DEPARTMENT OF ORTHOPEDICS AND PHYSICAL REHABILITATION
DIVISION OF ARTHRITIS AND JOINT REPLACEMENT SURGERY

Preparing for your knee replacement surgery

Musculoskeletal
CENTER OF EXCELLENCE

UMassMemorial
Health Care

University of
Massachusetts
UMASS Medical School

Dear Patient:

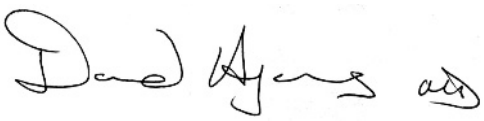
Thank you for considering UMass Memorial Medical Center for your joint replacement surgery. Our team has received national and regional recognition for its expertise in joint replacement surgery. These awards are based on the exceptional outcomes of our patients. We have the region's most extensive team of orthopedic specialists with a depth of experience that places us in the top ten percent of orthopedic programs in the nation. Blue Cross Blue Shield has designated our Arthritis and Joint Replacement Center as a "Blue Distinction Center," a quality award given to the few hospitals that continually meet and exceed outcomes for joint replacement procedures.

Our most important measure of the quality of orthopedic care given here is the amount of improvement in a patient's activity and physical function after treatment. According to the federal Agency for Healthcare Research and Quality, the UMass Memorial Health Care Musculoskeletal Center of Excellence is a model program that is nationally recognized for the quality of our care and the exceptional functional results of our patient.

At our Arthritis and Joint Replacement Center, we are committed to helping people lead active lives. If joint pain, a sports- or work-related injury or other orthopedic problem prevents you from enjoying your regular activities, we are here to help — from initial consultation to diagnosis through treatment and recovery. When you turn to us for orthopedic care, you can feel confident that you will receive the highest-quality care from a respected team of experienced orthopedics experts.

This booklet explains the outstanding program that you will take part in if you have knee or hip replacement surgery at UMass Memorial. I encourage you to ask questions of any member of your Arthritis and Joint Replacement Center care team throughout the process. We are always available to answer your questions and help your recovery.

Sincerely,



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About This Booklet

The information provided in this booklet is intended to be your guide as you plan for your upcoming total knee replacement surgery. This guide was written by your Arthritis and Joint Replacement Center care team at UMass Memorial Medical Center in order to help answer many of the questions you may have regarding your surgery and recovery. We hope you find the information in this booklet helpful. We also encourage you to speak with your doctor or member of your health care team if you have any additional questions.

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Our Team

Our team consists of board-certified surgeons who have advanced training in knee replacement surgery. Our surgeons have performed hundreds of procedures using state-of-the-art techniques. Our academic partnership with the University of Massachusetts Medical School means our surgeons are engaged in ongoing clinical research efforts to advance surgical and nonsurgical methods for diagnosing and treating patients. Our nursing, physical therapy, and administrative staffs have combined their expert knowledge of patient care and recovery to supply you with information that is important for you to be successful.

Your Visits to the Arthritis and Joint Replacement Center

You will be asked to fill out a computer or paper survey about yourself and how you have been feeling. This survey is an extremely important part of your visit as it gives us important information to help plan your treatment.

Your surgeon will look at your survey in addition to any x-rays, MRIs or lab tests you have had to help determine the best time for your surgery. Your answers also help us understand how well you will recover after your surgery.

There are no right or wrong answers to these questions. We want you to be honest about how you feel, and your level of pain or joint stiffness. If pain is limiting everyday activities, then your doctor needs to know. Your survey answers can be used to help make these important decisions about your care.

You may be asked to fill out the survey at each visit including before surgery, as well as three months, six months, one year and perhaps up to two years after surgery.

Research Studies

Knee replacement surgery offers successful outcomes for patients, and most patients experience significant pain relief and greater mobility following their surgery. One of the reasons knee replacement surgery has been so successful is because patients like you have given their consent to participate in clinical research studies.

Orthopedic surgeons at UMass Memorial Medical Center are always looking for ways to improve total knee replacement surgery. Research helps improve the surgical techniques, the hardware that makes up your new knee, the medicines that are prescribed and your postsurgery care.

