



Periacetabular Osteotomy

University of Iowa Health Care
Department of Orthopedics
and Rehabilitation

Thank you!

Thank you for choosing University of Iowa Health Care and the Department of Orthopedics and Rehabilitation for your hip preservation surgery. This guide and the surgery workup appointment will help you plan for your surgery and recovery.

Read this guide. Share it with your family and close friends. Decide who will be your caregiver to help and coach you before and after surgery. This person should join you for the workup appointment. Here they will learn how to best help when you get home. Keep this guide for appointments and while you are in the hospital.

Write down questions and bring them to your workup appointment. Ask questions to be sure you are getting the right care for you. Be sure to follow your care teams orders. Call your care team if you have questions.

We look forward to helping you get back to a healthy and active life!

Sincerely,

The Young Adult Hip Team:

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- Courtney Seffker, PA-C
- Jenna Jensen, RN, BSN
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Table of Contents

General Information	Page 6
How does the hip joint work?.....	Page 7
What is hip dysplasia?.....	Page 7
How is hip dysplasia diagnosed?.....	Page 8
Periacetabular Osteotomy.....	Page 10
Getting Ready for Surgery.....	Page 13
Day Before Surgery	Page 16
Day of Surgery	Page 16
Hospital Recovery.....	Page 18
Going Home	Page 19
Recovery at Home.....	Page 20
Activity and Precautions.....	Page 21
Appendix A: Home Exercises Before Surgery	Page 24
Appendix B Preparing Your Home Checklist:	Page 26
Appendix C: Surgery List	Page 27
Appendix D: Hospital Map.....	Page 28
Appendix E Incentive Spirometer:.....	Page 29



General Information

Important appointments

Workup Appointment: _____

Department of Orthopedics: Sports Medicine Clinic

Surgery Date: _____

- Ambulatory Surgery Center (Elevator L, Level 4)
- Main Operating Room (Elevator H, Level 6)
- Stead Family Children's Hospital (Level 4)

Contact information

Address: 2701 Prairie Meadow Drive, Iowa City, IA 52242

Telephone: 319-384-7070

- Option 1: Appointment
- Option 2: Prescription Refill
- Option 3: Nursing

Telephone After Hours: 319-384-8442

Ask to talk with the orthopedic resident on-call

Fax: 319-353-6754

Email: ortho-sportsnurses@uiowa.edu

To email photos with your name and date of birth if needed.

Work, FMLA, and disability paperwork

Your care team will complete FMLA and disability forms after your surgery. Be sure to fill out the employee section before sending the forms. It will take about 14 days for your care team to complete the forms. Fax the forms to 319-353-6754.

How does the hip joint work?

The hip is a ball and socket joint. The ball is the head of the thigh bone (femur). The socket (acetabulum) is in the pelvis.

In a healthy hip:

- The socket is cup shaped.
- The head of the thigh bone is covered by the socket.
- Cartilage lines the socket and head for smooth and stable motion of the hip.
- The labrum is a fibrous cartilage on the rim of the hip socket. It provides cushion, to help keep the ball stable in place.
- There are many muscles that keep the hip stable too.



General Hip Anatomy

Hip problems include:

- Labral tears
- Cartilage loss or damage
- Bony abnormalities (CAM or pincer impingement)
- Hip dysplasia

What is hip dysplasia?

People with hip dysplasia do not fully form their hip socket. This causes a shallow hip socket with a not properly covered head. This causes uneven distribution of weight in the joint and instability. These abnormal mechanics lead to:

- Premature wear and tear
- Labrum tear and cartilage damage
- Early onset of arthritis



Normal Hip X-Ray



Dysplastic Hip X-Ray

About 1 out of 100 people are born with hip dysplasia. Many do not have pain until they have arthritis later in life. 50 out of 100 young people treated for arthritis with hip replacement have dysplasia.

