurgical testing visit, call (212) 639-7873 or 7874.

Anesthesia

(212) 639-6840

Call with questions about anesthesia.

Blood Donor Room

(212) 639-7643

Call for more information if you are interested in donating blood or platelets.

Bobst International Center

(888) 675-7722

MSK welcomes patients from around the world. If you are an international patient, call for help.

Chaplaincy Service

(212) 639-5982

At MSK, our chaplains are available to listen, help support family members, pray, contact community clergy or faith groups, or simply be a comforting companion and a spiritual presence. Anyone can request spiritual support, regardless of formal religious affiliation. The interfaith chapel is located near the main lobby of Memorial Hospital, and is open 24 hours a day. If you have an emergency, please call the hospital operator and ask for the chaplain on call.

Counseling Center

(646) 888-0200

Many people find counseling helpful. We provide counseling for individuals, couples, families, and groups, as well as medications to help if you feel anxious or depressed.

Integrative Medicine Service

(800) 525-2225

Integrative Medicine Service offers patients many services to complement traditional medical care, including music therapy, mind/body therapies, dance and movement therapy, yoga, and touch therapy.

Look Good Feel Better Program

(212) 639-5665

Learn beauty techniques to help you feel better about your appearance. This program is for both women and men. To register for a workshop at MSKCC, call (212) 639-LOOK. To find out if a group program is available in your area, check the www.lookgoodfeelbetter.org, or call 1-800-395-LOOK.

Patient-to-Patient Support Program

(212) 639-5007

You may find it comforting to speak with a cancer survivor or caregiver who has been through a similar treatment. Through our Patient-to-Patient Support Program, we are able to offer you a chance to speak with former patients and caregivers.

Patient Financial Services

(212) 639-8242

Call with any questions about preauthorization from your insurance company. This is also called preapproval. Patient Financial Services can also help you with your billing or other insurance questions.

Patient Representative Office

(212) 639-7202

Call if you have any questions about the Health Care Proxy form or if you have any concerns about your care.

Perioperative Clinical Nurse Specialist

(212) 639-5935

Call if you have any questions about MSK releasing any information while you are having surgery.

Private Nursing Options

(212) 639-6892

Patients may request private nurses or companions. Call for more information.

Resources for Life After Cancer (RLAC) Program

(646) 888-4740

At MSK, care doesn't end after active treatment. The RLAC Program is for patients and their families who have finished treatment. This program has many services, including seminars, workshops, support groups, counseling on life after treatment, and help with insurance and employment issues.

Social Work

(646) 888-5271 or (646) 888-5203

Social workers help patients, family, and friends deal with issues that are common for cancer patients. They provide individual counseling and support groups throughout the course of treatment, and can help you communicate with children and other family members. Our social workers can also refer you to community agencies and programs, as well as financial resources if you're eligible.

Tobacco Treatment Program

(212) 610-0507

If you want to quit smoking MSK has specialists who can help. Call for more information.

For additional online information, visit LIBGUIDES on MSK's library website at <http://library.mskcc.org>. You can also contact the library reference staff at (212) 639-7439 for help.

External Resources

Access-A-Ride

www.mta.info/nyct/paratran/guide.htm

(877) 337-2017

In New York City, the MTA offers a shared ride, door-to-door service for people with disabilities who are unable to take the public bus or subway.

Air Charity Network

www.aircharitynetwork.org

(877) 621-7177

Provides travel to treatment centers.

American Cancer Society (ACS)

www.cancer.org

(800) 227-2345

Offers a variety of information and services, including Hope Lodge, a free place for patients and caregivers to stay during cancer treatment.

Cancer and Careers

www.cancerandcareers.org

A comprehensive resource for education, tools, and events for employees with cancer.

CancerCare

www.cancercare.com

(800) 813-4673

275 Seventh Avenue (between West 25th & West 26th Streets) New York, NY 10001

Provides counseling, support groups, educational workshops, publications, and financial assistance.

Cancer Support Community

<http://cancersupportcommunity.org>

Provides support and education to people affected by cancer.

Caregiver Action Network

www.caregiveraction.org

(800) 896-3650

Provides education and support for those who care for loved ones with a chronic illness or disability.

Chronic Disease Fund

www.cdfund.org

(877) 968-7233

Offers financial assistance to pay for copayments during treatment. Patients must have medical insurance, meet the income criteria, and be prescribed medication that is part of the CDF formulary.

Corporate Angel Network

www.corpangelnetwork.org

(866) 328-1313

Free travel to treatment across the country using empty seats on corporate jets.

fertileHOPE

www.fertilehope.org

(855) 220-7777

Provides reproductive information and support to cancer patients and survivors whose medical treatments have risks associated with infertility.

Gilda's Club

www.gildasclubnyc.org

(212) 647-9700

A place where men, women, and children living with cancer find social and emotional support through networking, workshops, lectures, and social activities.

Healthwell Foundation

www.healthwellfoundation.org

(800) 675-8416

Provides financial assistance to cover copayments, health care premiums, and deductibles for certain medications and therapies.

Hospital Hosts

www.hospitalhosts.com

National resource to help reduce costs related to medical travel needs such as air, car, and lodging near hospitals.

Joe's House

www.joeshouse.org

(877) 563-7468

Provides a list of places to stay near treatment centers for people with cancer and their families.

LGBT Cancer Project

<http://lgbtcancer.com>

Provides support and advocacy for the LGBT community, including a online support groups and a database of LGBT friendly clinical trials.

National Cancer Institute

www.cancer.gov

National Cancer Legal Services Network

www.nclsn.org

Free cancer legal advocacy program.

National LGBT Cancer Network

www.cancer-network.org

Provides education, training, and advocacy for LGBT cancer survivors and those at risk.

Needy Meds

www.needymeds.com

Lists Patient Assistance Programs for brand and generic name medications.

NYRx

www.nyrxplan.com

Provides prescription benefits to eligible employees and retirees of public sector employers in New York State.

Partnership for Prescription Assistance

www.pparx.org

(888) 477-2669

Helps qualifying patients without prescription drug coverage get free or low-cost medications.

Patient Access Network Foundation

www.panfoundation.org

(866) 316-7263

Provides assistance with copayments for patients with insurance.

Patient Advocate Foundation

www.patientadvocate.org

(800) 532-5274

Provides access to care, financial assistance, insurance assistance, job retention assistance, and access to the national underinsured resource directory.

RxHope

www.rxhope.com

(877) 267-0517

Provides assistance to help people obtain medications that they have trouble affording.