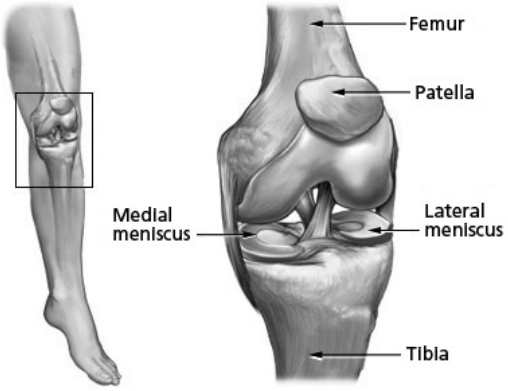
Some research studies ask you to fill out a questionnaire while others may invite you to participate in receiving the latest joint technology and medications. If you are asked to participate in a study, please read all of the information provided to you in order to decide if the study is right for you. Participation in research is completely voluntary. If you do not wish to participate in a research study it will not affect the excellent care you will receive at UMass Memorial Medical Center.

If you have any questions regarding a research study that you are in, or one you would like to participate in, or if you do not wish to continue your participation in a study, please speak to our orthopedic research nurse. Any one of our staff will be happy to provide you with the correct telephone number. Our research nurse is always happy to answer any questions you may have.

Anatomy of the Knee

A healthy knee moves easily, allowing you to walk, turn and squat without pain. Your knee joint is made up of three bones. Your thigh bone (femur) sits on top of your shin bone (tibia). When you bend or straighten your knee, the rounded end of your thigh bone rolls and glides across the relatively flat upper surface of your shin bone. The third bone is often called the kneecap (patella) which is in front of the knee. The patella is attached to the muscles that allow you to straighten your knee. Your kneecap provides leverage that reduces strain on these muscles.

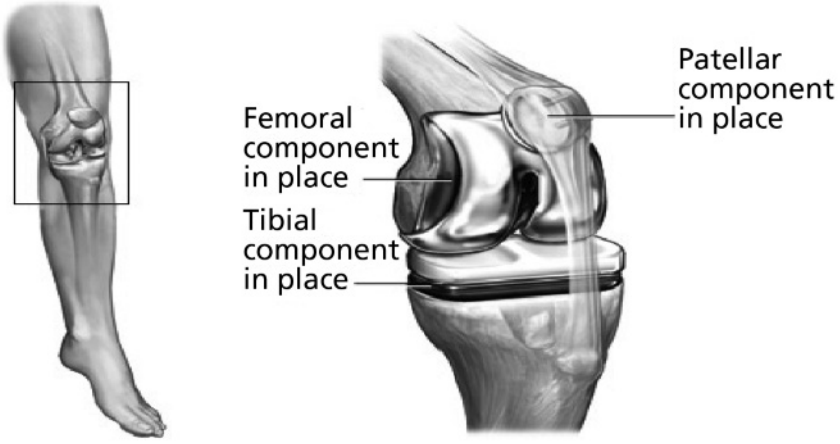
Normal Knee Anatomy



Osteoarthritis of the Knee

Osteoarthritis is a chronic disease involving the weight bearing joints, which is characterized by destruction of the articular cartilage and impaired function. See above illustration that compares a normal knee with a knee with osteoarthritis.

Resurfacing of the Knee Joint



Preparing for Surgery

Classes for the Patient and Family

Your total joint care team has designed a program to help you prepare for joint replacement surgery. Before surgery, you and a family member or friend are invited to the joint replacement surgery class on the Memorial Campus of our Medical Center. For your convenience, the surgeon's administrative staff will also try to book your presurgical evaluation appointment on the same day as the class. We encourage you to attend the class to help you be better informed about your upcoming surgery. During the class, you will learn about your surgery and what to expect, meet people who have undergone the surgery and meet some of the hospital staff who will care for you. You can also ask questions about your surgery and hospital stay. Please remember to write down all questions prior to coming so you will not forget to ask what is important to you.

The class is held once a week on the Memorial Campus of our Medical Center. Patients should meet at the Arthritis and Joint Replacement Center, located on the first floor of the South Building. The class lasts about 90 minutes. You can call your surgeon's office to register for a class.