Pain from hip dysplasia is often felt in the:

- Groin
- Lateral hip
- Sometimes back of the hip and buttock

Some people also have signs such as:

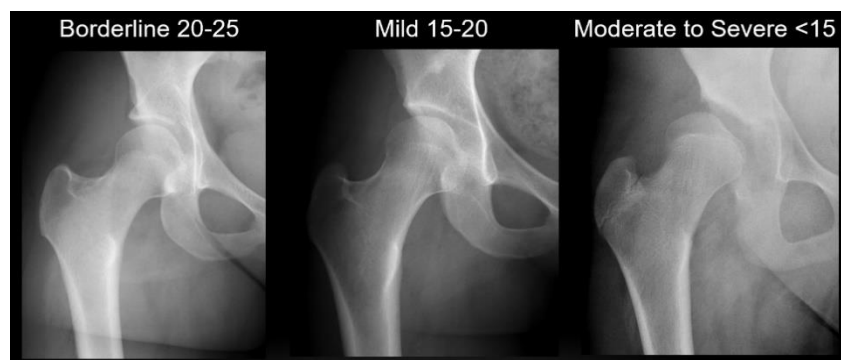
- Snapping
- Clicking
- Popping
- Feeling of it giving out

How is hip dysplasia diagnosed?

It is diagnosed with an:

- X-ray
- Exam
- Medical history

Measurements are used to decide the degree of hip dysplasia. The most common measurement is the Lateral Center Edge Angle of Wiberg.



MRI is used to find damage to the labrum and cartilage that is often present with hip dysplasia. CT is used to 3 dimensionally see the position of the hip socket and plan for correction.

Periacetabular Osteotomy (PAO)

Surgery is used to correct the orientation of the hip socket. This will improve stability of the femoral head.

The surgery is done with 3 cuts through the pelvis bone to move the socket and to improve coverage. X-ray is used during surgery to safely make cuts and confirm proper coverage. Screws are used to keep bone in place.

You will do rehab to help maintain muscle strength and promote good healing.

At the time of surgery, your surgeon may correct other deformities with hip arthroscopy (hip scope). For example, if there is a labrum tear due to hip dysplasia, a hip scope can correct labral tear. Impingement is also often corrected with hip arthroscopy during PAO.

When might I benefit from a PAO?

Surgery can be considered when a person with dysplasia or impingement still has pain after trying:

- Physical therapy to strengthen hip stabilizing muscles
- Anti-inflammatory or over-the-counter pain medicines
- Changing your activity
- Possibly cortisone injections (shots)
- Weight loss for people with a body mass index (BMI) greater than 30



Each person is different, but your care team will likely talk with you about PAO if:

- X-rays show significant hip dysplasia
- You have hip pain every day
- You have significant lifestyle changes and activity limits due to your hip

We are happy to answer all your questions before you decide if surgery is right for you.

What can I expect from a PAO?

Goals of a PAO are:

- Pain relief
- Better physical function and quality of life
- Prolong the time to develop arthritis or need hip replacement
- You may still need hip replacement in the future despite having PAO
 - 20 out of 100 people have hip replacement 10 years after PAO.
 - 40 out of 100 people have hip replacement 20 years after PAO.
 - 60 out of 100 people have hip replacement 30 years after PAO.

You should be able to do most of your normal activities 4 to 6 months after PAO, such as:

- Day-to-day activities
- Sports (jumping and contact sports often closer to 6 to 9 months)
- Work

What are the risks of a PAO?

PAO is a major surgery. Complications are rare but may happen. They can alter your recovery and long-term function. Your care team studied 100 people who had PAO and found:

- 2 out of 100 people had blood clots in the leg or lungs that needed 3 to 6 months of anticoagulation medicine. You are given aspirin to take after surgery to lower this risk.
- 6 out of 100 people had a skin infection and needed antibiotics.
- Nobody had deep infection needing another surgery, but other hospitals report 0 to 2 out of 100 people have deep infection.
- Nobody had sciatic or femoral nerve injury that caused muscle weakness, but other hospitals report 2 out of 100 people have a nerve injury that caused muscle weakness.
- People who have PAO commonly have numbness in the anterior thigh below the incision.

Getting Ready for Surgery

Plan for 24-hour care

You need someone to help you 24-hours a day for the first 2 weeks after surgery. Talk with your family, friends, or neighbors to find a caregiver.

You need a driver to and from the hospital for:

- Surgery
- Appointments the first 6 weeks after surgery

Medicines before surgery

Do **not** take birth control pills for 3 weeks before and 6 weeks after surgery. This lowers your risk of a blood clot.

Do **not** take any product with NSAIDs or aspirin, such as ibuprofen, Advil®, or Aleve®, for 7 days before surgery.

Pain control before surgery

Your care team does not prescribe opioid pain medicine before surgery. They recommend against taking opioid pain medicine for long-term pain. Instead:

- Take over-the-counter (OTC) pain medicine
- Use heat and cold packs
- Alternate rest and exercise

Talk with your primary care provider (PCP) about opioid pain medicine if more pain control is needed before surgery.

Nicotine

Stop using nicotine. It puts you at higher risk of complications, such as:

- Lessens blood flow to the surgical site. This slows bone and wound healing.
- Blood clots

Talk with your care team about stopping smoking.

Some nicotine products are:

- Chew
- Cigarettes
- Cigars
- E-cigarettes
- Smokeless tobacco
- Vaping

You need to have a nicotine-free urine test before your surgery can be scheduled. It takes about 3 to 4 weeks being nicotine-free to have a clean urine test.

You must be nicotine-free until surgery and at least 6 weeks after surgery. Your surgery will be canceled if your urine test is positive for nicotine.

Nutrition, supplements, and diabetes

In the weeks before surgery, eat foods that are healthy and nourishing to your body. Stay hydrated. Eat foods high in protein and plenty of fruits and vegetables. This will help bone healing after surgery.

Supplements may be needed before surgery in addition to healthy eating. Buy supplements at any pharmacy or drugstore. Your care team recommends:

- Calcium 400 mg 3 times per day
- Vitamin D 2000 units daily
- Protein 20 g daily

Home exercise program

A healthy and strong body before surgery helps you get better faster.

Rehabilitation before PAO must be done to have strong lower body muscles after surgery. See the exercises to do before surgery in **Appendix A:**

Home Exercise Program.



Getting your home ready

You need to get your house ready for easy and safe use after surgery. Some tips to make your home safe are:

- Remove all throw rugs, cords, and clutter from the floor and stairs.
- Have good lighting in each room.
- Arrange furniture so there are clear walking pathways.
- Use a chair with arms and a seat height of at least 20 inches. Be careful getting up from low or overstuffed chairs or couches.
- Think about getting assistive devices for your home, such as: toilet seat riser, bath chair, and shower grab bar.
- Place items you use often at waist or counter level in your bedroom, bathroom, and kitchen.
- If your bedroom is on a second level with many stairs, think about changing your main level living space into a bedroom for the first few weeks.

To learn more, read **Appendix B: Preparing Your Home Checklist**.

Notes

Day Before and Morning of Surgery

You will get a call 1 to 2 days before your surgery. They will tell you when to check-in and the time of your surgery. Be sure to answer your phone. Staff may not leave a voicemail.

To learn more, read **Appendix C: Surgery Checklist**.

You need to:

- Shower as instructed the day before and day of surgery.
- Follow the eating and drinking instructions the day before and day of surgery.
- Take medicines as instructed with sips of water.
- Allow plenty of time for travel, parking, and finding your way.

You will get detailed handouts about the above information at your workup appointment.

Day of surgery

What will happen when I get to the hospital?