Presurgical Evaluation Appointment

Every patient undergoing surgery will be seen for a presurgical evaluation. Your surgeon's office will help you make the appointment two to three weeks before your surgery. During this appointment, you will have a medical evaluation (including lab work, chest x-ray and EKG), be screened for infection risk, meet with an anesthesiologist, and meet with a nurse who will explain the procedure and all tests you will need before coming into the hospital. The appointment will take approximately two hours.

Please remember to bring a list of your prescription and nonprescription medications, including vitamins and herbal supplements. Please bring a list of allergies and your medical history, as well as a copy of your Health Care Proxy. At this time the anesthesiologist will advise you about which of your daily medications you should take on the morning of your surgery. You will also be given Hibiclens, an antibacterial soap, with instructions on how to use it before surgery.

If after your presurgical evaluation appointment you develop any potential infections, such as open wounds, urinary tract infections, toothaches, rashes or cold/flu symptoms, contact your surgeon's office. An infection could delay your surgery.

Other Appointments You May Need

Dental Evaluation – Please have any dental work (cleaning, tooth extractions, etc.) done at least one month before your surgery if possible. The dentist should evaluate you for any infections or potential complications.

Medical Appointment – You should notify your primary care physician that you are planning to have surgery. He/she may want to see you before the surgery.

Urinary Evaluation – During your pretesting appointment, you will have a urine test done to make sure you do not have an infection. Any urinary tract infection will be treated. If necessary your surgeon may want a further urologic evaluation.

Weight Loss – If you are overweight, your surgeon may request that you lose weight prior to your surgery. This will help decrease complications after surgery.

Blood Transfusions

Patients having total joint replacement surgery may require a blood transfusion. Your surgeon may recommend you donate blood prior to surgery. If you have discussed this with your surgeon and you are a candidate to donate your own blood, please call:

The Blood Donor Center
UMass Memorial Medical Center – University Campus
55 Lake Avenue North, Worcester, MA
Telephone: 508-421-1950 or 508-421-1951

You can donate one unit at a time with a week off between donations. It is preferable that you call the Blood Donor Center to set up your appointments four to six weeks prior to your surgery because you are only able to donate one unit at a time. Remember that the blood you donate is good only for 42 days.

Home Preparation

Adapting your home will make your return safer and enhance your recovery. Use this as a check list to review your home prior to surgery.

- ☐ Take up all throw rugs. Use only nonskid rugs in good condition.
- ☐ Secure the edge of area rugs with double-faced tape or tack them down.
- ☐ Avoid highly polished floors. Clean floors to remove any substance which may catch your feet or crutches and cause you to fall. Powder makes the floor slippery. Hairspray makes the floor sticky.
- ☐ Move most commonly used pots and pans to waist-high level to avoid excessive reaching or bending.
- ☐ Arrange the furniture so that the pathways are wide enough (at least 36 inches) to accommodate a walker/crutches/wheelchair.
- ☐ Remove household clutter. Consider getting a trash can with wheels for trash removal.
- ☐ Brightly colored tape on each step or threshold is advised for people who have vision problems to increase safety while walking.
- ☐ Be aware of surface changes, such as rug to floor or linoleum.
- ☐ Remove extension cords and telephone cords across walkways. If the cords are necessary across walkways, secure them with duct tape.
- ☐ Avoid soft sofas or chairs which are difficult to get up from. Opt for sturdy chairs with arm rests.
- ☐ Check for adequate lighting throughout the house and outside. Install nightlights, especially in the bedroom, bathroom and hallways.
- ☐ Modify pet feeding areas by placing food dishes on a low bench or stool for easy access to refill. Avoid placing these items in areas where you will be walking frequently.
- ☐ Arrange a sleeping area and a bathroom on the living level of your home. Use a bed or couch with the proper support and height. Your bed should not be low to the floor, which puts added stress on your knees, or so high that your feet cannot touch the floor.
- ☐ Consider a bedside commode and/or urinal for nighttime use.
- ☐ Place toilet paper convenient to reach without twisting or bending.
- ☐ Place soap/shampoo at a comfortable height.
- ☐ If you are using a shower to bathe we suggest that you remove glass shower doors. These are unsafe to use as support while getting in and out of the shower or tub. DO NOT use a towel rack, soap dish or windowsill for support. Request a trained professional (plumber, carpenter) to install grab bars in the tub.

☐ Place gripping tub strips on the bottom of the tub to prevent your feet from slipping.

☐ Consider an emergency call system if you stay home alone for long periods of time.

☐ Keep a portable telephone and emergency numbers with you at all times.

What to Bring to the Hospital

UMass Memorial Medical Center will provide you with the basic essentials needed for your stay in the hospital.

When you arrive in your room after surgery, you will receive toothpaste, toothbrush, soap, lotion, comb, mouthwash, shaving cream, disposable razor and a denture cup. You are welcome to bring any personal toiletries that would make your stay more comfortable.

The hospital also supplies you with a gown to wear throughout your stay. This is much more convenient for you as you are trying to get out of bed and perform activities. We highly recommend that you leave all valuables (jewelry, large sums of money, credit cards) at home, as the hospital cannot be responsible for them.

Bring the following things with you to the hospital:

- Copy of your Health Care Proxy
- Written list of prescription and nonprescription medications, vitamins and herbal supplements that you take, including those you have stopped prior to surgery
- Written list of any allergies to medications, food or latex
- Eyeglasses and eye case, instead of contact lenses, as they are more easily cared for and are easier to use
- Loose, comfortable clothing to wear home
- Footwear with a rubber nonskid bottom with good support, like a sneaker or walking shoe
- Telephone numbers of family and friends (Please note: Your hospital room is equipped with a telephone and you are allowed to make local calls only. Please make arrangements for long distance calling.)
- Books, magazines, music devices or a hobby to help you relax; all rooms are equipped with televisions

Evening before Surgery

You should call the Surgical Admissions Unit at 508-334-6384 between 2 pm and 5 pm the business day prior to your surgery to get your scheduled arrival time.

You should not eat or drink after midnight before your surgery. You may take your medications with sips of water as instructed.

Day of Surgery

Surgical Admissions Unit

On the day of your knee surgery you should report to the Surgical Admissions Unit, second floor, East Building, Memorial Campus. Enter through the main entrance of the hospital and take elevator E.

When you arrive, you will change into a hospital gown. Your belongings can be labeled and sent to the inpatient unit, but we suggest that family members take your belongings and bring them to your room to avoid them being misplaced. The nursing staff will take your vital signs and review your final preparations for surgery. When your family members are asked to leave, they may go to the surgical waiting area just outside the unit.

Your surgeon will come and speak to your family in the waiting room or call your family after your surgery is finished. Please leave a cell phone or other contact number with the surgical admissions staff.

For your family's convenience, there is a cafeteria on the first floor of the South building and a coffee shop in the atrium/main lobby. The cafeteria is open every day from 6:15 to 10:30 am and 11 am to 9:30 pm.

Holding Area

When it is time for your surgery, you will be transported via stretcher to a holding room. An IV line will be placed for routine fluids, antibiotics and a blood transfusion if necessary. Your anesthesiologist and surgeon will meet with you to discuss any last-minute questions or concerns. For safety purposes, you will be asked to sign your initials with a surgical pen at the location of your surgery. Once you are fully prepared and the surgical team is ready, you will be taken into the operating room.

Recovery Room

Once the surgery is complete, you will be taken to the Post Anesthesia Care Unit (PACU) where you will stay until you are awake and alert, your vital signs are stable, and your pain is under control.

As soon as these occur and your room is ready, you will be taken to your room on the floor. In some instances, patients remain in the PACU overnight.

Your Room

Upon arriving in your room, you will meet your nurse and your personal care assistant who will orient you to your surroundings. Your vital signs will be taken and your medical condition will be assessed. You will still have an IV but can drink if you are able.

It is important to rest on your first night after surgery. The nurses will assess your pain to make sure it is under control. You will be checked frequently for safety and comfort. Do not hesitate to report any concerns or ask any questions.

You may be wearing special white stockings and/or compression boots to promote circulation and to help prevent blood clots.