1. Check-in for surgery at your designated surgery center.
 - See **Appendix D: Hospital Map** for directions.
2. Staff will take you to a surgery prep room.
3. Staff will place an identification band on your wrist.
4. You will put on a hospital gown and remove contact lenses if you have them.
5. Staff will start an intravenous (IV) line to be used for fluids and medicines during and after your surgery.
6. Your orthopedic and anesthesia care team will talk to you before taking you to the operating room.
7. You will be given general anesthesia. There will not be a spinal anesthesia or nerve block. These have been found to slow recovery.
8. Surgery will take 3 to 5 hours.

What should I expect after surgery?

After surgery you will be taken to the Post Anesthesia Care Unit (PACU) to be monitored for 1 to 3 hours. Your blood pressure, pulse, respiration, and temperature will be checked often. The blood flow and feeling in your legs and feet will also be checked often.

Your care team will talk with your family how you are doing.

You will be taken to the inpatient unit when your care team feels you are ready. You will have a catheter in your bladder, which will be removed the day after surgery.

Physical therapy will visit each day while you are in the hospital.

Most people stay 2 to 3 nights in the hospital. Please ask your care team about visitor restrictions.

Incision and dressing

- There will be an 8 to 12 cm "bikini" line incision over the front of your hip.
- There will be dissolvable sutures under the skin.
 - If a hip scope is done with the PAO, you will have 2 sites about 1 cm wide. They are closed with dissolvable sutures under the skin.
- Keep the watertight dressing on for 2 weeks.



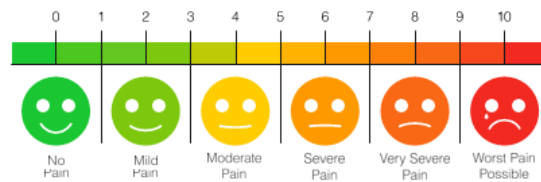
Notes

Hospital Recovery

Pain management

Good pain control is important. You will have pain, even with pain

medicine. The goal is to control your pain to a tolerable level so you can heal and do rehabilitation. Pain medicine will be prescribed. Ask your nurse if you need it.



Your care team will ask you to rate your pain on a scale of 0 to 10. Zero means no pain and 10 means the worst possible pain.

Deep breathing exercises

People are often sleepy and spend more time in bed after surgery. Because of this, they do not take as many deep breaths as normal. This could cause fluid to sit in the lungs and can cause pneumonia.



An incentive spirometer will help keep your lungs clear after surgery. Nursing staff will teach you how and encourage you to use it while in the hospital.

Your care team suggests taking the incentive spirometer home. Keep using it while you are taking narcotic pain medicine.

To learn more, read **Appendix E: Incentive Spirometry**.

Physical and occupational therapy

Therapy starts the day after surgery. You will work with the rehab team each day while in the hospital.

You will work on:

- Walking
- Sitting to standing
- Going up and down stairs
- Range of motion and strengthening exercises
- Special techniques and how to use adaptive equipment to do daily activities
- You be given an exercise program to complete after surgery that you will follow until you begin formal physical therapy 3 weeks after surgery.

Preventing blood clots

To keep blood moving through your legs and prevent a blood clot:

- Wear foot or calf pumps while resting.
- Do ankle pump exercises many times each hour when you are awake.
- Walk several times a day with physical therapy or nursing staff.
- Take aspirin to thin your blood. Your care team will talk to you about which medicine is best for you.
- Talk with nursing staff if you have questions or need help.

Going Home

You can go home when you are medically ready and pass physical therapy. You will go home with prescriptions for pain control and to thin your blood. These can be filled at the Discharge Pharmacy if you want.

You will go home with a walker or crutches. You may also have assistive devices to help you at home.

Nursing staff will help you get dressed, remove your IV, and be sure you have your belongings. They will talk with you about your specific instructions. Be sure to ask questions.

Reminder: You will need someone to help you 24-hours a day for the first 2 weeks after surgery.

Drive or flight home

On the drive or flight home, we suggest:

- Sit in a reclined position, so the hip does not have to flex past 90 degrees.
- Get out the vehicle or standing up on flight. Do this at least every 2 hours to stretch out and move to avoid stiffness.
- Use a trash bag to make it easier to slide in and out of a car.
- You can ride in your normal vehicle in a reclined position. A pillow can be used to prop your surgical leg upright. While in the hospital a physical therapist will instruct you on transferring in and out of your vehicle. No specialized vehicle is needed for transportation home after surgery.

Follow-up

Your first return appointments will be 3 weeks and 6 weeks after surgery. These will be with a physician assistant. They will be scheduled before you go home. X-rays are done at each of your return appointments.

You may be able to do these locally if you live far away. Talk about this with your care team at your preoperative appointment.

Call if you have questions before your next appointment.

Recovery at Home

Pain management

You will have pain after surgery, even with your pain medicine. We want you to be able to tolerate the pain. Pain can be managed well when medicine, cold therapy, elevation, and coping skills are used together.

Medicine

Most people go home with 3 medicines for pain control. Take these as needed:

- Tylenol
- Oxycodone
- Hydroxyzine

Most people stop taking all opioid pain medicines by 2 to 3 weeks after surgery.

Opioid pain medicine will not be ordered after this time. Talk with your care team if you are still having trouble with pain at that time.

Allow 3 business days for prescriptions to be refilled.

Cold therapy

Cold therapy or ice packs can help with swelling and pain control.

Put ice on your hip. Put it near but not on your incision. Use it as often as needed each day. Use for 20 minutes each time. Put a thin towel between the ice bag and your skin to protect your skin. Let your skin go back to normal sensation and temperature (often 2 to 3 hours) before you use ice again.

After surgery, you may have less sensation in your hip. Be sure to check your skin while using ice to be sure it is **not** mottled (blotches of different shades of red and white). Remove the ice right away if your skin looks mottled.

Elevation

Elevating your leg can help with swelling and pain control. Rest with your leg above the level of your heart. Lie flat with a pillow under your head and several pillows under your leg. Do this at least 3 times each day, for 30 minutes each time.

Activity and Precautions

Hip precautions and restrictions

You will have weight bearing and range of motion restrictions after your PAO.

Precautions

- Do not bend the hip more than a 90-degree angle (like the letter L).
- Do not reach for your feet.

Restrictions

- Flat-foot touch weight bearing.
- Always use crutches or a walker.

Follow these for 6 weeks after surgery. Your activity, range of motion, and weight bearing will progress per the postoperative protocol.

Physical intimacy

You can often start sexual activity 6 weeks after surgery. Be sure you follow the hip precautions.

Physical therapy (PT)

You will do PT. A good rehab program is vital to safely regain motion, strength, and function of the hip and leg. You will start PT about 3 weeks after surgery.

You may do physical therapy close to home. A PT order will be given to you at your first follow-up appointment. Your physical therapists will get a rehabilitation protocol with your restrictions.

Return to sports and work

The goal is to have people do their desired sport or physical activities. Most people can return to light running or jogging after 5 to 6 months. Most people return to full participation in high level and contact sports by 6 to 9 months after surgery. This depends on your activity or sport. If you play a high level or contact sport, it is best to do a formal return to sport testing.



Driving

You may drive when you are no longer taking pain medicine, and your surgeon and physical therapist let you to place weight through your leg. This will likely be 6 weeks after surgery.

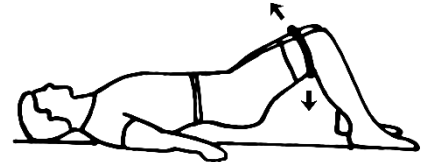
Check your driving skills in a parking lot before driving on the road.

Appendix A: Home Exercises Before Surgery

You will be given PT exercises to do at home after surgery.