You will be taught how to cough and take deep breaths to prevent congestion in your lungs while you are not moving around.

Your Hospital Stay

First Day and Beyond

Your first day after surgery will be the beginning of your recovery:

- You will get out of bed with the help of a caregiver. Do not get out of bed without first calling for assistance.
- Your IV will be stopped, and you will be allowed to eat and drink your normal diet.

We encourage you to ask questions and communicate concerns to the nursing staff as well as the entire orthopedic team.

The average length of stay in the hospital for a total joint replacement patient is three to four days. Each day you will increase your activity level and strength. You can expect the following to occur:

- Lab staff will draw your blood daily. These results will be evaluated by the orthopedic team and if necessary you may receive a blood transfusion based on these results.
- Physical therapy treatments will help you get back on your feet and ready for discharge.
- You will be visited daily by our discharge coordinator who will help you with your discharge plan.
- While you are in the hospital you should receive any medication you normally take at home. If you do not receive your medications, please tell your nurse. If you have any questions, do not hesitate to ask. You may also receive additional medications as prescribed by your surgeon such as a multivitamin, vitamin C, iron, laxatives to prevent constipation and blood thinning medicine to prevent blood clots.
- The continuous passive motion (CPM) machine may be prescribed by your doctor for use after surgery to help you improve knee motion and decrease joint stiffness. The CPM is used while lying in bed and will bend and straighten your knee as you rest. It can be used while sleeping. The settings on the machine will be increased over time to help you bend your knee further.

Pain Management

Our body uses several different chemicals to transmit pain messages to the brain. Each of these chemicals is part of a pain-signaling pathway. Recent studies have shown that a more effective way of treating pain is to treat multiple pathways with medications for each pathway. Using a number of different medications enables us to treat pain more effectively, while minimizing side effects. Since we are trying to treat multiple pathways, you will find that we will be using a number of different pain medications, beginning the morning of surgery and extending through your hospital stay and at home.

Some of the pain modalities used are:

- Nerve blocks – local anesthesia injected around a nerve
- Long acting medication by mouth
- Short acting medication by mouth
- An anti-inflammatory medication
- Tylenol®
- Medication for nerve pain
- Patient-controlled analgesia (PCA: a pump controlled by the patient to deliver intravenous pain medication)

Pain control begins on admission and continues throughout your hospital stay. The pain modality to be used will be decided upon by your surgeon and anesthesiologist. This decision is based on your medical history.

Pain management is an important aspect of care for a total joint patient. The nursing staff will frequently ask you to rate your pain on a scale of zero to 10, zero being no pain and 10 being severe pain. It is important to all members of your care team that you are as comfortable as possible. If at any time you do not feel your pain is under control, please do not hesitate to inform them.

Bowel and Bladder Function

In some instances you will have a catheter placed during or after surgery. A catheter is a thin flexible tube inserted in the body to withdraw fluids. If you have a catheter, it will be removed in one to two days.

Normal bowel movement following surgery is very important. Pain medication can and often does cause constipation. While you are in the hospital, you will receive stool softeners and/or laxatives in order to prevent constipation. It is important for you to continue to manage your bowel movements at home. There are many remedies that can be bought at your local pharmacy including:

- Docusate sodium (Colace®): 100 milligrams twice daily
- Milk of Magnesia: Follow directions on the label
- Senokot®: Two tablets at bedtime
- Glycerine suppositories and small enemas: Follow directions on the label

Drinking plenty of fluids and eating high fiber foods such as vegetables, oranges, apricots and prunes can help ease constipation.

Blood Clots

Blood clots can develop after surgery. Your surgeon will prescribe a blood-thinning medication called an anticoagulant to help prevent blood clot formation.

You may wear special white stockings and/or compression boots to promote circulation and prevent blood clots.

If you are given white compression stockings you should continue to wear them after you leave the hospital until your first visit with your surgeon. Wear them during the day and remove them at night. Getting out of bed and moving also helps prevent blood clots.

Physical Therapy

While you are in the hospital you will receive physical therapy.

Physical therapy focuses on teaching the proper techniques for getting in and out of bed, up and down from a chair, and walking with an assistive device (a walker or crutches). Your therapist will also review a therapeutic exercise program that is designed to increase your range of motion and strength (see page 17).