Bridging with Elastic

1. Loop elastic around lower thighs.
2. Lie on back with knees bent and feet wide.
3. Push knees out against elastic and hold.
4. Raise buttocks up and hold.
5. Lower buttocks and repeat.

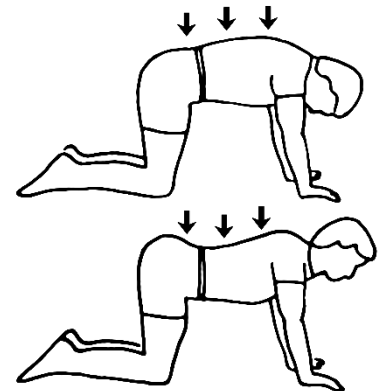


Special Instructions

- Keep a neutral spine.
 - Do 1 set of 30 repetitions, every other day.
-

Quadruped Cat/Cow

1. Start in 4-point kneeling, back in neutral position.
2. Tuck chin in and round your back upward 1 segment at a time.
3. Reverse by letting back arch 1 segment at a time. Keep neck in neutral at the end.

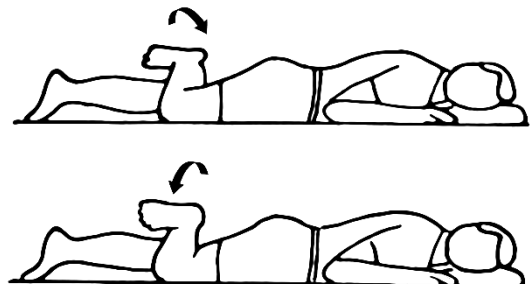


Special Instructions

- Do 1 set of 20 repetitions, every other day.
-

Prone Hip Rotation

1. Lie face down.
2. Bend knee of involved leg to 90-degrees.
3. Move lower leg side to side through pain-free range.

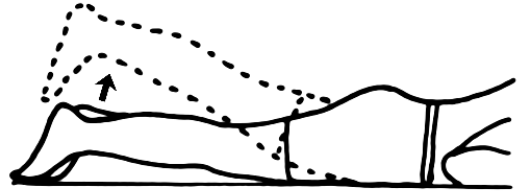


Special Instructions

- Do not let the pelvis or low back position change. Keep thigh in line with trunk.
- Do 1 set of 20 repetitions, every other day.

Prone Hip Extension

1. Lie face down
2. Keep knee on involved leg straight.
3. Lift involved leg up.
4. Return to starting position and repeat.

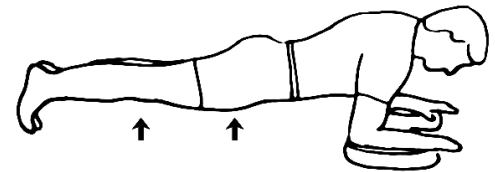


Special Instructions

- Do not use your low back. It should be felt in the buttocks.
- Do 1 set of 20 repetitions, every other day.

Front Plank

1. Lie face down, supporting body on forearms.
2. Raise hips and knees up off ground.
3. Tighten abdominal muscles as you hold body straight.
4. Hold for 1 minute. Keep a neutral spine.

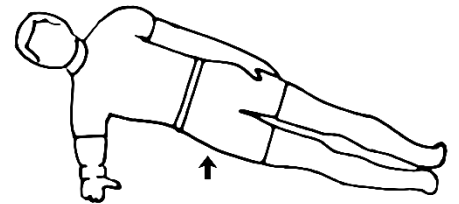
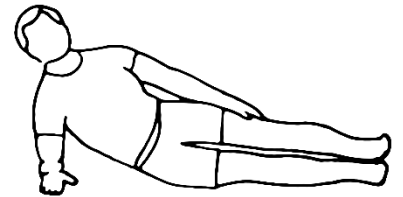


Special Instructions

- Start on knees if too challenging.
- Do 1 set of 1 repetition, every other day.

Side Plank

1. Lie on floor on your side, forearm supporting upper body.
2. Knees should be straight, ankles together.
3. Place free hand on hip.
4. Raise hips and thighs off floor until trunk and back are straight.
5. Hold for 45 seconds.
6. Repeat on other side.



Special Instructions

- Start on knees if too challenging.
- Do 1 set of 1 repetition, every other day.

Appendix B: Preparing Your Home Checklist

Tips to make your home safe

- Remove all clutter from the floor and stairs.
- Remove all throw rugs and cords.
- Put items you use often at counter level in your kitchen, bathroom, shower, and bedroom.
- Make meals ahead of time and store them in the freezer.
- Place a non-slip mat or tape in the shower.
- Put up grab bars near the toilet and shower.
- Place a night light in the bathroom.
- Have good lighting in all rooms, hallways, and stairs. Turn on lights when you get up at night
- Arrange furniture so there are clear walking pathways.
- Do not use low chairs or couches. A good seat height is at least 20 inches.
- Measure to see if your toilet is at least 20 inches from the ground. If it is not, get a toilet riser that is at least 20 inches high.
- Think about having pets stay with someone so you do not trip over them.
- Always keep your assistive devices near you. Use them to keep your balance and maintain your precautions.
- Make sure stairs have a handrail the entire length of the stairs. Place bright non-skid strips on the edge of steps.

Appendix C: Surgery List

Before Surgery

- Remove nail polish or artificial nails and jewelry.
- Shower as instructed.
- Follow fasting guidelines as instructed.
- Have a caregiver and driver to help you after surgery.

Packing Checklist for a 24 to 48-Hour Hospital Stay

- A complete and up-to-date medicine list
- Any assistive devices you use, such as a walker or crutches
- Non-slip, closed toe walking shoes
- A change of clothes (shirt, pants, and undergarments that are loose fitting and easy to get on)
- Personal toiletries
- CPAP and/or inhaler
- Eyeglasses (not contact lenses)
- A small amount of money or credit card if you need to pay for medical equipment, prescriptions, or transportation
- Something to help pass the time, such as book or magazine

Please Do Not Bring

- Medicines (opioids and over the counter medicines) unless instructed by your care team
 - You cannot take your own medicines during your hospital stay. It is not safe.
- Valuables (except those mentioned above)
- Jewelry
 - Remove and leave at home all piercings and jewelry, including wedding rings. See a jeweler for help removing if needed.