After Hospital Care

Discharge Planning

All patients having total joint replacement surgery will require further therapy after discharge from the hospital.

The discharge coordinator, along with other members of the orthopedic team, will coordinate your discharge to home with therapy/nursing services. Your discharge plan will depend on your medical needs, your progress with therapy, your home arrangement and your insurance. You should arrange to have help with meals and other needs at home, such as cleaning and shopping.

Below are some options available for continued care:

Rehabilitation Center – You may need additional rehabilitation because you require continued monitoring of your medical condition. The length of your stay will depend on your progress with therapy.

Outpatient Physical Therapy – You may require additional therapy after you are discharged from rehab or from home physical therapy. This option should be discussed with your surgeon at your first visit after surgery.

Reasons to Call Your Physician

Please notify your surgeon if you develop:

- Redness or drainage from your incision
- Separation or opening of the incision
- Calf discomfort
- Fever (temperature greater than 101 degrees) or chills
- Rash
- Increased pain
- Leg swelling
- Decreased motion or increased stiffness
- Any other concerns you may have

Wound Care

Please keep the incision clean and dry.

It is best to leave the incision uncovered if there is no drainage. You may cover it with a dry, sterile dressing for your comfort and change it every day.

If you suspect that you are developing an infection in the wound area or you develop redness around the sutures, contact your surgeon immediately.

Antibiotics

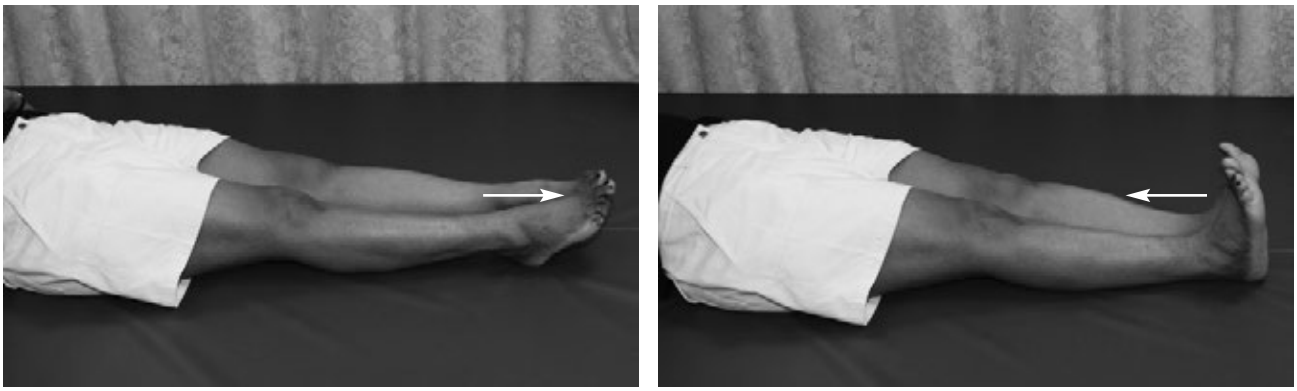
You now have an artificial knee. To decrease the chance of infection of this joint, your primary care physician or dentist will need to prescribe antibiotics before any dental, surgical or invasive procedures.

Exercise Program after Surgery

To make your recovery easier, familiarize yourself with these exercises before coming to the hospital. Your therapist will show you which ones are best and how often you should do each one. The therapist will introduce additional exercises as you progress in your recovery.