Appendix D: Hospital Map

University of Iowa Hospitals & Clinics Entrances and Exits

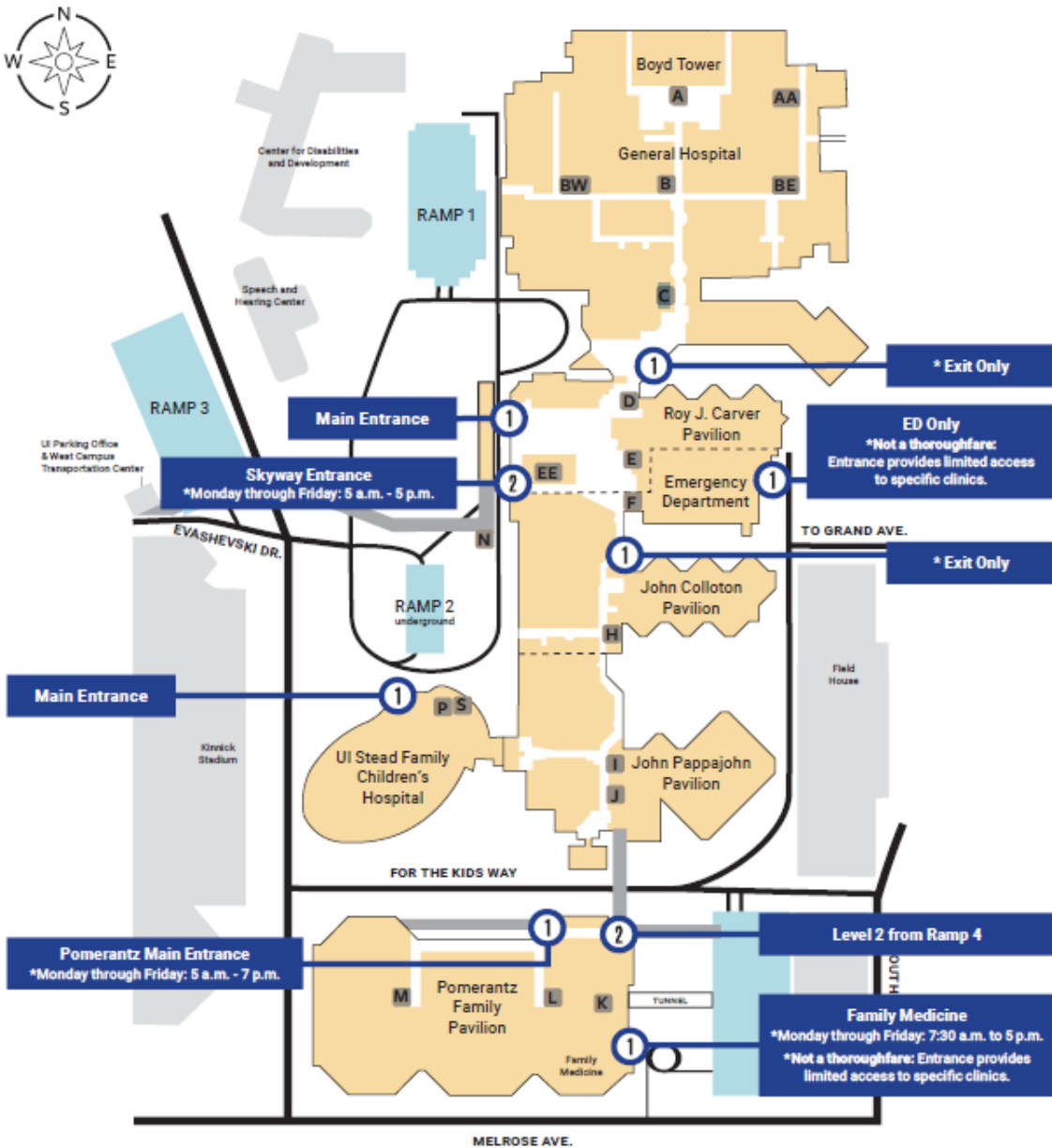


Open 24/7 and operates as both entrance and exit unless otherwise noted.

= Available to staff, patients, and visitors

- = Level 1 Entrance/Exit
- = Level 2 Entrance/Exit
- = Lower Level Entrance/Exit
- = Elevator
- = Skyway

Any entrances and exits not marked here are temporarily closed | Effective: October 1, 2021



Appendix E: Incentive Spirometer

What is an incentive spirometer?

After surgery, people are often sleepy and spend more time in bed than usual. People do not take as many deep breaths as normal. Fluid sits in the lungs and can cause pneumonia. An incentive spirometer will help keep your lungs clear after surgery.



How do I use an incentive spirometer?

1. Sit up in bed if possible.
2. Hold the incentive spirometer upright.
3. Put the end of the hose in your mouth.
4. Take a big breath **in**, slowly. Try to keep the yellow piece in the better to best range.
5. Hold your breath (try for at least 5 seconds).
6. After each set of 10 deep breaths, practice coughing to be sure your lungs are clear. If you have an incision, support your incision when coughing by holding a pillow firmly against it.

How often do I use an incentive spirometer?

Use the spirometer each 1 hour while you are awake. During the night, use the spirometer when you are awake and at least every 4 hours (with vital signs). Stop using the spirometer after you go home and are doing your normal level of activity or have stopped taking prescription pain medicine.