Ankle Pumps

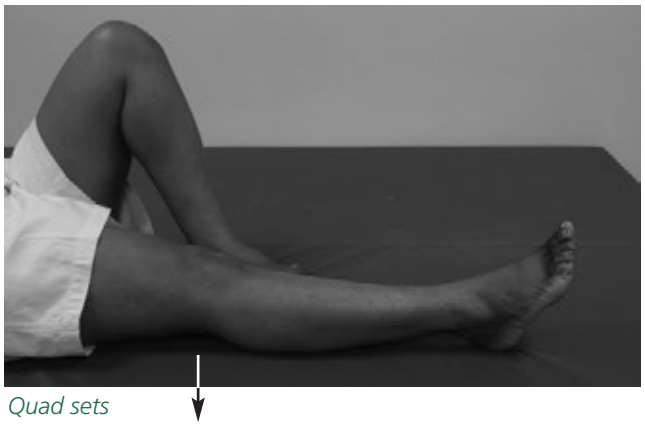
Lie on your back with your legs straight out in front of you. Slowly alternate pointing your feet down (bend at your ankles and push down towards the foot of the bed) followed by bringing your feet back up (point your feet up toward your nose). Relax and repeat for one minute. Do this exercise several times during the day. As you get more active you can perform this exercise while sitting with your feet on the floor or one leg at a time with your foot resting on a stool.



Ankle Pumps

Quad Sets

Lie on your back with your involved leg straight. Bend the other knee. Slowly tighten the thigh muscles of the straight leg and push the back of your knee into the bed. Continue to breathe regularly as you hold your thigh muscles tight for a count of 10. Relax slowly. Repeat 10 times.



Quad sets

Short Arc Quads

Lie on your back with a pillow or towel rolled under your involved knee and your other knee bent. With your thigh resting on the pillow or towel roll slowly tighten your knee and lift your heel off the bed until your leg is straight. Hold for a count of 5 then lower your heel slowly back to the bed allowing the knee to bend. Relax. Continue to breathe normally throughout the exercise. Repeat 10 times.

Short Arc Quads

Knee Bending While Sitting

Sit in a chair with your knees bent. Slide the foot of your involved leg back, bending your knee until you feel a stretch. Hold it bent for a count of 10. Relax and repeat 10 times. Continue to breathe normally throughout the exercise.

Knee Bending

Knee Stretch While Sitting

Sit in a firm chair and allow your involved knee to relax, and then bend it as far as possible. Cross your other foot on top of the ankle on your involved side. Then gently use your front foot to slowly bend your operated knee until you feel a stretch. Hold for a count of 10. Relax. Repeat 10 times.

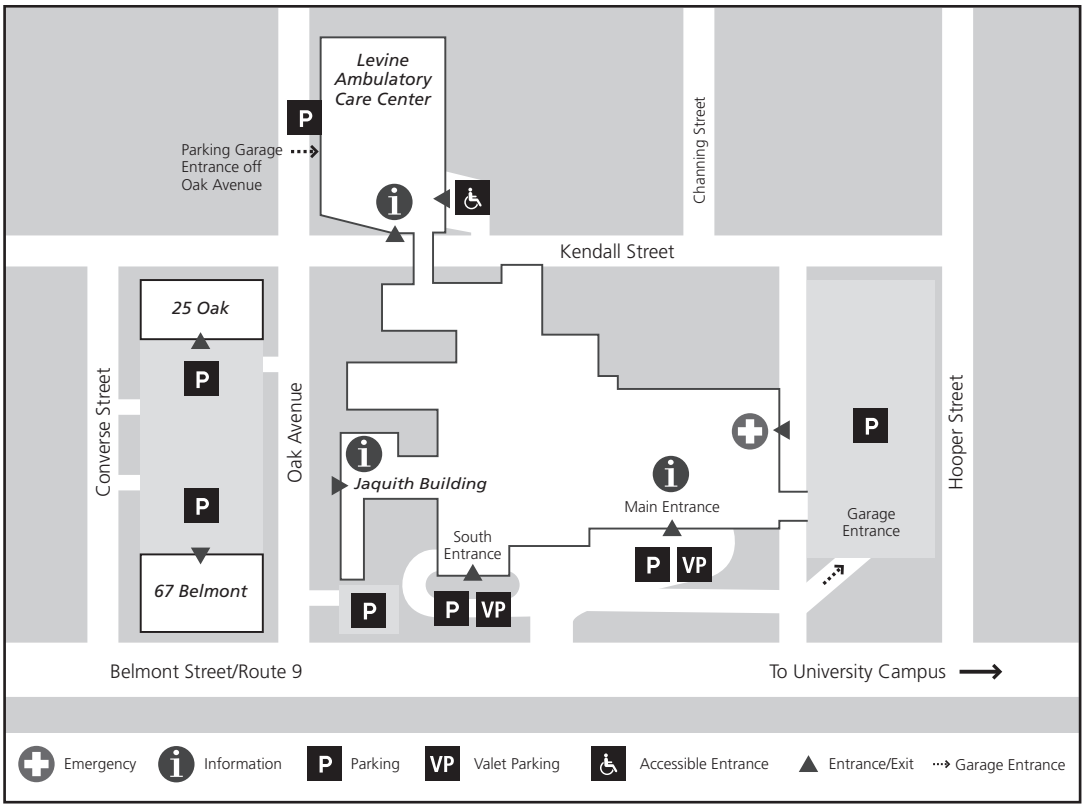
Knee Stretch

Knee Straightening While Sitting

Sit in a chair with your knees bent. Straighten the knee of your involved leg out as much as possible. Hold it straight for a count of 10. Relax. Repeat 10 times. Continue to breathe normally throughout the exercise.

Knee Straightening

Directions to Presurgical Evaluation at the Arthritis and Joint Replacement Center



UMass Memorial Medical Center – Memorial Campus
119 Belmont Street, Worcester

From the east: Take Mass. Turnpike West to I-495 North. Take Exit 25B to I-290 West. Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. Memorial Campus is 1⁄2 mile on the left.

From the west: Take Mass. Turnpike East to Exit 10 (I-290 East). Take I-290 East to Exit 17. Turn right off exit onto Route 9/Belmont Street. The Memorial Campus is on your left.

From the north: Take I-495 South to Exit 25B (I-290 West). Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). Take left onto Belmont Street. The Memorial Campus is on your left.

Or: Take I-190 South to I-290 West toward Auburn. Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). The Memorial Campus is on the left.

From the south: Take I-495 North to Exit 25B (I-290 West). Follow I-290 to Exit 18. Turn right off exit onto Lincoln Street. Bear left and proceed to Lincoln Square (intersection of Route 9/Belmont Street). The Memorial Campus is on your left.

Or: Take I-395 North to where it becomes I-290 East. Take I-290 to Exit 17. Turn right off exit onto Route 9/Belmont Street. The Memorial Campus is on your left.

Parking: In the parking garage near the Emergency Department Entrance or valet in front of the south entrance.

When you arrive at the hospital, come through the south entrance and take Elevator S to the Arthritis and Joint Replacement Center on the first floor.

Internet Resources:

UMass Medical School Joint Care:	www.myjointcare.net
American Academy of Orthopaedic Surgeons:	www.AAOS.org
American Association of Hip and Knee Surgeons:	www.AAHKS.org

UMassMemorial
Medical Center
A Member of UMass Memorial Health Care

Patients and families trust UMass Memorial Medical Center as the region's leading academic medical center, committed to improving the health of our communities in Central New England. With our partner, the University of Massachusetts Medical School, we are committed to excellence in primary and specialty care, community service, teaching and research. The Medical Center offers advanced technology and support services for patients and families, providing the region with specialists renowned for their expertise in caring for adults and children.

Contributions to UMass Memorial Medical Center are deeply appreciated. Call 508-856-5520 or email giving@umassmed.edu.

UMassMemorial
Health Care

University of Massachusetts Medical School

UMass Memorial Health Care is the largest not-for-profit health care system in Central New England with more than 13,000 employees and nearly 2,000 physicians, many of whom are members of UMass Memorial Medical Group. Our member hospitals and entities include Clinton Hospital, HealthAlliance Hospital, Marlborough Hospital, UMass Memorial Medical Center, Wing Memorial Hospital and Medical Centers and Community Healthlink, our behavioral health agency. With our teaching and research partner, the University of Massachusetts Medical School, our extensive primary care network and our Cancer, Diabetes, Heart and Vascular, and Musculoskeletal Centers of Excellence we deliver seamless programs of quality and compassionate care for patients across our health care system.

Follow umassmemorial on:

Department of Orthopedics and Physical Rehabilitation
Division of Arthritis and Joint Replacement Surgery
UMass Memorial Medical Center – University Campus
55 Lake Avenue North, Worcester, MA 01655
www.umassmemorial.org/ortho

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